Targeting optimal care, together
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Welcome letter

On behalf of the Scientific Programme Committee, it is our honour and pleasure to welcome you to ESTRO 38.

ESTRO 38 will offer to us all, as professionals of oncology, the chance to share knowledge, practice and advances in the field, within the ever warm and dynamic environment of the ESTRO meetings.

‘Targeting optimal care, together’ will be the theme of ESTRO 38 and through these few, however impactful words, the Scientific and organising committees would like to put a spotlight on the multiprofessional and multidisciplinary aspect of our specialty. The theme also represents our strength: we are all working towards a common goal for improved patient outcomes, and this will be expressed throughout the scientific programme:

Targeting: the concept is inherent to the radiation oncology specialty, and certainly well in line with the modern concept of precision medicine.

Optimal Care: the value and the cost for radiotherapy are an inseparable part of the equation for optimal treatment. Although the clinical outcome of our patients is the priority in our daily practice, this cannot happen without common efforts to improve the access to treatment for all cancer patients.

Together: the radiation oncology community is a mosaic of various stakeholders: medical and scientific communities, industry, national societies as well as oncology organisations, institutes, patients and advocates. We all join forces.

The interdisciplinary component of the scientific programme includes sessions on the following topics:

• Artificial Intelligence in radiation oncology: role and potential
• Radio-immunotherapy
• Adaptive RT guided by early response (adapting the adaptive!)
• Adaptive RT: reactive or proactive?
• MR machines and treatment adaptation
• Clinical trials for particle therapy: which ones to run and how?
• The DNA damage response with radiotherapy
• Radiotherapy biomarkers: a confluence of imaging, genetics and pathology
• Cardiac substructures and toxicity
• Predictive models of toxicity and big data, big open issues
• The role of hypofractionation in current radiotherapy and its impact in planning radiotherapy services
• Palliation in radiotherapy - How much is enough?
• Are adolescents and young adults (AYA) a specific patients’ population?
• Plan of the day. General gains of performing
• Re-irradiation for breast cancer
• Extreme hypofractionation in the treatment of localised prostate cancer
• Radiotherapy in bladder cancer: standard of care and future perspectives
• Which is the best technique for the delivery of APBI?
• From discovery to cure
• Dose painting - what is the reality?
• Inflammatory environmental factors and radiation response
• Functional imaging in radiotherapy: from biology to guidance
• Role of ablative treatments in oligometastatic disease

With symposia, proffered papers sessions and debates, ESTRO 38 will offer ample opportunities to learn about cutting-edge research from leading scientists.

A strong educational platform will also feature worldwide experts who will give pre-meeting courses, teaching lectures, contouring workshops and multidisciplinary tumour boards during five days.

The Young Scientists Track has now become a not to be missed event within the congress with a one-day programme tailored to the young audience. On the agenda are: lectures, symposia and networking opportunities.

ESTRO’s annual congresses feature the largest exhibition in radiation oncology in Europe with an increasing number of exhibitors year after year. Be there and get a chance to meet all the industry leaders show-casing the latest developments in the radiotherapy and oncology fields.

We welcome you in elegant and majestic Milan, where we hope you will join us to make ESTRO 38 a memorable event for the radiation oncology community.

With warm regards,

Umberto Ricardi
ESTRO 38 Chair
Scientific Programme Committee

Chair of the congress
U. Ricardi (IT)

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Abstract reviewers
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About ESTRO

ESTRO 2030 VISION
The governance of ESTRO is pleased to share with you the 2030 vision that has been officially presented at ESTRO 37 in Barcelona last April.


The 2030 vision will set the roadmap to follow for the further development of the discipline of radiation oncology.

ESTRO MISSION
Founded in 1980, ESTRO is a non-profit scientific organisation whose role is to foster, in all its aspects, radiation oncology, clinical oncology and related subjects, including physics as applied to radiotherapy, radiation technology and radiobiology. To fulfil its purpose, ESTRO promotes education, science, research and advocate for access to radiotherapy through its teaching courses, workshops, meetings, publications and public affairs activities.

ESTRO School
The ESTRO School has become an internationally recognised provider of high-quality education in radiotherapy and oncology and has developed a wide array of educational activities:

• Live teaching courses covering basic and continuing medical educational needs of all professionals working in the field of (radiation) oncology
• Pre-meeting teaching courses, workshops, teaching lectures and tumour boards during congresses
• Live and online workshops courses with FALCON (Fellowship in Anatomic deLineation and CONtouring), the online delineation programme
• Hands-on experience through mobility grants programme.

The ESTRO School promotes multidisciplinary education in oncology, basic science, physics and technology, imaging, and interdisciplinary oncology, with the objective of standardising knowledge and clinical practice, whilst recognising the diversity of radiation oncology practice in different parts of the world. In 2019, the ESTRO School is organising 37 live courses (31 in Europe and six outside Europe) and two undergraduate courses.

ESTRO CONFERENCES
ESTRO next conference:

WCB (World Congress of Brachytherapy)
2-4 April 2020 | Vienna, Austria
The World Congress of Brachytherapy is an outstanding event for the brachytherapy community covering major indications and aspects of the discipline.
ESTRO 39
3-7 April 2020 Vienna, Austria
ESTRO 39 will focus on the latest data in clinical oncology, radiation physics, radiation technology and patients’ care, brachytherapy and radiobiology, all contributing to the goal: better patients’ outcome in cancer treatment.

ESTRO MEMBERSHIP
The ESTRO membership gathers 7,300 professionals of radiation oncology and its related fields, providing them with the resources and tools they need to successfully support their career development. ESTRO members can benefit from a host of advantages such as:

- Online subscription to Radiotherapy & Oncology, the Society’s journal
- Reduced fees for attending ESTRO conferences, teaching courses and online workshops
- Online access to scientific material through the e-library (DOVE)
- Eligibility for grants, awards, faculties and governance positions.

A wide range of oncology professions are represented within the ESTRO community: Radiation oncologists, clinical oncologists, medical physicists, radiobiologists, radiation therapists (RTTs), dosimetrists, radiotherapy nurses, medical oncologists, surgeons, industry representatives, organ specialists, other medical and non-medical professions, coming from more than 100 countries spread all over the world.


ESTRO Publications
Radiotherapy & Oncology
Radiotherapy & Oncology, the Green Journal, is the flagship publication in ESTRO’s family of journals. The Journal publishes original research articles and review articles on all aspects of radiation oncology and has a current impact factor of 4.328.

www.thegreenjournal.com

Open access journals
ESTRO and Elsevier have launched more recently three new open access journals in order to provide specialised venues for the publication of ESTRO members’ work:

- Physics and Imaging for Radiation Oncology – phiRO, www.phiro.science
“ESTRO 38, Milan, Italy, 26/04/2019 - 30/04/2019 has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) with 24 European CME credits (ECMEC®s). Each medical specialist should claim only those hours of credit that he/she actually spent in the educational activity.”

“Through an agreement between the Union Européenne des Médecins Spécialistes and the American Medical Association, physicians may convert EACCME® credits to an equivalent number of **AMA PRA Category 1 Credits™**.

Information on the process to convert EACCME® credit to AMA credit can be found at [www.ama-assn.org/education/earn-credit-participation-international-activities](http://www.ama-assn.org/education/earn-credit-participation-international-activities).”

“Live educational activities, occurring outside of Canada, recognised by the UEMS-EACCME® for ECMEC®s are deemed to be Accredited Group Learning Activities (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada.”
**Venue**
MiCo
Viale Ludovico Scarampo, Milan, Italy
Fieramilanocity
Main entrance: GATE 5
Metro stop Portello

**Accommodation**
For your hotel reservation in Milan, MiCo dmc is appointed as Official Housing Bureau of the 38th ESTRO Annual Meeting. For any information please contact:

MICODMC
P. le Carlo Magno 1
20149 Milan – Italy
T. +39 02 87255050
F. +39 02 43426274
estro2019.hotel@micodmc.it

**Currency**
The currency in Italy is the EUR.

**Official language**
The official language of the congress is English. No simultaneous interpretation will be provided.

**Posters**
Electronic poster stations will allow you to view the virtual displays at your leisure and to correspond with presenters or forward a presentation to a colleague or home office.

A limited number of posters will also be displayed in the poster area during the whole congress.

**Exhibition**
An exhibition featuring equipment and medical publishers will be held in the Exhibition area. The exhibition will open on Friday evening with the Networking evening and will remain open from Saturday to Monday. Entrance is free for all registered participants. Companies and publishers who would like to participate in the exhibition may obtain more detailed information from the ESTRO Office.

**CONTACT PERSON**
Hande Yilmaz
Exhibition Administrator
T: +32 2 7759018
hyilmaz@estro.org

**Insurance**
The European Society of Radiotherapy and Oncology (ESTRO) does not accept liability for individual medical, travel or personal insurance. In the event of unforeseen or serious circumstances beyond its control, ESTRO shall be entitled to cancel or modify the dates of the event. Delegates shall not be entitled to compensation for any costs or damages incurred as a consequence of such a cancellation or change. All delegates are urged to take personal travel insurance. ESTRO will not be liable for any theft or damage to property and/or persons.
caused on site during the Congress, by any factor whatsoever, unless there has been a fault, intent or deliberate recklessness on the part of ESTRO. ESTRO shall not be held responsible in the event of poisoning or food intoxication during the Event.

Certificates of attendance
We believe in sustainability!
Please note that ESTRO will no longer provide attendees with a printed certificate of attendance.

ESTRO will provide attendees with a direct link to a printable digital certificate.

Luncheons and refreshments
The registration fee for the conference includes coffee breaks to all participants and company delegates wearing their conference badges. Lunch will be available for purchase in the exhibition area and is not included in the registration.

Opening ceremony and networking evening
All participants and company delegates are invited to the official opening ceremony which will be held in the Gold Plenary room on Friday 26 April.

The opening ceremony will be followed by the Networking evening which will take place in the exhibition area.

Satellite Symposia
Commercial satellite symposia will be held during lunch breaks. The programmes of the symposia will be published in the official programme book and on the ESTRO website.

For additional information, please do not hesitate to contact:
Hande Yilmaz
Exhibition Administrator
T: +32 2 7759018
hyilmaz@estro.org

Social activities
Friday 26 April
Opening ceremony
We can’t wait to welcome you to Milan for a thrilling ESTRO 38, which will start on Friday 26 April 2019 with an opening ceremony.

Friday 26 April 2019
Networking evening
All registered participants and all company delegates are invited to the Networking evening which will take place in the exhibition area.

Saturday 27 April 2019
Poster Awards ceremony
All participants and company delegates are invited to the poster awards ceremony, which will be held in the poster area.
Saturday 27 April 2019
Tweet-up
Meet your Twitter friends and network at the Tweet up taking place on Saturday 27 April in the poster area. Let’s Tweet-up there!

Sunday 28 April 2019 | 19:00 hrs
Super Run
The Super Run has now become a not-to-be-missed event at the ESTRO annual meetings. The initiative is a great occasion for all participants, sporty or not, to join in a common challenge.

Individual performance or collective effort? This year, you can decide. You will be able to choose to run on your own or to run a relay with teammates. So, don’t forget to pack your running shoes and start training!

Monday 29 April 2019 | 21:30 hrs
After dinner event
All participants are invited to an after-dinner event which will take place in Alcatraz in Milan.

Tuesday 30 April | 13:45 hrs
Post congress tour
ESTRO will organize a post congress tour to the Fondazione CNAO (National Center of Oncological Hadrontherapy for the treatment of tumours) on 30 April.

Enter the bunker of the synchrotron, an 80 meters long particle accelerator, where carbon ions and protons travel, and be amazed in front of the robotic system for positioning the patient in the treatment rooms of CNAO.

Physicists, engineers and technicians from CNAO will take you along a route of about 1 ½ hour.

Buses will leave from the MiCo at 13:45 hrs and will be back at around 16.45 hrs.

Sunday 28 April | 8:00 hrs – 17:00 hrs
Young track
The young scientists’ sessions will take place from 8:00 hrs to 17:00 hrs.

How to reach Milan from the airport
BY AIR
Linate
Take bus no. 73 in the "National Arrivals Exit" area all the way to the terminal in Via Gonzaga / Piazza Diaz.
Go down into the Metro station "Duomo". Here take the Red Line 1 (Rho Fiera Milano direction).
• for the "viale Eginardo / viale Scarampo" entrance: get off at the “Amendola” stop – 700 m from the Congress Centre, or at “Lotto” approx. 800 m.
• for the "piazzale Carlo Magno / via Gattamelata" entrance: get off at the “Cadorna” stop, exit the subway and go to the railroad station above: take the first train departing and get off at the “Domodossola” stop – just 600 m from the Congress Centre.
**Malpensa**
The “MALPENSA EXPRESS” train service will take you directly from the airport to the centre of Milan in 40 minutes, arriving at the Ferrovie Nord “Cadorna” station. Here take the Red Metro Line 1 (Rho Fiera Milano direction).
• for the “viale Eginardo / viale Scarampo” entrance: get off at the “Amendola” stop – 700 m from the Congress Centre, or at “Lotto” approx. 800 m.
• or the “piazzale Carlo Magno / via Gattamelata” entrance: get off at the “Cadorna” stop, exit the subway and go to the railroad station above: take the first train departing and get off at the “Domodossola” stop – just 600 m from the Congress Centre.

**Orio al Serio**
The “AUTOSTRADA” or “AIR PULLMAN” bus service will take you directly from the airport to Milan Central Station in 60 minutes: then take the Metro Green Line 2 (Abbiatgegrasso direction) and get off at “Cadorna”. Here take the Red Line 1 (Rho Fiera Milano direction).
• for the “viale Eginardo / viale Scarampo” entrance: get off at the “Amendola” stop – 700 m from the Congress Centre, or at “Lotto” approx. 800 m.
• for the “piazzale Carlo Magno / via Gattamelata” entrance: get off at the “Cadorna” stop, exit the subway and go to the railroad station above: take the first train departing and get off at the “Domodossola” stop – just 600 m from the Congress Centre.

**BY TRAIN**
**Central Station – Garibaldi Station**
Take the Metro Green Line 2 (Abbiatgegrasso direction) and get off at “Cadorna”. Here take the Metro Red Line 1 (Rho Fiera Milano direction).
• for the “viale Eginardo / viale Scarampo” entrance: get off at the “Amendola” stop – 700 m from the Congress Centre, or at “Lotto” approx. 800 m.
• for the “piazzale Carlo Magno / via Gattamelata” entrance: get off at the “Cadorna” stop, exit the subway and go to the railroad station above: take the first train departing and get off at the “Domodossola” stop – just 600 m from the Congress Centre.

**Cadorna Station**
Here take the Metro Red Line 1 (Rho Fiera Milano direction).
• for the “viale Eginardo / viale Scarampo” entrance: get off at the “Amendola” stop – 700 m from the Congress Centre, or at “Lotto” approx. 800 m.
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Floorplan
**New at ESTRO 38**

**Selfie Corner**
Pass by The Selfie Corner during your coffee and/or lunch breaks, take a selfie, get the chance to win a free registration at ESTRO 39 in Vienna.

On 2 May, we will announce the most liked picture as winner on ESTRO social media (Twitter, Facebook, Instagram, LinkedIn).

For further information, look for ESTRO staff onsite.

**Spin the wheel**
What are your wishes and dreams in the field of radiation oncology? Spin the wheel and make a wish based on the options given by the wheel. Set free your imagination!

**Innovative Spaces**
Don't forget ESTRO’s innovative spaces: check out The Stage where the congress will introduce a new type of meeting room set-up. There, industry pitches and Meet & Greets will take place.

Also, take a look at The Circle and The Lounge to relax, chat with participants and discover what the Society can offer you.

**Join the game #1**
First time at ESTRO Congress? This game is a 100% for newbies:
You will have to collect 5 pins from Friday to Monday.
You start at the registration area and end at The Lounge.

More information will be shared onsite!
2019 ESTRO Communities Pavilion
At ESTRO 38, all delegates will be invited to the Communities Pavilion. Designed to foster exchanges about science, projects, collaborations, and why not, job opportunities, the Communities Pavilion provides a networking forum for the wide range of stakeholders in radiation oncology.

Launched in 2017, the Communities Pavilion welcomes institutions, national societies as well as patient associations, each represented within one booth. The ESTRO Communities Pavilion is open to all ESTRO 38 participants. The following organisations may participate as exhibitors:
- All institutes
- National societies
- International radiotherapy societies
- Patients associations
- Other oncology associations

Opening hours:
Saturday 27 April to Monday 29 April, from 09:30-17:00.

For more information, please contact: Gabriella Axelsson (gaxelsson@estro.org)

2019 Start-Up Corner
Start-up companies will be invited to the Start-up Corner located in the exhibition area. The Start-up Corner is a dedicated area where start-up companies can present their new concepts and products and benefit from the visibility offered by our industrial exhibition.

The Start-up Corner is open to all ESTRO 38 participants.

Opening hours:
Friday 26 April during the Networking evening and Saturday 27 April to Monday 29 April from 09:30 - 17:00.
ESTRO would like to extend a special thank you to the chair of ESTRO 38 Umberto Ricardi and, the Chairs of the Scientific Advisory Groups, Claus Rödel, Catharine Clark, Marc Vooijs, Bartosz Bak and Bradley Pieters for having accepted the responsibility to develop the scientific programme.

A special thank you to all the members of the Scientific Advisory Groups and to the abstract reviewers for their valuable contribution to the conference.

**ESTRO welcomes as special guests:**
AAPM – American Association of Physicists in Medicine
ASTRO – American Society for Radiation Oncology
CARO – Canadian Association of Radiation Oncology
EACR – European Association for Cancer Research
EFOMP – European Federation of Organisations for Medical Physics
EORTC – European Organisation for Research and Treatment of Cancer
ESR – European Society for Radiology
IAEA – International Atomic Energy Agency
JASTRO – Japanese Society for Therapeutic Radiology and Oncology
RANZCR – The Royal Australian and New Zealand College of Radiologists
Download the ESTRO app!

Find out about all the next ESTRO conferences, including ESTRO 38: essential information, networking opportunities and the latest news at your fingertips!

Download the app from www.estro.org
Awards overview

**Lifetime Achievement Award**
Gyorgy Kovacs
Riccardo Calandrino
Ekkehard Dikomey
Christian Carrie
Friday 26 April | 17:45-18:45 | Gold Plenary

**ESTRO Award Lectures and Academic Awards**

- **Claudius Regaud award Lecture**
  Is fractionation history?
  *Dirk De Ruysscher (The Netherlands)*
  Sunday 28 April | from 12:30 to 13:00 | Gold Plenary

- **Klaus Breur Award Lecture**
  A stroll in Rome together
  *Vincenzo Valentini (Italy)*
  Monday 29 April | from 12:00 to 12:30 | Gold Plenary

- **Emmanuel van der Schueren Award Lecture**
  Learning from clinical practice: pushing quality forward
  *Núria Jornet (Spain)*
  Saturday 27 April | from 12:00 to 12:30 | Gold Plenary

- **Jens Overgaard Legacy Award**
  Back to the future, a tale of volumes
  *Philip Poortmans (France)*
  Sunday 28 April | from 17:40-18:00 | Gold Plenary

- **GEC-ESTRO Iridium 192 Award**
  The role of women in the brachytherapy field
  *Christine Haie-Meder (France)*
  Saturday 27 April | from 12:30 to 13:00 | Gold Plenary

- **Honorary Members award lectures**
  Multidisciplinary approaches as the keys to defeat lung cancer
  *Giorgio Scagliotti (Italy)*
  Saturday 27 April | from 17:35 to 17:50 | Gold Plenary
• **Honorary Members award lectures**
  Are radiation specialists good global cancer citizens?
  *Julie Torode (Switzerland)*
  Saturday 27 April | from 17:50 to 18:05 | Gold Plenary

• **Honorary Members award lectures**
  *Angelita Habr-Gama (Brazil)*
  Saturday 27 April | from 18:05-18:20 | Gold Plenary

• **Honorary Physicist Award Lecture**
  Precision medicine – an opportunity for medical physics and radiation oncology
  *Matthias Guckenberger (Switzerland)*
  Sunday 28 April | from 18:00-18:20 | Gold Plenary

• **Donald Hollywood award lecture**
  Stem cell sparing IMRT for head and neck cancer patients: a double-blind randomized controlled trial
  *Roel Steenbakkers (The Netherlands)*
  Monday 29 April | from 17:40 to 17:50 | Gold Plenary

• **Academic award: Jack Fowler University of Wisconsin Award**
  First clinical real-time motion-including tumour dose reconstruction during radiotherapy delivery
  *Simon Skouboe (Denmark)*
  Monday 29 April | from 12:30 to 12:40 | Gold Plenary
György Kovács graduated from the Medical University of Szeged/Hungary in 1977 and became resident at the Municipal Centre of Radiotherapy in Budapest/Hungary. He went on to become research fellow from 1984-1987, at the Oncology Research Centre of the German Academy of Sciences in Berlin-Buch where he completed his academic thesis "Fast neutron treatment of salivary gland tumors". From 1989-1991 he took up a research fellowship with the Alexander von Humboldt Foundation at the Radiotherapy Clinic of the Westfälische Wilhelms University, Münster/Germany. Between 1991-2005 he received a full professorship in radiotherapy at the CAU Kiel/Germany and led the Interdisciplinary Brachytherapy Centre.

From 2005 to date, he is full Professor in radiotherapy at the University of Lübeck/Germany and leads the Interdisciplinary Brachytherapy Unit. He is additionally the Educational Programme Director of the Gemelli-INTERACTS, based at the Università Cattolica del Sacro Cuore, Rome/Italy, since 2017.

György was actively involved in several activities in ESTRO, including being GEC-ESTRO Chair (2008-2010), leader of the GEC-ESTRO H&N and Skin WG (2010-2018), Director ESTRO-EAU Interdisciplinary Prostate Brachytherapy TC (1992-2012), ESTRO-ACROP committee member (2013-2018), ESTRO-APAC Executive Board Member (2016-date). He was the founding Chair of the DEGRO Brachytherapy Group (1990-2008).

He has received scientific prizes: "Strebel Medal" (German-, Swiss-, Austrian Radiotherapy Societies, 2003), "Iris Fischer Memorial Lecture Award" (Yale University/USA, 2009), "Samir Desai Oration Lecture Award" (Indian Brachytherapy Society, 2014), "Elis Berven Lecture Award" (Swedish Oncology Society, 2017). He is honorary member of the Hungarian- (2010), Belgian- (2011) and Pakistan Radiotherapy Societies, as well Honorary senator of the University of Szeged/Hungary (2014 to date).

György Kovács has published over 200 scientific works in peer-reviewed international journals and has an h-factor of 27.
Riccardo Calandrino was born in Milano in 1953. He obtained his degree in Physics in 1976 and became specialist in Medical Physics in 1981. He has been head of IRCCS San Raffaele Medical Physics Department since 1982.

He was Contract Professor at the Università Statale di Milano from 1988 to 1993; and from 1997 to 1999; Contract Professor at Università Vita e Salute San Raffaele from 2000 to 2006 and course coordinator for the Course Fisica e Tecnologie Mediche at the faculty of Medicine. He also served as Contract professor at the Università Vita e Salute since AA 2006 /2007 for the faculty of Physiotherapy up to 2008/2009.

Riccardo has authored and co-authored more than 50 published papers concerning the optimisation of radiotherapy and evaluation of its side effects (including 2nd Tumour induction); as well as radioprotection of staff and that of the environment in the management of medical cyclotrons.
Ekkehard Dikomey studied physics at the University of Hamburg and completed his diploma in 1976. This was followed by a PhD at the Department of Biophysics and Radiobiology at the University Hospital of Hamburg-Eppendorf under Prof. Horst Jung. The topic of his research was ‘Effect of hyperthermia on DNA repair’. He remained at this institute and became a group leader in 1985. His habilitation ended in 1996 with the research title ‘Impact of DNA Repair on Cellular Radiosensitivity’. In 2000 he became interim Director of the institute which was converted into the Department of Radiobiology & Experimental Radiooncology. He was confirmed in the position in 2002. The topic of research of this department was ‘Double-strand break repair in tumours: molecular mechanisms and targeting’.

He has to date published over 120 peer-reviewed papers and raised about 10M € for research. He retired from this position in 2015. Since then he is a guest professor at the Department of Radiotherapy and Radio Oncology at the University of Marburg headed by Prof. Rita Engenhart-Cabillic. He was a board member of several societies such as the IARR, DEGRO, DGDR, GBS, where he was elected as a President from 2012 to 2014.

Ekkehard also worked in several scientific committees such as the organising committee of the Wolfsberg Meeting on Molecular Radiation Biology/Oncology from 1997 until 2015. At present he is the speaker of the German Competence Network for Radiation Research, which is an advisory board for the German Government.

He was appointed full assistant professor in 1989 at Centre Leon Berard and got involved in paediatric radiation oncology, lung and genitourinary cancer.

He was elected head of the Department of radiation therapy at Centre Leon Berard in 1993 at the age of 35 years. He also served as Director of technical facilities from 1999 to 2009 and deputy Director from 2009 to 2014 at the Centre Leon Berard and is its director’s counsellor to date.

Christian initiated the quality control for medulloblastoma treatment in 1993 first at national level first and later at a European level for the European SIOP (International Society of Paediatric Oncology) protocols.

He was one of the founders of PROS (Paediatric Radiation Oncology Society) in 2004 and president of PROS from 2005 to 2010; member of SIOP scientific committee since 2006; joined the ESTRO board from 2007 to 2010; and was president of the French paediatric radiotherapy group from 2016 to 2017.

Christian is 61 years old, married for 38 years, father of two boys and grandfather of one boy. He loves sailing, gardening, travelling and sport.
Claudius Regaud Award

Dirk De Ruysscher
Maastro clinic
Maastricht, the Netherlands

Dirk De Ruysscher earned his medical degree at the University of Leuven, Belgium, in 1986, and became Radiation Oncologist at the same university in 1991. In 1992, he obtained his PhD thesis at the University of Leuven on the influence of radiotherapy on immunity. He currently heads the Division Maastro Clinical Trials as well as Proton Therapy Research at ZON-PTC (Proton Therapy South-East Netherlands), is coordinator of the biobank project at Maastro Clinic, which includes now over 10000 patients and heads the Dutch Platform for Radiotherapy for Lung Cancer. He is full Professor of Respiratory Oncology/ Radiation Oncology at the Maastricht University Medical Center, Maastricht, The Netherlands.

He is specialised in lung cancer in which he pioneered the integration of molecular imaging in radiation treatment planning and individualised radiotherapy schedules. He has coordinated work packages in several academic international (EU), Dutch and Belgian research projects, as well as collaborations with industrial partners.

Dirk has supervised many PhD projects, and was or is the study coordinator of 9 phase I studies, 22 phase II and 6 phase III trials, dealing with individualised radiation-dose escalation, combining targeted agents with radiotherapy, the development of new PET tracers, molecular pathways involved in radiation damage, individualised radiotherapy, proton therapy, meta-analyses, cost-effectiveness, immune therapy and PCI. He has published over 300 peer-reviewed Wi-1 papers and chapters in several scientific books.
Vincenzo Valentini is full Professor in Radiation Oncology at Università Cattolica S.Cuore, Rome and Scientific Director, Fondazione San Giovanni Paolo II – Campobasso. He is furthermore, Director of the Diagnostic Imaging, Radiation Oncology and Hematology Department at Fondazione Policlinico Universitario A. Gemelli, Rome.

He is author of more than 450 publications in peer-reviewed international journals, publisher of monographs on intestinal neoplasms and on the applications of information technology in radiotherapy. He is editor of *Radiotherapy and Oncology* journal, and member of the editorial boards of other international journals.

In the last 30 years he has concentrated his interest in several fields: the optimisation of radiation treatments using advanced image techniques to define the volume of irradiation and delineation recommendations, publishing several international guidelines; the integration between radiotherapy and surgery, managing preoperative and intra-operative programs; the integration between radiotherapy and chemotherapy in which he applied different plans for the treatment of locally advanced neoplasms, particularly in diseases of the rectum, pancreas, stomach, anal canal, lung, cervix and biliary tract.

He was Director of the ESTRO course on Evidence and Research on Rectal Cancer and is now Director of the courses on Imaging in Oncological Radiotherapy; and Neoplasms of the upper abdomen. Vincenzo was recipient of many European and International awards and is honorary member of ESSO, SEOR, AROI, JASTRO, DEGRO, PSRO and was awarded the ESTRO Physic Honorary Membership.

He served ESTRO as President from 2011 to 2014.
Born in Barcelona in 1968, Núria Jornet graduated in Physics at the Universitat Autònoma de Barcelona in 1991. She received a grant from the Catalan Government to follow a Masters in Medical Physics at the University Paul Sabatier, Toulouse, and Paris IV. Back in Barcelona, she earned a permanent position at Sant Pau hospital as a clinical physicist in the Medical Physics Department. She simultaneously studied for a PhD on in vivo dosimetry with diodes for high energy x-ray beams.

From the very start of her career Núria has been closely linked to ESTRO. She has been a long-term member of the Education Council of ESTRO. She is current chair of the Physics Committee and member of the Scientific Council.

She has a strong commitment to teaching and is faculty member of the ESTRO school, and course director of the Quality management: Quality monitoring and Quality Improvement course. She has also taught on training courses organised by the IAEA. She was member and chair of several scientific committees for national and international scientific meetings (ESTRO, IAEA, SEFM, ECCO, EFOMP).

Although Núria works at a clinical department, she has strong links with research groups at the Physics University (UB), BarcelonaTech (UPC), and Biology University (UAB) with whom is shared different research projects and teaching courses. Projects focus on in vivo dosimetry, dose calculation in heterogeneities for high energy x-ray beams, skin dose calculation and measurement and biological dosimetry. Other work is on image biomarkers of cardiac toxicity after radiotherapy in breast cancer. She has authored 25 papers in peer-reviewed journals, around 150 communications in meetings and 10 funded research projects. She is associate editor of Physica Medica and phiRo and reviewer of several scientific journals.
After completion of his medical studies at the University of Antwerp, Belgium, Philip Poortmans trained in radiation oncology at the Middelheim and Vincentius Hospitals in Antwerp. After a short stay in Turnhout he started clinical activities in Tilburg, The Netherlands, in 1991. The multidisciplinary environment and the good infrastructure and organisation created an excellent matrix for his engagement in clinical research, especially within the framework of the EORTC. This led to wide recognition and further development of his educational skills and, in 2005 culminated into a PhD at the University of Maastricht on quality assurance in clinical trials in breast cancer.

After chairing the department of radiation oncology of the Radboud UMC, Nijmegen, for two and half years, he moved in March 2017 to the Institut Curie, Paris, France, to be fully engaged in the optimisation of the largest French radiation oncology department including its proton centre.

Philip took on leading roles in ESTRO from 2005 till 2008 as board member and from 2013 till 2017 as President. He is the current president of ECCO.

He has special interest in breast cancer, after investing also a lot in quality assurance in clinical trials, malignant lymphoma, urological cancers and rare tumours. He is course director of ESTRO’s teaching courses “Multidisciplinary Management of Breast Cancer” and “Accelerated Partial Breast Irradiation”. Apart from about 250 peer-reviewed articles, he co-edited with Seymour H. Levitt, James A. Purdy and Carlos A. Perez “Technical Basis of Radiation Therapy. Practical Clinical Implications” (Springer).

He is honorary member of BVRO/ABRO, ESSO, SEOR, AROI, BIGOSA and of JASTRO.
Christine Haie-Meder studied medicine at the faculty of Medicine in Poitiers. She trained in Radiation Oncology at the Institute Curie and at the Institut Gustave Roussy. She became board certified in Radiation Oncology at the University of Paris XII. Interested in all fields of brachytherapy, she worked in the Brachytherapy Unit of Gustave Roussy Cancer Center with Professors Daniel Chassagne and Andrée Dutreix and afterwards with Dr Alain Gerbaulet. She spent 6 months in Rochester New York at Philip Rubin's Department. She became Head of the Brachytherapy Unit in 1999 until 2016. She recently joined the Amethyst Radiation Oncology Group in March 2018. She has been active in the ESTRO society, being an ESTRO board member, GEC-ESTRO Chair and also taught in ESTRO teaching courses. She published more than 240 articles in international journals, more than 300 abstracts in radiation oncology and gynaecological meetings and had several contributions in books.
Honorary Member Award

Giorgio Scagliotti
University of Turin
Turin, Italy

Giorgio Scagliotti is Professor of Medical Oncology at the University of Torino in Italy. He is currently the Chief of the Medical Oncology Division at the S. Luigi Hospital, Orbassano, Torino, Italy and former Head of Department of Oncology at the same University. He earned his medical degree and completed his postgraduate training in respiratory medicine, internal medicine and medical oncology at the University of Torino.

His research interests have included experimental studies on basic and clinical applied research on lung cancer, including translational research. He has been or is currently the study coordinator of several international clinical trials.

Giorgio Scagliotti is a member of several scientific societies, including the Italian Association for Medical Oncology, European Respiratory Society (ERS), American Society of Clinical Oncology (ASCO), and International Association for the Study of Lung Cancer (IASLC). From 2003 to 2007 he served as Executive Board member of IASLC and is currently its President (2017-2019).
Based in Geneva, Julie Torode is Director of Special Projects for the Union for International Cancer Control (UICC), currently seconded to World Health Organisation (WHO) supporting the global effort to eliminate cervical cancer, following the call to action by the Director General, Tedros Adhanom Ghebreyesus, in May 2018.

Julie likes to deliver results and work with purpose highlighted by key advocacy achievements across the spectrum of care with UICC and Noncommunicable Diseases (NCDs) Alliance detailed in the global commitments to cancer and NCDs in the global action plan 2013-2020, the Sustainable Development Goals which run to 2030 and the 2017 cancer resolution. She is also involved in the collaboration with WHO to update the cancer chapter of the WHO model essential medicines list and the first edition of the WHO list of priority medical devices for cancer management.

Key partnerships Julie set up for UICC are the Global Initiative for Cancer Registration, and the International Cancer Control Partnership. More recently, her efforts have been focused on strengthening health systems for equitable access to cancer diagnosis, treatment and palliative care with a partnership on access to opioids with WHO and the United Nations Office on Drugs and Crime (UNODC), developing the City Cancer Challenge and Treatment for All campaigns.

Partnerships with UICC member organisations (1117 in 168 countries) are central to progress in global advocacy with the global Taskforce for radiotherapy in cancer control and the Global Impact of Radiotherapy in Oncology (GIRO) 2030 representing two examples directly working with ESTRO.
Angelita Habr-Gama was born to a family of Lebanese immigrants in northern Brazil and grew up in São Paulo where she went to Medical School, completed her training in surgery, and still practices. Angelita excelled in medical school and became the first female surgery resident in Brazil, the first of many firsts. She became first female fellow in coloproctology at the renowned Saint Mark’s Hospital in London and on her return to the University of São Paulo, she dedicated herself to her academic calling. There she went on to become the first female professor of surgery in Latin America, the Head of the Department of Surgery of the Colon, Rectum and Anus and finally the Head of the Gastroenterological Department of the University of São Paulo Medical School.

Her contributions in coloproctology are numerous and her dedication to research, education, and practice in coloproctology throughout her career are unparalleled and are evidenced in her body of work as well as in her trainees and pupils. Of note is her research in rectal cancer – the proposal to not operate patients that have a complete response to neoadjuvant chemoradiation therapy. This began as an observation in a handful of patients in the 1990’s and over the course of nearly three decades translated into a paradigm shift in rectal cancer management. This tenacity is emblematic of all of her pursuits.

In recognition of her contributions she has received numerous national and international prizes and awards and has been honored as Honorary Fellow of most surgical societies worldwide.
Matthias Guckenberger was trained as Radiation Oncologist at the Department of Radiation Oncology (Prof. M. Flentje), University Hospital Würzburg, Germany. After a research fellowship at the Institute of Cancer Research UK and the Royal Marsden Hospital London under Prof. M. Brada. He was promoted to Associate Professor (W2 Professor) in 2010 and became Vice-Chairman of the Department of Radiation Oncology, at the University Hospital Würzburg. In 2014, he was appointed as Chair of the Department of Radiation Oncology, University Hospital Zurich and Full Professor at the University of Zurich (Switzerland). He is currently Chair of the Imaging Department of the University Hospital Zurich and is Vice Dean for the Master of Medicine at the University of Zurich.

His research is located at the interface of medical-physics and clinical research: development, implementation and clinical evaluation of advanced radiotherapy technologies. Areas of interest are from a physics perspective image-guided adaptive radiotherapy, radiomics & outcome modelling and stereotactic radiotherapy, and from a clinical perspective: lung cancer, prostate cancer and oligometastatic disease. He has published in more than 230 PubMed listed manuscripts with an h-index of 42.

Within ESTRO, he served for many years as teacher in the ESTRO school courses “Image guidance” and “Advanced technologies”, as course-director of the “Stereotactic Body Radiotherapy” course, member of the task group on quality management, member of the Green Journal Editorial board and member of the ESTRO Board and Scientific Council. He enjoys his free time with his wife Christine and their three children, Jan, Lea and Mia, mostly doing sports activities.
Roel Steenbakkers is a radiation oncologist specialised in radiotherapy of head and neck cancer, skin cancer and benign disease. From 2000 to 2009 he worked at the Netherlands Cancer Institute, Antoni van Leeuwenhoek Hospital (NKI-AvL) in Amsterdam. He obtained his PhD at the NKI-AvL in 2007 on the topic ‘Optimising Target Definition for Radiotherapy’. He received his medical degree as a radiation oncologist in 2009. Since then and to date he works at the University Medical Centre Groningen (UMCG) in The Netherlands.

At the UMCG Roel is involved in daily patient care. He is an active member of the implementation team for proton therapy for head and neck cancer. Furthermore, he is responsible for the research of several projects in head and neck cancer and benign disease plus supervising several PhD-students. For head and neck cancer, his main research topic is radiation induced side effects with the emphasis on xerostomia. This includes xerostomia modelling, imaging, prevention, stem cell sparing radiotherapy techniques (photons and protons) and stem cell therapy. For benign disease, his main research topic is Ledderhose disease.
Simon Skouboe was born in 1990 in Denmark. He studied for his bachelor in technical physics and subsequently his master’s degree in physics at the Department Physics and Astronomy at Aarhus University in Denmark. During his studies, he discovered medical physics and went on to follow his master’s thesis in this field, as he found it even more interesting than nuclear and solid-state physics. The master’s thesis involved real-time motion including dose reconstructions in phantoms including experiments as verifications, along with the ground work for expanding the program to handle patient anatomy.

The work during his master’s thesis was successful, and he started a PhD project as a direct continuation of the work, under the supervision of Prof Per Poulsen, medical physicist Thomas Ravkilde and Prof Morten Høyer. His focus of interest was on development of software tools and its clinical application thereof. The real-time motion-including dose reconstructions were implemented in the clinic for liver SBRT patients in 2018 during his PhD. He intends to make use of the developed system in a prostate study before submitting his PhD thesis at the end of 2019.

Currently in the third and final year of his PhD, Simon hopes to get funding for a post-doc focused on treatment adaptation based on delivered dose.
DEADLINES
Abstract submission: 12 June
Early registration: 31 July
Late registration: 5 November
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<td>Contouring workshops</td>
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<td>Multidisciplinary tumour board sessions</td>
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Young Programme

Sunday 28 April 2019 from 8:00-17:30 | Ambra 3-4

08:00-08:40 > Teaching lecture
Precision medicine and systems biology - transforming cancer research in the 21st century
Chair: M-I Bittner [DE]
Speaker: W. Kolch [IE]

08:45-10:00 > Symposium
Combining research and (clinical/ professional) training/ practice
Chair: C. Chargari [FR]
Co-chair: G. Reggiori [IT]
Taking time off for full-time research - is it worth it?
A. Levy [FR]
Why do we need and pitfalls to be trained in statistics?
A. Escande [FR]
Research and training in medical physics
S. Petit [NL]
Clinical vs lab research for clinicians
D. Milanovic [UK]
Lessons learnt from a young head of department
R. Baumann [DE]

10:00-11:45 > Coffee break & Speed Dating
Chair: MI Bittner [UK] and C. Chargari [FR]

13:00 – 14:30 > Young Lunch symposium
How to prevent burnout?
Chair: J-E Bibault [FR]
Co-chair: J. Bertholet [UK]
Perspectives on burnout in the medical professions
P. Franco [IT]
OC-0327 The PRO BONO survey (PROject on Burn-Out in Radiation Oncology)
P. Franco [IT]
Science slam:
1. Report back from ESTRO mobility grants clinical: SRS & SBRT in the management of oligometastatic disease
   I. Zumbadze (GE)
2. Report back from ESTRO mobility grants physics: Modelling Head and Neck Radiotherapy outcomes using radiomics biomarkers
   P. Kalendralis (NL)
3. Science slam: To breathe or not to breathe. ESTRO Mobility Grant report
   S. Prcic (SL)

14:30-15:45  >  **Symposium**

*Stronger together - news and projects in the young national societies*

*Chair: N. Ebert (DE)*
*Co-chair: O. Kaidar-Person (IL)*

Perspective of an established young society: the Spanish Young Society
V. Morillo (ES)

An emerging young society: Young Romanian Radiotherapists and Oncologists Group (YRROG)
M. Zerbea (RO)

Creating a new young radiation oncology society - the case of Poland
M. Spalek (PL)

Working together across borders: YROG
C. Ostheimer (DE)

Panel discussion - Speakers and session chairs

16:00 – 17:00  >  **The Stage**

*Quiz and Young networking cocktail*

*Chair: L. Dubois (NL)*
CLINICAL PRE-MEETING COURSE

MR guided radiotherapy for clinicians
Friday 26 April 2019 | 08:30-17:00 | room Brown 3

Course directors: B. Slotman (NL) and C. Gani (DE)
Course teachers: R. Botman (NL), A. Bruynzeel (NL), C. D. Fuller (US), M. Guckenberger (CH), I. Jürgenliemk-Schulz (NL), S. Klüter (DE), M. Ladd (DE), T. Nyholm (SE), B. Raaymakers (NL), A. Tree (UK), V. Valentini (IT), U. van der Heide (NL)

Course aim
To provide an overview of the current and potential role of external beam MRI-guided radiotherapy for clinicians.

Learning objectives
• To obtain an overview on MRI guided systems for external beam radiotherapy
• To assess the clinical benefits of MRI-guided radiotherapy for various tumour sites
• To identify limitations of MRI guided radiotherapy
• To become engaged in this new field within radiotherapy
• To get an overview of the potential of MR hybrid devices as a research tool.

Target audience
Everyone interested in the exciting new field of MRI-guided adaptive radiotherapy. The program will target clinicians and physicists, but RTT’s with special interest in MRI-guided radiotherapy will also benefit from the course.
Programme

08:30-09:00 > Introduction to MRI-guided radiotherapy
B. Slotman [NL]/C. Gani [DE]

09:00-09:30 > MRI basics for clinicians
Uulke van der Heide [N]

09:30-10:00 > Beyond T2 and 3T: New MRI-techniques for clinicians
Mark Ladd [DE]

10:00-10:30 > MRI-based treatment planning
Tufve Nyholm [SE]

10:30-11:00 > COFFEE BREAK

11:00-11:30 > The MRI-linac concept [Elekta]
Bas Raaymakers [NL]

11:30-12:00 > The MRI-linac concept [ViewRay]
Sebastian Klüter [DE]

12:00-12:30 > RTT perspective on MRI-guided workflow
Robin Botman [NL]

12:30-14:00 > LUNCH

14:00-14:20 > Head and neck cancer: Functional MR imaging
Clifton David Fuller [US]

14:20-14:40 > Pancreatic cancer: Dose escalation
Anna Bruynzeel [NL]

14:40-15:00 > Prostate cancer – advantages and disadvantages of MR-guided RT
Alison Tree [UK]

15:00-15:20 > Individual lymph nodes: See it and zap it
Ina Jürgenliemk-Schulz [NL]

15:20-15:40 > Renal cell cancer: A new indication
Matthias Guckenberger [CH]

15:40-16:10 > COFFEE BREAK

16:10-16:40 > Rectal cancer: MRgBioBoost
Vincenzo Valentini [IT]

16.40-17:00 > Panel discussion
B. Slotman [NL]/C. Gani [DE]

17:00 > Close of pre-meeting
RADIOBIOLOGY PRE-MEETING COURSE

Radiation induced cell death (the good and the ugly)
Friday 26 April 2019 | 08:15-17:30 | room Brown 1

Course directors: F. Paris (FR) and R. Coppes (NL)
Course teachers: M. Demaria (NL), U. Gaipl (DE), C. Herskind (DE), J.L. Perfettini (FR), I. Orhon (NL), R. Syljuasen (NO), M. Vooijs (NL)

Course aim
To provide insight in cellular processes leading the response to radiation.

Learning objectives
Participant will obtain knowledge on cellular and molecular processes that are resulting from irradiation on a cellular and tissue level, the interaction of these cells with the environment and vice versa eventually resulting in a tumour and normal tissue response.

Target audience
Radiobiologists, Clinicians, Physicists, RTTs.
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker, Country</th>
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<tbody>
<tr>
<td>08:15-09:00</td>
<td>Clonogenic cell death triggered by misrepaired of DNA damage</td>
<td>Randi Syljuasen (NO)</td>
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<tr>
<td>09:00-09:45</td>
<td>Apoptosis</td>
<td>Carsten Herskind (DE)</td>
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<td>09:45-10:30</td>
<td>Immune death</td>
<td>Udo Gaipl (DE)</td>
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<td>10:30-11:00</td>
<td>COFFEE BREAK</td>
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<tr>
<td>11:00-11:45</td>
<td>Senescence</td>
<td>Marco Demaria (NL)</td>
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<td>11:45-12:30</td>
<td>Autophagy</td>
<td>Idil Orhon (NL)</td>
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<td>12:30-14:00</td>
<td>LUNCH</td>
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<td>14:00-14:45</td>
<td>Non-cell-autonomous death and Radiation</td>
<td>Jean Luc Perfettini (FR)</td>
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<td>14:45-15:30</td>
<td>Cell signaling induced death</td>
<td>Marc Vooijs (NL)</td>
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<tr>
<td>15:30-16:00</td>
<td>COFFEE BREAK</td>
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<tr>
<td>16:00-16:45</td>
<td>Death program induced independently of DNA damage</td>
<td>François Paris (FR)</td>
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<tr>
<td>16:45-17:30</td>
<td>Integrated models of cell death</td>
<td>Rob Coppes (NL)</td>
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<td>17:30</td>
<td>Close of pre-meeting</td>
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INTERDISCIPLINARY PRE-MEETING COURSE

Conservative treatment in early rectal cancer
Friday 26 April 2019 | 08:30-17:30 | room Ambra 5

Course directors: N. Gambacorta (IT) and A. Appelt (UK)
Course teachers: G. Beets (NL), R. Beets-Tan (NL), R. de Jong (NL), E.I Fokas (DE),
K. Haustermans (BE), F. Peters (NL), N.Scott (UK), D. Sebag-Montefiore (UK), A. Sun Myint (UK)

Course aim
To provide an overview of alternatives to radical surgery in the management in early rectal cancer, including patient selection, imaging, pathology and radiotherapy techniques.

Learning objectives
• To be able to identify patients who might benefit from non-surgical management of early rectal cancer
• To understand the role of different imaging modalities in selection, assessment and follow-up of patients with early rectal cancer treated without radical surgery
• To understand the pathology risk factors to identify different risk classes of early tumour
• To understand the potentials of treatment intensification.
• To gain knowledge of the characteristics and limitations of different radiotherapy treatment modalities, including external beam treatment, brachytherapy and contact X-ray

Target audience
Radiation oncologists and senior residents; lower GI radiologists who support a radiotherapy service; medical physicists who are involved in rectal cancer radiotherapy.

Programme
08:30   >   Pre-meeting starts
08:30-08:45   >   Clinical rationale for conservative management of early cancer
                   David Sebag-Montefiore (UK)
08:45-09:00   >   Patient selection – clinical factors and biomarkers
                   Karin Haustermans (BE)
09:00-09:40   >   Imaging for staging, patient selection, response assessment and follow-up
                   Regina Beets-Tan (NL)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 09:40-10:00 | Surgical alternatives to TME  
*Geerard Beets (NL)*          |
| 10:00-10:30 | Discussion                                                               |
| 10:30-11:00 | COFFEE BREAK                                                            |
| 11:00-11:20 | Pathology assessment of the specimen after local excision  
*Nigel Scott (UK)*     |
| 11:20-11:40 | Intensification strategies: the role of concomitant chemotherapy  
*Emmanouil Fokas (DE)* |
| 11:40-12:00 | External beam radiotherapy – treatment targets and organs at risk  
*Femke Peters (NL)*    |
| 12:00-12:20 | Dose escalation – rationale and techniques  
*Ane Appelt (UK)*      |
| 12:20-12:30 | Discussion                                                               |
| 12:30-14:00 | LUNCH                                                                   |
| 14:00-14:20 | Image guidance and adaptive strategies for external beam radiotherapy  
*Rianne de Jong (NL)* |
| 14:20-14:40 | Contact X-ray treatment / Papillon  
*Arthur Sun Myint (UK)* |
| 14:40-15:00 | Imaging for response assessment and follow-up  
*Regina Beets-Tan (NL)* |
| 15:00-15:20 | Regrowth or recurrence: assessment and salvage management  
*Geerard Beets (NL)* |
| 15:20-15:30 | Discussion                                                               |
| 15:30-16:00 | COFFEE BREAK                                                            |
| 16:00-16:20 | Quality of life and functional outcome after conservative management  
*Geerard Beets (NL)* |
| 16:20-16:40 | Published studies of conservative treatment  
*Netta Gambacorta (IT)* |
| 16:40-17:00 | Ongoing and planned clinical trials  
*David Sebag-Montefiore (UK)* |
| 17:00-17:20 | New horizons – emerging modalities  
*Netta Gambacorta (IT)* |
| 17:20-17:30 | Discussion and close of pre-meeting                                    |
Management of high-risk prostate cancer
Friday 26 April 2019 | 09:00-17:15 | room Ambra 8

Course directors: A. Bossi (FR) and G. De Meerleer (BE)
Course teachers: A. Briganti (IT), C. Cozzarini (IT), V. Fonteyne (BE), P. Hoskin (UK), S. Joniau (BE), R. Renard-Penna (FR)

Course aim
To provide an up-date of the current challenges related to the diagnosis and management of High Risk prostate cancer patients with specific emphasis on the role of EBRT and brachytherapy, whether or not within a multimodality approach.

Learning objectives
The most important learning objective will be to recognise the need of a fully multidisciplinary approach in the diagnosis and treatment of patients diagnosed with High Risk Prostate cancer.

In details, after participating to this course attendees will be able:
• to summarise the current evidences related to the recent definition and diagnosis of High Risk disease
• to discuss the modern treatment options
• to explain the rapidly changing paradigm in the association between drugs and irradiation
• to identify the most frequent toxicity related to the different management options
• to discuss the current and future treatment approaches.

Target audience
Radiation oncologists, surgeons with a special interest in urology, medical oncologists, RT physicists, RTTs and RT nurses.

Programme
09:00 > Pre-meeting starts
09:00-09:30 > The definition of HRPCa in 2019
S. Joniau (BE)
09:30-10:00 > Local and distant staging of HRPCa: the role of MRI
R. Renard-Penna (FR)
10:00-10:30 > Beyond Gleason score and PSA
A. Briganti (IT)
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>10:30-11:00</td>
<td>COFFEE BREAK</td>
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<tr>
<td>11:00-11:15</td>
<td>External Beam RT</td>
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<td>V. Fonteyne (BE)</td>
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<td>11:15-11:30</td>
<td>Surgery</td>
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<td>S. Joniau (BE)</td>
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<tr>
<td>11:30-11:45</td>
<td>Brachytherapy</td>
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<td>P. Hoskin (UK)</td>
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<td>11:45-12:00</td>
<td>Alternative fractionations</td>
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<td></td>
<td>C. Cozzarini (IT)</td>
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<tr>
<td>12:00-12:15</td>
<td>Discussion</td>
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<td>12:15-12:30</td>
<td>Clinical cases discussion</td>
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<td>G. De Meerleer (BE) / A. Bossi (FR)</td>
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<tr>
<td>12:30-14:00</td>
<td>LUNCH</td>
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<td>14:00-14:20</td>
<td>Imaging for the relapsing patient</td>
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<td>R. Renard-Penna (FR)</td>
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<td>14:20-14:40</td>
<td>Post-op RT</td>
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<td>C. Cozzarini (IT)</td>
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<td>14:40-15:00</td>
<td>Salvage surgery</td>
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<td>A. Briganti (IT)</td>
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<td>15:00-15:20</td>
<td>Salvage brachytherapy</td>
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<td>P. Hoskin (UK)</td>
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<tr>
<td>15:30-16:00</td>
<td>COFFEE BREAK</td>
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<tr>
<td>16:00-16:15</td>
<td>The oligometastatic disease: what are we talking about?</td>
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<td>A. Briganti (IT)</td>
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<td>16:15-16:30</td>
<td>State of the art of RT in the oligometastatic setting</td>
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<td>V. Fonteyne (BE)</td>
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<td>16:30-16:45</td>
<td>Treatment of Up-front M+ disease</td>
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<td>S. Joniau (BE) and C. Cozzarini (IT)</td>
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<td>16:45-17:00</td>
<td>Discussion</td>
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<td>G. De Meerleer (BE) / A. Bossi (FR)</td>
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<td>17:15</td>
<td>Close of pre-meeting</td>
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<td>G. De Meerleer (BE) / A. Bossi (FR)</td>
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**PHYSICS PRE-MEETING COURSE**

**Machine Learning for Physicists**  
Friday 26 April 2019 | 08:45-17:15 | room Ambra 1-2

*Course directors:* B. Heijmen (NL) and D. Verellen (BE)  
*Course teachers:* I. El Naqa (USA), J. Dhont (BE), S. Gulliford (UK), F. Maes (BE)

**Course aim**  
To provide basic knowledge on machine learning and its application. On the one hand there is a focus on a true understanding of the methodology, on the other hand practical approaches for getting started with machine learning will be discussed, e.g. using open source software. The course aims at enabling medical physicists to understand and critically evaluate clinical applications from a user point of view. For investigators and developers the course may be helpful in getting started in the field. The course assumes that the participants have no knowledge on the subject.

**Learning objectives**  
After following this course the participants will be able to:  
• understand the fundamental basics of machine learning  
• describe and explain the most common algorithms, methods and approaches related to machine learning  
• understand concepts such as artificial intelligence, machine learning, deep learning, supervised and unsupervised learning  
• understand for what type of problems machine learning is most suited and for what problems other approaches/algorithms are better  
• identify advantages and disadvantages of different approaches of machine learning in relation to applications in radiation oncology  
• explore existing tutorials and sources for open source software to start up a program.

**Target audience**  
Medical physicists with no or little prior knowledge that want to understand the basics of machine learning in order to implement and use existing applications safely in a clinical workflow. The course also provides a starting point for those physicists that are interested in learning how to develop their own applications.
Programme

08:45-09.00  >  Introduction to the course  
  Ben Heijmen (NL) / Dirk Verellen (BE)

09:00-09:45  >  Introduction to artificial intelligence in radiotherapy  
  Issam El Naqa (USA)

09:45-10:30  >  Overview of machine learning algorithms and practical considerations  
  Issam El Naqa (USA)

10:30-11:00  >  COFFEE BREAK

11:00-11:45  >  Conventional machine learning techniques  
  Sarah Gulliford (UK)

11:45-12:30  >  Deep learning techniques  
  Frederik Maes (BE)

12:30-14:00  >  LUNCH

14:00-14:45  >  Deep learning for head and neck segmentation  
  Frederik Maes (BE)

14:45-15:30  >  Current and future clinical applications of machine learning in radiotherapy  
  Sarah Gulliford (UK)

15:30-16:00  >  COFFEE BREAK

16:00-16:45  >  Commissioning and QA of Machine Learning Algorithms for clinical use  
  Issam El Naqa (US)

16:45-17:30  >  How to start a machine learning project – a practical example  
  Jennifer Dhont (BE)

17:30  >  Closure of pre-meeting  
  Ben Heijmen (NL) / Dirk Verellen (BE)
**Basic course brachytherapy treatment**  
Friday 26 April 2019 | 08:30-17:30 | room Brown 2

*Course directors:* R. Schokker (NL) and B. Wisgrill (AT)  
*Course teachers:* S. Abdollahi (IR), D. Berger (AT), R. Farrell (UK), S. Goncalves (PT), N. Ritt (AT), J. Steenhuijsen (NL), N. Tselis (DE), L. Van den Berghe (BE)

**Course aim**  
Radiation Therapist (RTTs), dosimetrists and RT nurses have several tasks in the brachytherapy treatment. To get to a more uniform level of knowledge, this course will provide with the basic principles of brachytherapy. Next, to these basic principles, there will be different hospitals from various European countries presenting their workflow. It will be an interactive program, where participants can share their experiences.

**Learning objectives**  
The participants will:
- Gain knowledge of the basic physiological and biological aspects of brachytherapy
- Gain knowledge in assisting during the brachytherapy treatment
- Understand the strengths and limitations of the described techniques
- Understand the role of the RTTs, dosimetrists and RT nurses
- Be able to expand the role of nurses, dosimetrists and RTTs in their brachytherapy department.

**Target audience**  
The course is aimed at radiation therapists (RTTs), RT nurses, and dosimetrists who want to improve their basic knowledge of brachytherapy. It will also be very helpful to physicians and physicists who want the RT nurses, dosimetrists or RTTs from their department to be more involved in brachytherapy.
Programme

08:30-08.40  >  Introduction “new horizons in brachytherapy for RTT’s, nurses and dosimetrists
Course directors

08.40-09.10  >  Clinical rationale for brachytherapy [should we still do brachytherapy?]
Nikolaos Tselis (DE)

09.10-09.35  >  Brachytherapy what is it about? [principles and physics]
[“old school brachytherapy”]
Daniel Berger (AT)

09.35-10.00  >  Brachytherapy in the current era and the future
Rogier Schokker (NL)

10.00-10.30  >  Brachytherapy safety
Jacco Steenhuijsen (NL)

10:30-11.00  >  COFFEE BREAK

11.00-11.30  >  Role for RTT’s in brachytherapy
Natalie Ritt (AT)

11.30-12.00  >  Role for nurses in brachytherapy
Ludwig Van den Berghe (BE)

12.00-12.30  >  Role for dosimetrists in brachytherapy
Susana Goncalves (PT)

12:30-14:00  >  LUNCH

14.00-14.25  >  Education and training in brachytherapy
Rosaleen Farrell (UK)

14.25-14.30  >  Introduction breakout sessions
Course directors

14.30-15.30  >  Breakout session expanding the role of nurses/RTT’s and dosimetrists
Rogier Schokker (NL) and Bernd Wisgrill (AT)

15:30-16:00  >  COFFEE BREAK

16.00-16.30  >  Results breakout session
Course directors

16.30-17.20  >  Debate: only with a RTT / brachynurse /dosimetrist the
brachytherapy team is complete OR who is best suited in the
brachytherapy team RTT or dosimetrist
Sara Abdollahi (IR) and Daniel Berger (AT)

17.20-17.30  >  Close of pre-meeting
EDUCATION PRE-MEETING COURSE

Academic Entrepreneurship and Technology Transfer in Radiation Oncology: Dream or Reality?
Friday 26 April 2019 | 09:00-17:00 | room Ambra 6

Course directors: P. Lambin (NL) and K. Tanderup (DK)

Course aim
Radiotherapy is a discipline involving a high degree of technology and using various discipline (imaging, biology, computer sciences, clinic, physics...). This course is meant as a workshop to stimulate collaboration between academia and industry and technology transfer which is essential for new technology to bridge the “second translational gap” and reach the patients.

Learning objectives
To provide understanding of:
• Business models
• Product development
• Patents and technology transfer
• Rules and regulations
• Funding opportunities.

To facilitate:
• Networks between academia and industry
• Networks between researchers working with innovation.
• To stimulate technology-oriented consortia which can apply for joint EC funding.
• To promote European radiation oncology industry.

Target audience
• Radiation oncologists, medical physicists, RTTs, and radiation biologists
• Engineers/physicists/biologists from knowledge-based companies, start-ups, spin-offs.

Topics
• Welcome and round of presentation
• Technology Transfer or Academic entrepreneurship (AE): what is it? and why should we do it?
• The path of AE: a helicopter view
• Intellectual Property: the first step
• The Business Plan: the second step
• (Pre-)seed funding
• Grants for Technology Transfer
• AE for hardware
• AE for software
• AE for biomarkers (SNP, gene signatures...)
• AE for service
• AE for drugs
• The issue of Potential Conflict of Interest.
### Programme

<table>
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<th>Time</th>
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| 09.00-09.10 | Welcome and round of presentation  
All teachers |
| 09.10-09.30 | Technology Transfer or Academic entrepreneurship (AE): what is it? and why should we do it?  
P. Lambin |
| 09.30-09.50 | From research to value for patients: value for money  
Y. Lievens |
| 09.50-10.10 | The path of AE: a helicopter view  
R. Mackie |
| 10.10-10.30 | Discussion |
| 10.30-11.00 | COFFEE BREAK |
| 11.00-11.20 | Intellectual Property: the first step  
R. Mackie |
| 11.20-11.40 | The Business Plan: the second step  
D. Gibon |
| 11.40-12.00 | (Pre-)seed funding and grants for Technology Transfer  
S. Walsh |
| 12.00-12.20 | Personal experience: from idea to start-up  
S. Jafari |
| 12.30-13.30 | LUNCH |
| 13.30-13.50 | AE for hardware  
R. Mackie |
| 13.50-14.10 | AE for software  
J. Löf |
| 14.10-14.30 | AE for biomarkers  
S. Walsh |
| 14.30-14.50 | The point of view of the early investor  
J.W. Doosje |
| 15.00-15.30 | COFFEE BREAK |
| 15.30-15.50 | The issue of potential conflict management  
R. Mackie |
| 15.50-16.10 | The point of view of the large company: when and why do they buy startups?  
S. Singh |
| 16.10 | Quiz and Conclusion |
Course aim
This course, run for the first time in 2018, introduces foundation principles of effective leadership as they apply to senior trainees and junior practitioners in the radiation oncology professions. Feedback from the first fully subscribed course has been very positive. The course aims to equip participants with the knowledge, skills and attributes viewed as the building blocks for effective leadership. The course is directed at professionals interested in developing expertise in leading teams for quality improvement, advocacy and in all situations where they might positively influence the future of our discipline within both local and inter-national settings. The course links to a specific radiation oncology competency knowledge and skill-set developed through Delphi consensus process. (dx.doi.org/10.1016/j.radonc.2017.04.009).

Learning objectives
Upon completion of the course, successful learners will be able to:
• Examine and reflect on their own behaviour, reactions and interactions with team members
• Describe basic leadership theory and styles as they might apply to practical situations
• Describe the foundations of effective change, management and negotiation
• Explore strategies to establish and lead effective teams
• Apply basic quality improvement tools to approach an improvement process.

Target audience
The target group consists of senior trainees or junior practitioners (approximately first five years after training) in the radiation oncology professions, including radiation or clinical oncologists, radiation physicists, radiation therapists/technologists, nurses and scientists.

Content
This course consists of a blended learning programme of two months’ duration including on-line and face to face components. All sections of the programme will
be highly interactive and will highlight their practical relevance to the workplace and facilitating improvements within our discipline.

The on-line components will start on 26 March 2019 and consist of an introductory 90-minute tutorial with the participants and teachers followed by on-line exercises and compulsory electronic learning modules to be completed prior to the ESTRO 38 conference. Live sessions will take place during ESTRO 38 in Milan.

An on-line community network of participants will be established at the completion of the programme.

On-line and live course topics include:
- An introduction to leadership – what it means and why it is our responsibility
- Basics of leadership theory and styles - how to apply these
- Self-awareness, personality and emotional intelligence – how they link to leadership
- Leading and managing change
- Tools and strategies for leading quality improvement processes
- Team building and engagement – including basics of negotiation
- Creating and communicating a vision for change.

Programme
INTERACTIVE PREMEETING ONLINE
26-27 March
- Introductions and objectives
- What is Leadership and why does it matter?
- Intro Tools for Quality Improvement
- Introduce Homework: Identify a local process/ problem for improvement
- Introduction to difficult conversations
- Introduce on-line resources/pre- reading

ON-LINE MODULES AND HOMEWORK
During this period: email access for queries/support
Insights Discovery on-line completion
- Quality Improvement - project and IHI videos
- PMH modules - Negotiation, Conflict resolution, Leadership Styles and Running a meeting
- Selected reading

LIVE COURSE AND LUNCH SESSIONS
26 April 2019 @ ESTRO38
08.30-09.15  >  Introductions faculty and participants - Recap objectives
                  S. Turner/All
09.15- 09.45  >  Basics of leadership theory & styles | S. Turner
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<td>Insights Part 1</td>
<td>B.A. Millar and S. Turner</td>
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<tr>
<td>11.00-12.30</td>
<td>Insights Part 2</td>
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<tr>
<td>13.45-14.35</td>
<td>Building effective teams</td>
<td>M. Giuliani and S. Turner</td>
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<td>14.35-15.30</td>
<td>Leading change</td>
<td>A. Cortese, M. Leech</td>
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<td>COFFEE BREAK</td>
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<td>15.50-16.45</td>
<td>Conflict: A primer for emerging leaders</td>
<td>M. Giuliani, B.A. Millar</td>
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<tr>
<td>16.45-17.00</td>
<td>Plan for alumni event and lunchtime sessions/close</td>
<td>S. Turner/All</td>
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**Lunch meeting 1 @ ESTRO 38**
Leading a quality improvement process | K. Benstead, B.A. Millar, L. Morris

**Lunch meeting 2 @ ESTRO 38**
Creating and Communicating a Vision | S. Turner, L. Morris, M. Leech
Contouring Workshops

26 - 30 April 2019 | Ambra 7

OAR on Head and Neck Cancer
Friday 26 April 2019 from 08:00-10:00 (repeated Saturday 27 April from 14:30-16:30)
Chair: J Cacicedo (SP)
Panellist: AR Lopes Simões (UK)

Rectal Cancer
Friday 26 April 2019 from 10:30-12:30 (repeated Sunday 28 April from 14:30-16:30)
Chair: C Valentini (DE)
Panellists: V Chiloiro (IT) and V Plodeck (DE)

Lung SBRT
Friday 26 April 2019 from 13:30-15:30 (repeated Monday 29 April from 14:30-16:30)
Chair: M Dahele (NL)
Panellist: M Guckenberger (CH)

Primary Vaginal Cancer
Friday 26 April 2019 from 16:00-18:00 (repeated Tuesday 30 April from 09:15 – 11:15)
Chairs: L Fokdal (DK) and H Westerveld (NL)
Panellists: M Schmid (AU) and C Chargari (FR)

Target audience
These contouring workshops are aimed at junior clinical or radiation oncologists who want to improve their delineation skills or at more senior specialists who want to refresh and validate their knowledge and skills in this field. The OAR case is especially targeted to radiation therapists (RTTs) and dosimetrists.

Structure of the workshops
- Presentation of the clinical case and the delineation exercise
- Explanation of the contouring software
- The first delineation on site
- Presentation of the delineation guidelines
- The second delineation on site
- Discussion between experts and participants.

Practical arrangements
- Participants should bring their own laptops
- Wifi and wired connection will be available
- Participants will be limited to 70 per workshop to keep a strong interactivity in the group

Contouring Workshops
Multidisciplinary Tumour Board Sessions

Multidisciplinary tumour board on Soft Tissue Sarcomas
Saturday, 27 April 2019 | 14:30-15:45
Room: Ambra 5-6
Chair: Rick Haas, NL

Multidisciplinary tumour board on Prostate Cancer
Sunday, 28 April 2019 from 14:30-15:45
Room: Ambra 5-6
Chair: Vincent Khoo (UK)

Multidisciplinary tumour board on Bladder Cancer
Monday, 29 April 2019 from 14:30-15:45
Room: Brown 2
Chair: Maarten Hulshof (NL)
Panellists: yESTRO: Giulia Marvaso | Medical Oncologist: Daniele Raggi (IT) | Urologist: Ettore Ditrapani (IT) | Radiation Oncologist: Anne Kiltie (UK) | Pathologist: Carlo Patriarca (IT)
Translating research and partnership into optimal health

3-7 April 2020
Vienna, Austria
### SCIENTIFIC PROGRAMME

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Saturday 27 April 2019

- **TEACHING LECTURE**
  
  Artificial Intelligence Applications in Radiation Oncology  
  08:00 - 08:40 | Auditorium  
  Chair: R. Coppes (The Netherlands)

  08:00 > Artificial Intelligence Applications in Radiation Oncology  
  Speaker: N. Dinapoli (Italy)  
  SP-0001

- **TEACHING LECTURE**
  
  Using mice to model normal tissue responses to thoracic radiation  
  08:00 - 08:40 | Brown 1  
  Chair: B.S. Sørensen (Denmark)

  08:00 > Using mice to model normal tissue responses to thoracic radiation  
  Speaker: A. Ryan (United Kingdom)  
  SP-0002

- **TEACHING LECTURE**
  
  State of the art in definitive treatment of locally advanced NSCLC  
  08:00 - 08:40 | Gold Plenary  
  Chair: S. Ramella (Italy)

  08:00 > State of the art in definitive treatment of locally advanced NSCLC  
  Speaker: C. Faivre-Finn (United Kingdom)  
  SP-0003

- **TEACHING LECTURE**
  
  New ILROG radiotherapy guidelines for haematological malignancies  
  08:00 - 08:40 | Brown 3  
  Chair: H.T. Eich (Germany)

  08:00 > New ILROG radiotherapy guidelines for haematological malignancies  
  Speaker: L. Specht (Denmark)  
  SP-0004
TEACHING LECTURE

The role of postoperative radiotherapy in endometrial cancer: what have we learned of the PORTEC trials?
08:00 - 08:40 | Brown 2
Chair: R. Nout (The Netherlands)

08:00 | The role of postoperative radiotherapy in endometrial cancer: what have we learned of the PORTEC trials?
Speaker: C. Creutzberg (The Netherlands)

TEACHING LECTURE

Gating and breath-hold techniques in Radiation Therapy
08:00 - 08:40 | Space 1-2
Chair: M. Tenhunen (Finland)

08:00 | Gating and breath-hold techniques in Radiation Therapy
Speaker: M. Aznar (United Kingdom)

TEACHING LECTURE

Technology for precision small animal radiotherapy research: Optimal use and challenges
08:00 - 08:40 | Space 3-4
Chair: S. Chiavassa (France)

08:00 | Technology for precision small animal radiotherapy research: Optimal use and challenges
Speaker: F. Verhaegen, A. Vaniqui, S. Van Hoof, I.P. Almeida, B. van der Heyden, P. Granton, J. Theys, M. Vooijs, L. Dubois (The Netherlands)

TEACHING LECTURE

Ensuring Quality in an Image Guidance Era
08:00 - 08:40 | Ambra 1-2
Chair: C. Dickie (Canada)

08:00 | Ensuring Quality in an Image Guidance Era
Speaker: E. Miles (United Kingdom)
SYMPLECTED

Artificial intelligence in Radiation Oncology
08:45 - 10:00 | Auditorium
Chair: S. Magrini (Italy)
Co-chair: P. Meyer (France)

08:45 > Clinical applications of AI for Radiation Oncology
Speaker: J. Bibault (France)

09:03 > Acceptance, commissioning, introduction, regulatory aspects and QA of AI
Speaker: W. Verbakel (The Netherlands)

09:21 > Unified radiogenomic prediction of late radiotherapy toxicities
Speaker: J. Coates, (United Kingdom)

09:39 > Impact of AI and automation on practice
Speaker: L. Tagliaferri (Italy)

SYMPLECTED

Mouse models: Animal models the next step for RT
08:45 - 10:00 | Brown 1

During the symposium on ‘Mouse models’, Verena Jendrossek will elaborate on the dual face of immune-mediated systemic effects of radiation using preclinical thoracic normal tissue complication models. Anne Kiltie will explain how to avoid small intestine toxicity using small animal radiation research platforms for radiosensitization of orthotopic bladder cancer. Christian Karger will discuss whether the proton RBE of 1.1 should be changed into a LET-dependent model and if preclinical studies may answer this question. Leila Akkari will show how the tumor microenvironment of glioblastoma post radiotherapy changes and what the benefits are of targeting macrophages in combination with radiotherapy.

Chair: B. Cornelissen (United Kingdom)
Co-chair: L. Dubois (The Netherlands)

08:45 > Linking radiation-induced damage to systemic effects: what can we learn from preclinical models of normal tissue complications
Speaker: V. Jendrossek (Germany)

09:03 > New developments in small animal image guided radiotherapy: Bladder cancer
Speaker: A. Kiltie (United Kingdom)
09:21  >  RBE of protons: what can we learn from preclinical models?  
_C.P. Karger (Germany)_

09:39  >  Dynamics changes in immune cells during glioblastoma 
response to treatment: macrophages at play 
_Speaker: L. Akkari (The Netherlands)_

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**SYMPOSIUM**

*Optimal management of patients with unresectable stage 3 NSCLC*

**(08:45 - 10:00 | Gold Plenary)**

*Chair: U. Nestle (Germany)*

*Co-chair: C. Ostheimer (Germany)*

08:45  >  Standard of care in 2019  
_Speaker: F. McDonald (United Kingdom)_

09:03  >  Optimal management of patients with unresectable stage III 
NSCLC: areas of controversy and ongoing research  
_Speaker: R. Dziadziuszko (Poland)_

09:21  >  Active management of patient's comorbidities (including 
respiratory and cardiac comorbidities)  
_Speaker: V. Westeel (France)_

09:39  >  Role of patient reported outcome in patients follow-up  
_Speaker: Y. Lievens (Belgium)_

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**SYMPOSIUM**

*Combined modality treatment vs chemotherapy alone in lymphoma patients?*

**(08:45 - 10:00 | Brown 3)**

The session will consist of two main parts – in the first one, speakers will deliver lectures regarding the current state of art and the role of radiation therapy in Hodgkin lymphomas (Prof. Eich) and indolent lymphomas (Prof. Yahalom).

The second part of the session will discuss the role of combined modality treatment versus chemotherapy alone in the treatment of aggressive lymphomas (DLBCL) from a radiation oncologist view (Prof. Mikhaeel) and a haematologist view (Prof. Vitolo). After the lectures time for audience discussion (15 minutes) is also provided.

*Chair: U. Ricardi (Italy)*

*Co-chair: B. Tomasik (Poland)*
08:45 > The role of radiotherapy in Hodgkin Lymphoma - results from the German Hodgkin Study Group (GHSG)
   *Speaker: H.T. Eich (Germany)*

09:00 > State of the art for indolent lymphoma
   *Speaker: J. Yahalom (USA)*

09:15 > Aggressive Lymphoma (DLBCL); when does addition of RT make a difference?
   *Speaker: G. Mikhaeel (United Kingdom)*

09:30 > Aggressive Lymphoma (DLBCL) - when does addition of RT doesn't make a difference?
   *Speaker: U. Vitolo (Italy)*

09:45 > Discussion

**SYMPOSIUM**

*Image guided adaptive brachytherapy (IGABT) for primary vaginal cancer in Europe and North America*

08:45 - 10:00 | Brown 2

Vaginal cancer is a rare tumour that accounts for less than 3% of all gynaecological malignancies.

The main treatment includes definitive radiotherapy with combined chemotherapy and brachytherapy (BT). Studies in BT of vaginal cancer are mainly small retrospective series that can be divided in older studies using 2-dimensional BT and more recent studies using 3-dimensional image guided adaptive brachytherapy (IGABT).

During the session European and North American experiences in IGABT of vaginal cancer will be discussed. Furthermore, an adaptive target concept for IGABT in vaginal cancer based on clinical findings and imaging (MRI) will be introduced. Finally, differences in dose planning of IGABT in vaginal cancer among institutions will be discussed.

*Chair: L.U. Fokdal (Denmark)*
*Co-chair: C. Chargari (France)*

08:45 > Evidence for image guided adaptive brachytherapy in primary vaginal cancer
   *Speaker: H. Westerveld (The Netherlands)*
09:00  >  GYN GEC-ESTRO Recommendations for IGABT target delineation in primary vaginal cancer  
   Speaker: M. Schmid (Austria)  

09:15  >  Brachytherapy for primary vaginal cancer – North American experiences  
   Speaker: M. Kamrava (USA)  

09:30  >  Dose planning for primary vaginal cancer – a multicentre comparison  
   Speaker: N. Nesvacil (Austria)  

09:45  >  Discussion  

**JOINT SYMPOSIUM**  
**ESTRO-AAPM: QA of online adaptive radiotherapy**  
**08:45 - 10:00 | Space 1-2**  

The session looks into the challenges of on-line adaptive radiotherapy QA. After a short overview of the on-line adaptive radiotherapy process and QA needs by the chair, the first speaker will focus on QA of contour propagation from geometry and dosimetry point of view including dose accumulation. The second talk will give an overview on QA aspect of deformable image registration following AAPM TG 132 report. The last two presentations will discuss the practical QA based on clinical experience of on-line adaptive radiotherapy performed using two different platforms.

*Chair: E. Gershkevitsh (Estonia)*  
*Chair: S. Mutic (USA)*  

08:45  >  Setting the scene  
   Speaker: S. Mutic (USA)  

08:53  >  QA of contour segmentation  
   Speaker: E.M. Vasquez Osorio (United Kingdom)  

09:09  >  QA of deformable image registration  
   Speaker: M. Kessler (USA)  

09:25  >  QA of on-line adaptive radiotherapy: Experience of The Royal Marsden Hospital  
   Speaker: S. Nill (United Kingdom)  

09:41  >  QA of on-line Adaptive Radiotherapy: Washington University Experience  
   Speaker: S. Mutic (USA)
SYMPOSIUM

Beyond Physical dose
08:45 - 10:00 | Space 3-4
Chair: M. Merchant (Gibraltar)
Co-chair: P. Mancosu (Italy)

08:45  >  Mathematical modelling of radiation response in proton therapy
Speaker: K. Kirkby (United Kingdom)  SP-0034

09:03  >  Developing metrology support for biologically relevant dosimetry
Speaker: H. Rabus (Germany)  SP-0035

09:21  >  Understanding biological response
Speaker: B.S. Sørensen (Denmark)  SP-0036

09:39  >  Implementation of nanodosimetric based radiobiological models in treatment planning systems
Speaker: F. Villegas (Sweden)  SP-0037

JOINT SYMPOSIUM

Quality in an IGRT
08:45 - 10:00 | Ambra 1-2
Chair: M. Rossi (The Netherlands)
Co-chair: E. Forde (Ireland)

08:45  >  Continuous quality improvement strategies to support volumetric IGRT
Speaker: W. Li (Canada)  SP-0038

09:10  >  Development of standardised image guidance registration in the MR-Linac era
Speaker: H. de Boer (The Netherlands)  SP-0039

09:35  >  Exploiting IGRT to calculate delivered dose for normal tissue sparing
Speaker: L. Shelley (United Kingdom)  SP-0040

POSTER VIEWING

Poster viewing 1: Breast and skin
08:45 - 10:00 | Poster area
Chair: Y. Kirova (France)
Chair: N. Tselis (Germany)
> Randomized therapeutic trial of combined pentoclo versus placebo in radiation-induced plexopathy  
*S. Delanian* (France), T. Maisonobe, T. Lenglet, D. Psimaras, M. Resche-Rigon, P. Pradat  
**PV-0041**

> Radiation related lymphopenia as a predictor of locoregional recurrence in early breast cancer  
*O. Cho* (Korea Republic of), Y. Oh, M. Chun, O.K. Noh, J. Heo  
**PV-0042**

> ESTRO guidelines for volume delineation for RT after immediate implant-based reconstruction  
*O. Kaidar-Person* (Israel), P. Poortmans, B.V. Offersen  
**PV-0043**

> Mastectomy or breast-conserving therapy for early breast cancer: outcome comparison of 7565 cases  
*S. Corradini* (Germany), M. Pazos, D. Reitz, S. Schönecker, M. Niyazi, U. Ganswindt, F. Alongi, M. Braun, N. Harbeck, C. Belka  
**PV-0044**

> Is proton therapy a “pro” for breast cancer? A comparison of proton vs. non-proton RT using the NCDB  
**PV-0045**

> Patient selection for proton therapy of early breast cancer – the DBCG phase II study strategy  
**PV-0046**

> IMRT versus VMAT for elderly patients with breast cancer: comparison of acute and late toxicities  
F. Alongi, F. Gregucci (Italy), A. Fiorentino, R. Mazzola, V. Figlia, F. Ricchetti, G. Sicignano, N. Giaj-Levra, S. Naccarato, A. Massocco, S. Corradini, R. Ruggieri  
**PV-0047**

> The Radiosensitivity Index (RSI) predicts for outcomes in triple negative breast cancer  
**PV-0048**

> Merkel cell polyoma viral load predicts overall survival in patients with Merkel cell carcinoma  
**PV-0049**
SYMPOSIUM

Challenging dose painting: Are we really painting what we aim to or the better outcome is only linked to higher dose spots within the CTV?
10:30 - 11:45 | Auditorium

Molecular imaging opens the possibility of defining areas within the GTV which due to a higher tumour burden or hypoxia would benefit from a higher radiation dose. Different trials on dose painting by volumes or numbers have been designed. At the same time interesting work on grid therapy, treating with high heterogeneous dose, has shown better outcomes in lung cancer.

During this symposium, the different speakers will present:
• Preclinical studies on dose painting. In particular comparison between dose escalation and dose redistribution based on FDG uptake in rat rhabdomyosarcoma model.
• Evaluation of loco-regional control and toxicity of a prospective clinical trial with adaptive dose-painting-by-numbers for head-and-neck cancer.
• Heterogeneous dose adaptation of treatments, based on treatment response for cervix cancer patients.
• The role of multi-modal imaging and its sensitivity and specificity to prescribe the optimal dose using simultaneous integrated boost or dose painting.

Chair: N. Jornet (Spain)
Co-chair: E. Troost (Germany)

10:30  >  What is left from dose painting when adding all uncertainties
        Speaker: M. Alber (Germany)  
10:48  >  What are the limitations on dose escalation to sub-volumes in head and neck cancer: experience from dose painting
        Speaker: F. Duprez (Belgium)
11:06  >  Heterogeneous dose adapted to treatment response during radiotherapy: clinical experience from cervix cancer IGABT
        Speaker: I. Jürgenliemk-Schulz (The Netherlands)
11:24  >  Exploiting low drug uptake volume for dose painting
        Speaker: A. Yaromina (The Netherlands)
PROFFERED PAPERS

RB 1: Proffered papers: Pre-clinical models is the next step for radiotherapy
10:30 - 11:45 | Brown 1
Chair: W. Mansour (Germany)
Chair: T. Schmid (Germany)

10:30 > Tumor reoxygenation and image-guided SBRT for the treatment of murine colorectal liver metastases
F. Tschanz (Switzerland) OC-0054

10:45 > Zebrafish model to study the use of nanoparticles as a radiosensitizer in low Z target beams
M. Ha (Canada), O. Piccolo, N. Melong, J. Lincoln, D. Parsons, A. Detappe, O. Tillement, R. Berbeco, J. Berman, J. Robar OC-0055

11:00 > Multiple strategies for resolving radiation-induced neurocognitive dysfunction
C. Limoli (USA), M. C. Vozenin, M. Acharya OC-0056

11:15 > Probing spatiotemporal fractionation on the preclinical level
I. Telarovic (Switzerland), M. Pruschy, I. Grgic, J. Krayenbuehl, M. Guckenberger, J. Unkelbach OC-0057

11:30 > Dose-volume effects in the central nervous system and sparing in microbeam/minibeam radiation
E. Bahn (Germany), M. Alber OC-0058

PROFFERED PAPERS

CL 1: Proffered papers: Lung
10:30 - 11:45 | Gold Plenary
Chair: R. Dziadziszko (Poland)
Chair: P. Borghetti (Italy)

10:30 > Stereotactic radiotherapy for oligoprogressive NSCLC: clinical scenarios affecting survival

10:40 > I-SABR induces local and abscopal responses in metastatic patients after failure to ICI treatment
10:50  >  EORTC 22113-8113 Lungtech trial on SBRT of central lung
tumors
S. Adebahr (Germany), Y. Liu, S. Colette, C. Faivre-Finn, S. Ahmad,
M. Ahmed, J. Belderbos, N. Andratschke, K. Franks, X. Geets,
M. Guckenberger, K. Konopa, M. Lambrecht, V. Lewitzki, Y. Lievens,
N. Pourel, D. De Ruyscher, R. Dziadziozu, C. Fortpied, F. McDonald,
H. Peulen, A. Grosu, C. Hurkmans, C. Le Pechoux, U. Nestle
OC-0061

11:00  >  Development & validation of prognostic and predictive models
in limited-stage small-cell lung cancer
A. Salem (United Kingdom), H. Mistry, S. Falk, G. Price, C. Faivre-Finn
OC-0062

11:10  >  CREO Project: exploratory radiomics for predicting adaptive
radiotherapy in NSCLC
M. Fiore (Italy), C. Greco, E. Ippolito, E. Molfese, P. Trecca, M. Miele,
E. Cordelli, R. Sicilia, P. Soda, R.M. D’Angelillo, L. Trodella, S. Ramella
OC-0063

11:20  >  Reducing radiotherapy dose to involved lymph nodes in locally
advanced NSCLC: efficacy and toxicity
J. Van Diessen (The Netherlands), M. Kwint, J. Sonke, I. Walraven,
B. Stam, J. De Langen, J. Belderbos
OC-0064

11:30  >  Cardiac dose and survival in lung cancer: which cardiac
sub-structures matters most?
A. McWilliam (United Kingdom), J. Khalifa, E. Vasquez Osorio,
A. Abravan, A. Marianne, C. Faivre-Finn, M. Van Herk
OC-0065

● PROFFERED PAPERS

CL 2: Proffered papers: Haematology, Sarcoma and oligometastases
10:30 - 11:45  |  Brown 3
Chair: G. Mikhaeel (United Kingdom)
Chair: J. Nixon (United Kingdom)

10:30  >  Effectiveness of radiotherapy for patients not in metabolic
remission after chemotherapy for DLBCL
J. Brady (United Kingdom), N.G. Mikhaeel
OC-0066

10:40  >  Continuous Positive Airway Pressure (CPAP): an innovative
respiratory gating in lymphoma patients
M. Levis (Italy), P. Solidoro, S. Bartoncini, E. Gallio, F.R. Giglioli,
V. De Luca, L. Focaraccio, C. Cavallin, G.C. Iorio, R. Parise, C. Palladino,
V. Di Martino, G. Furfaro, G. Rovere, A. Mattei, R. Ragona, U. Ricardi
OC-0067

10:50  >  MR-guided adaptive radiotherapy for intra-abdominal
lymphoma
F. Spoelstra (The Netherlands), P. Cobussen, M. Palacios, A. Bruynzeel,
F. Lagenwaard, B. Slotman, S. Senan
OC-0068
11:00 > 5x5 Gy with chemotherapy in borderline resectable soft tissue sarcomas: early results of a trial
M. Spalek (Poland), H. Koseła-Paterczyk, A. Borkowska, M. Wągrodzki, A. Szumera-Ciejkiewicz, A. Cieszanowski, P. Castaneda-Wysoka, T. Świraj, M. Dudzisz-Śledź, A. Czarnecka, E. Dąbrowska-Szewczyk, P. Rutkowski
OC-0069

11:10 > Radiation Therapy for Retroperitoneal Liposarcoma – a report from TARPSWG
OC-0070

11:20 > Stereotactic radiotherapy for nodal recurrences: an interim analysis from two phase I trials
OC-0071

11:30 > Clinical outcomes of stereotactic MR-guided adaptive radiation therapy for adrenal oligo-metastases
P. Cobussen (The Netherlands), M.A. Palacios, F.O.B. Spoelstra, I. Bahce, A.M.E. Bruynzeel, S.M.S. Hashemi, A. Becker – Commissaris, N.J. Haasbeek, B.J. Slotman, F.J. Lagerwaard, S. Senan
OC-0072

PROFFERED PAPERS

BT 1: Proffered papers: Treatment verification
10:30 - 11:45 | Brown 2
Chair: T. Major (Hungary)
Chair: J. Johansen (Denmark)

10:30 > BrachyView: A Real-time In-body HDR Source Tracking System with Simultaneous TRUS Image Fusion
S. Alnaghy (Australia), D. Cutajar, M. M. Safavi-Naeini, G. Stuart, H. Andrew, A. Bece, J. Jakubek, S. Pospisil, M. Lerch, M. Petasecca, A. Rosenfeld
OC-0073

10:40 > Accuracy of an integrated EMT/BT system for dwell-position detection in pelvic BT
OC-0074

10:50 > Error detection using an electromagnetic tracking system in multicatheter interstitial brachytherapy
S. Masitho (Germany), K. Kallis, V. Strnad, R. Fietkau, C. Bert
OC-0075
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>Real time treatment verification in HDR brachytherapy: an in-phantom proof of principle</td>
<td>M. Hanlon (Australia), R. Smith, V. Panettieri, J. Millar, R. Franich</td>
<td>OC-0076</td>
</tr>
<tr>
<td>11:20</td>
<td>Error detection thresholds for routine real time in vivo dosimetry in HDR prostate brachytherapy</td>
<td>J. Mason (United Kingdom), A. Henry, P. Bownes</td>
<td>OC-0078</td>
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<tr>
<td>11:30</td>
<td>Expanding Calibration Service for LDR Brachytherapy Seeds by Photon Fluence Determination</td>
<td>T. Schneider (Germany)</td>
<td>OC-0079</td>
</tr>
</tbody>
</table>

**PROFFERED PAPERS**

**PH 1: Proffered papers: Adaptive radiotherapy: tools and technologies**  
10:30 - 11:45 | Space 1-2  
Chair: G. Meijer (The Netherlands)  
Chair: E.M. Vasquez Osorio (United Kingdom)

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
<th>Reference</th>
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<tbody>
<tr>
<td>10:40</td>
<td>Plan-library supported automated replanning for online-adaptive IMPT of cervical cancer</td>
<td>T. Jagt (The Netherlands), S. Breedveld, R. Van Haeren, R. Nout, E. Astreinidou, M. Staring, B. Heijmen, M. Hoogeman</td>
<td>OC-0081</td>
</tr>
<tr>
<td>10:50</td>
<td>A biomechanical model to generate a library of cervix CTVs</td>
<td>C. Beekman (The Netherlands), S. Van Beek, J. Stam, J. Sonke, P. Remeijer</td>
<td>OC-0082</td>
</tr>
<tr>
<td>11:10</td>
<td>Baseline shifts towards the heart after IGRT are linked to overall survival in lung SABR patients</td>
<td>C. Johnson-Hart (United Kingdom), G. Price, E. Vasquez Osorio, C. Faivre-Finn, M. Van Herk</td>
<td>OC-0084</td>
</tr>
</tbody>
</table>
11:20 > Correcting CBCT images for dose calculation using a U-shaped deep convolutional neural network
G. Landry (Germany), D. Hansen, F. Kamp, M. Li, B. Hoyle, J. Weller, K. Parodi, C. Belka, C. Kurz

11:30 > Probabilistic Dose Accumulation Based Evaluation of Head and Neck Intensity Modulated Proton Therapy

PROFFERED PAPERS

PH 2: Proffered papers: Applications of dose modelling and calculation
10:30 - 11:45 | Space 3-4
Chair: B. McClean (Ireland)
Chair: C. Bert (Germany)

10:30 > A new method for modelling the tongue-and-groove in treatment planning systems
V. Hernandez (Spain), J.A. Vera-Sánchez, L. Vieillevigne, C. Khamphan, J. Saez

10:40 > A pilot study on the sensitivity of common beam modeling parameters in Eclipse
M. Glenn (USA), D. Followill, R. Howell, J. Pollard-Larkin, S. Zhou, S. Kry

10:50 > Mitigating inherent noise in Monte-Carlo dose distributions using UNet
U. Javaid (Belgium), J. Lee, K. Souris, S. Huang, J. Madrigal

11:00 > Use of a realistic breathing lung phantom to verify 4D Monte Carlo dose calculations
S. Gholampourkashi (Canada), J. Cygler, B. Lavigne, E. Heath

11:10 > Patterns of failures among Imaging and Radiation Oncology Core lung and spine phantom irradiations
S. Edward (USA), H.A. Molineu, P.E. Alvarez, D. Followill, S.F. Kry

11:20 > Portal dosimetry of small unflattened beams
A. Torres Valderrama (The Netherlands), I. Olaciregui-Ruiz, P. González, A. Mans

11:30 > Microcavities in the lung affect the dose distribution in microbeam radiation therapy
G. Hombrink (Germany), J. Wilkens, S.E. Combs, S. Bartzsch
PROFFERED PAPERS

RTT 1: Proffered papers: Motion management and adaptive strategies
10:00 - 11:45 | Ambra 1-2
Chair: M. Kearney (Ireland)
Chair: H. McNair (United Kingdom)

10:30 > Retrospective evaluation of motion effects in robotic radiosurgery treatments of lung cancer
S. Trivellato (Italy), E. Rondi, S. Vigorito, E. Miglietta, F. Castellini, G. Piperno, A. Ferrari, B.A. Jereczek-Fossa, F. Cattani
OC-0094

10:45 > Intrafraction motion management in VMAT breast radiotherapy with AlignRT system: comparison of ROIs
V. Favrel (France), O. Ruiz Abrard, F. Chabbert, C. Garcia, L. Gonzague Casabianca, H. Maillieux
OC-0095

11:00 > Implementation of DIBH for gated IMRT of left sided breast cancer using optical surface guidance
N. Gomes (Portugal), A.M. Furtado, M.D.G. Coelho, M. Possanzini, J. Morales, C. Greco
OC-0096

11:15 > Detection of GoldAnchor markers implanted in the liver during robotic radiosurgery in the CK system
K. Szczepanik (Poland), M. Stapo-Fudzinska, B. Jochyme, D. Bodusz, L. Kleszyk, E. Teika, M. Kijonka
OC-0097

11:30 > Gated vs coached DIBH treatment in left sided breast cancer radiotherapy: a single centre study
K. Crowther (United Kingdom), S. Osman, S. O’Hare, S. Gray, D. Holland, H. Vennard, G. Hanna
OC-0098

POSTER VIEWING

Poster viewing 2: Advanced technologies
10:30 - 11:45 | Poster area
Chair: M. Hoogeman (The Netherlands)
Chair: E. Cagni (Italy)

> MC simulations and dose measurements of a patient-specific 3D range-modulator for proton therapy
Y. Simeonov (Germany), U. Weber, C. Schuy, K. Zink
PV-099

> Development of plan quality through EBRT dummy run in the EMBRACE-II study for cervical cancer
PV-100
Clinical implementation of a dedicated brain treatment planning optimizer for stereotactic treatment
T. Gevaert (Belgium), A. Girardi, B. Engels, M. Boussaer, C. El Aisati, M. De Ridder

A prediction of intrinsic uncertainties in radiotherapy treatment planning systems
K. Kiers (The Netherlands), P. Van Horssen, J.T. Trinks, P.R. Pronk, A. Mans, C.J. Schneider, E.M.F. Damen, T.M. Janssen

Linking ACROP guidelines to ICRU91: a multicentre study in lung SBRT on prescription and reporting

Out of field dose for three imaging modalities in case of image guided prostate cancer radiotherapy
C. Le Deroff (France), R. Lefeuvre, J. Bouvier, R. De Crevoisier, C. Lafond

Ga-PSMA PET/CT for quantitative evaluation of radiotherapy-induced cell loss in salivary glands
V. Mohan (The Netherlands), N. Bruin, J. Van de Kamer, J. Sonke, A. Al-Mamgani, W. Vogel

An optimized compact microbeam source for preclinical studies
F. Treibel (Germany), J.J. Wilkens, S. Bartzsch, S.E. Combs

In vitro study of CIEDs malfunctions by direct exposure at doses≥2Gy
M.D. Falco (Italy), E. Di Girolamo, C. Di Carlo, N. Adorante, G. Caravaggio, S. Marcucci, D. Genovesi

AWARD LECTURE
Emmanuel van der Schueren Award Lecture
12:00 - 12:30 | Gold Plenary

12:00 > Chair: Y. Lievens (Belgium)
12:05 > Learning from clinical practice: pushing quality forward
Speaker: N. Jornet (Spain)
AWARD LECTURE

Iridium Award Lecture
12:30 - 13:00 | Gold Plenary

12:30 > Chair: R. Pötter (Austria)
12:35 > The role of women in the brachytherapy field
  Speaker: C. Haie-Meder (France)

SYMPOSIUM

MR-guided radiation therapy: hybrid machines and treatment adaptation
14:30 - 15:45 | Auditorium

This session will describe the state of art of MR-guided radiation therapy approaches (MRgRT).
The description of the innovative adaptive workflow will start from the experimental animal setting, discussing its feasibility for glioblastoma in rat models.
The major MRI technical aspects of the hybrid irradiation of humans, such as tissue contrast and motion management during delivery, will be then addressed with particular emphasis on the correlations among anatomical changes, dose accumulation and treatment adaptation solutions.
Finally, initial clinical experiences of a MRgRT program will be discussed together with associated research strategies and selected clinical examples.

Chair: D. Thorwarth (Germany)
Co-chair: L. Boldrini (Italy)

14:30 > Magnetic resonance based small animal radiotherapy in neuro-oncology

14:50 > On-line MRI-guidance for dose accumulation and plan adaptation
  Speaker: B. Raaymakers (The Netherlands)

15:10 > First clinical experience and future directions of MR-guided radiation therapy
  Speaker: D. Zips (Germany)
15:30 > MRI artifact simulation for clinically relevant MR sequences for guidance of HDR brachytherapy
E. Beld (The Netherlands), M.A. Moerland, M.A. Viergever, J.J.W. Lagendijk, P.R. Seevinck

SYMPOSIUM
How to exploit Immunogenic cell death Mechanism in Radiotherapy
14:30 - 15:45 | Brown 1

Chair: J. Perfettini (France)
Co-chair: V. Olivo Pimentel (The Netherlands)

14:30 > Immunogenic versus Non-Immunogenic Cell Death in Cancer
Speaker: A. Garg (Belgium), L. Vandenberk, S. Fang, P. De Witte, P. Solven, P. Agostinis

14:48 > Immunogenic tumor cell death induced by chemoradiotherapy: a clinical point of view
Speaker: K. Mimura (Japan), K. Kono

15:06 > Mechanisms of Radiotherapy Induced Inflammatory Signaling
Speaker: S. Harding (Canada)

15:24 > Radiotherapy and immunotherapy: Immunocytokines and/or immune checkpoint inhibitors?
Speaker: L. Dubois (The Netherlands)

SYMPOSIUM
Oligo-metastatic prostate cancer – shedding light in a quickly emerging field
14:30 - 15:45 | Gold Plenary

Oligometastatic prostate cancer is a disease concept characterised by a state of limited systemic metastatic burden for which metastasis-directed therapies (MDT) could be used to eradicate the disease or postpone systemic treatments. Modern imaging techniques such as PSMA PET have increased the number of patients diagnosed with oligometastases at different stages of disease evolution (de novo and recurrent setting and during the castration-resistant phase). Aim of this session is to provide an overview on the possible clinical goals achievable with MDT strategies. The role of imaging, the optimal MDT volumes for oligorecurrent nodal disease and the optimal sequencing of ablative and systemic treatments will be analyzed and discussed.

Chair: B.A. Jereczek-Fossa (Italy)
Co-chair: T. Zilli (Switzerland)
14:30  >  What are realistic clinical goals in radical radiotherapy for oligometastatic prostate cancer?  
   *Speaker: T. Hölscher (Germany)*  
   *SP-0118*

14:48  >  What is the optimal staging for oligometastatic prostate cancer?  
   *Speaker: L. Miszczyk (Poland), A. Napieralska, M. Miszczyk*  
   *SP-0119*

15:06  >  What is the optimal target volume concept in radiotherapy for oligometastatic pelvic lymph nodes after radical prostatectomy?  
   *Speaker: T. Zilli (Switzerland)*  
   *SP-0120*

15:24  >  What is the optimal sequencing of local and systemic treatment in oligometastatic prostate cancer?  
   *Speaker: G. De Meerleer (Belgium)*  
   *SP-0121*

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**SYMPOSIUM**

**New developments in gynaecological cancers**  
14:30 - 15:45 | Brown 3

In the last few years we have achieved a lot of new developments in gynaecological cancers. This session will address background of current risk stratified approach for adjuvant therapy in endometrial cancer, update on the role of molecular prognostic factors in endometrial cancer and finally the question can we use molecular prognostic factors in risk stratification for adjuvant therapy? The second speaker will tell us about threshold in high-risk locally advanced cervical cancer with dose escalation strategy, with very high local control rates but still frequent metastatic events. Various strategies are being employed or tested, including prophylactic para-aortic radiotherapy, laparoscopic lymph node staging to guide radiotherapy volumes, and systemic intensification.

*Chair: C. Marijnen (The Netherlands)*
*Co-chair: B. Urbanski (Poland)*

14:30  >  Integration of molecular prognostic factors in the management of endometrial cancer  
   *Speaker: R. Nout (The Netherlands)*  
   *SP-0122*

14:55  >  Improving outcomes in high-risk locally advanced cervical cancer: extended field RT, adjuvant chemotherapy or immunotherapy?  
   *Speaker: C. Chargari (France), C. Haie-Meder, S. Gouy, E. Deutsch*  
   *SP-0123*

15:20  >  Chemo-radiation in Vulvar Cancer: recent developments in (neo)adjuvant and primary therapy  
   *Speaker: S. Marnitz-Schulze (Germany)*  
   *SP-0124*
SYMPOSIUM
Real time navigation technologies in brachytherapy
14:30 - 15:45 | Brown 2

During this symposium the speakers will describe future technologies for brachytherapy such as real time navigation in gynaecologic brachytherapy with technical description even for difficult patients (tumour extending lateral to the pelvic or far from the vaginal surface and phantom example, 3D printed templates for steering of needles with workflow description, examples and clinical results and finally multi-modality image registration both rigid and deformable, methods for estimating therapy delivery accuracy but also impact of machine learning in this area.

Chair: D. Baltas (Germany)
Co-chair: A. Escande (France)

14:30  >  Multi-modal Image Fusion to support Minimally-invasive Therapy
Speaker: D. Barratt (United Kingdom)

14:55  >  Steering of needles and applicators
Speaker: J. Dankelman (The Netherlands)

15:20  >  3D printed templates for steering of needles
Speaker: J.C. Lindegaard (Denmark), P. Petric, A. Traberg Hansen, S. Kynde Nielsen, B. Meisner, K. Tanderup, L.U. Fokdal

SYMPOSIUM
Automatic / Knowledge based treatment planning: open issues
14:30 - 15:45 | Space 1-2

Automated and knowledge-based treatment planning has gained significant attention in the literature and there is increasing clinical uptake as commercial manufacturers offer some form of solution. While developments have occurred, there are still open areas of research and issues to be addressed. This session will explore some of these areas, addressing the following questions: how can we get the best out of knowledge-based planning? What role will automation play in personalised radiotherapy and what are the potential limitations? How can automated planning improve quality in clinical trials? How can automated planning play a role in bias-free plan comparisons?

Chair: M. Hussein (United Kingdom)
Co-chair: C. Masciocchi (Italy)
14:30  >  How can we get the best out of knowledge-based planning?
   Speaker: S. Currie (United Kingdom), E. Miguel-Chumacero, N. Laverick, G. Currie

14:48  >  Does automation jeopardise personalised treatment?
   Are we going back to prêt-à-porter instead of bespoke fashion?
   Speaker: R. Moeckli (Switzerland)

15:06  >  The potential of automated treatment planning in clinical trials
   Speaker: C. Hurkmans (The Netherlands)

15:24  >  Using automated planning for “bias-free” plan comparison
   Speaker: L. Rossi (The Netherlands), A.W. Sharfo, S. Breedveld, B.J.M. Heijmen

● JOINT SYMPOSIUM

ESTRO-EFOMP: Multi-disciplinary working in Radiotherapy
14:30 - 15:45 | Space 3-4

As we continue to seek to advance radiotherapy treatment through improved imaging and effective analysis of data the scientific disciplines required to deliver the best care are expanding. In this session we explore the multi-disciplinary nature of modern radiotherapy and highlight some of the important new roles. The perspective of physicists with a speciality other than radiotherapy will give their perspective on the changes they had to make to adapt to working in the radiotherapy multi-disciplinary team. In this session we will explore the view working in radiotherapy from physicists specialising in MRI, nuclear medicine, ultrasound and data science.

Chair: R.I. Mackay (United Kingdom)
Chair: E. Koutsouveli (Greece)

14:30  >  Working for radiotherapy applications: The perspective of a nuclear medicine physicist in the era of Hybrid Imaging Systems
   Speaker: V. Bettinardi (Italy), M.G. Cattaneo

14:48  >  Working in radiotherapy from the perspective of an MRI physicist
   Speaker: L.E. Olsson (Sweden)

15:06  >  Working with radiotherapy from the perspective of US physicist
   Speaker: E. Harris (United Kingdom)
15:24 > Working with radiotherapy from the perspective of data/computer scientist
Speaker: D. Sarrut (France), R. Simon, A. Myriam, C. Line, B. Thomas, B. Jean-Noel, G. Anne-Laure

SYMPOSIUM
Younger people and radiotherapy
14:30 - 15:45 | Ambra 1-2

The psychological, anatomical and surveillance issues for younger patients receiving radiotherapy will be discussed; examples of compliance, the risk of structural tissue damage after RT and the optimal balance of surveillance activities and follow up visits will be included. The second presentation will focus on the newest knowledge inside the causes of late effects and improved radiotherapy techniques helping to reduce incidence and severity. The symposium will be finalized with an example of how children’s distress and anxiety during radiotherapy treatment can be reduced by use of a tablet and cartoon watching; experience with clinical implementation will also be presented.

Chair: A. Boejen (Denmark)
Co-chair: T. O’ Donovan (Ireland)

14:30 > Considerations for Younger patients receiving RT: psychological, physical, and surveillance
Speaker: C. Dickie (Canada), N. Laperriere

14:55 > Radiotherapy in children and adolescents. What do we know until now and what will the future bring?
Speaker: T. Boterberg (Belgium)

15:20 > (VAIRT) Video-Assisted Immobilisation during external beam RadioTherapy for Children
Speaker: N. Ritt (Austria)
POSTER VIEWING

Poster viewing 3: Brachytherapy
14:30 - 15:45 | Poster area
Chair: T.P. Hellebust (Norway)
Chair: A. Gomez-Iturriaga (Spain)

- Endorectal HDR brachytherapy boost with MRI guidance for non operative management of rectal cancer
  
  *R. Engineer* (India), A. Saklani, A. D’Souza, A. Baheti, M. Patil, S. Chopra, P. Patil

- Predictive factors and patients’ selection for pulsed dose rate brachytherapy boost in anal cancer
  
  *T. Brahmi* (France), A.A. Serre, F. Gassa, F. Lafay, M. Sandt, P. Pommier

- Treatment outcomes of HDR brachytherapy for cervical cancer: a comparison of Ir-192 versus Co-60
  
  *T. Tantivatana* (Thailand), R. Kanisa

- HDR BRT treatment of non-melanoma skin cancer: outcome and feasibility in a retrospective analysis
  
  *D. Delishaj*, I.C. Fumagalli, R. D’Amico, G. Sangalli, F. Declich, C. Frigerio, C.P. Soatti (Italy)

- High-dose CT-guided interstitial brachytherapy of liver metastases in oligometastatic patients
  

- Custom-made moulds plesiotherapy for non-melanoma skin cancer treatment
  
  *M.A. González Ruiz* (Spain), J.L. Muñoz García, J. Quirós Rivero

- The impact of modern imaging on low dose-rate prostate brachytherapy
  
  *D. Lamb* (New Zealand), L. Greig, G. Russell, J. Nacey, L. Woods

- RTOG versus CTCAE score: reporting toxicity of HDR brachytherapy Monotherapy for prostate cancer
  
  *M. Jolicoeur* (Canada), E. Hill

- MRI-guided salvage HDR brachytherapy for locally recurrent prostate cancer
  
  *L. Joseph* (Canada), A. Sundaramurthy, A. Berlin, J. Helou, C. Menard, P. Warde, C. Catton, B. Lao, A. Bayley, A. Rink, A. Beiki-Ardakani, P. Chung
MULTIDISCIPLINARY TUMOUR BOARD

**Soft tissue sarcomas**
14:30 - 15:45 | Ambra 5-6
*Chair: R. Haas (The Netherlands)*

- yESTRO Radiation Oncologist
  *Panellist: M. Spalek (Poland)*
- Medical Oncologist
  *Panellist: P. Casali (Italy)*
- Surgeon
  *Panellist: A. Gronchi (Italy)*
- Radiation Oncologist
  *Panellist: F. Roeder (Germany)*
- Pathologist
  *Panellist: A.P. Dei Tos (Italy)*

**JOINT SYMPOSIUM**

**ESTRO-CARO: Functional imaging in RT: from biology to guidance**
16:15 - 17:30 | Auditorium
*Chair: D. Zips (Germany)*
*Chair: D. Jaffray (Canada)*

16:15 > **Developments in techniques and processing tools for functional imaging in radiotherapy**
  *Speaker: S. Leibfarth (Germany)*

16:40 > **Functional imaging in preclinical models for exploring new radiotherapy strategies**
  *Speaker: S. Stapleton (Canada)*

17:05 > **Using functional imaging as a guidance and decision tool in radiotherapy**
  *Speaker: M. Milosevic (Canada)*

**PROFFERED PAPERS**

**RB 2: Proffered paper: How to exploit immunogenic cell death mechanisms in radiotherapy**
16:15 - 17:30 | Brown 1
*Chair: C. West (United Kingdom)*
*Chair: G. Adema (The Netherlands)*

16:15 > **Radiation and PI3K-αδ inhibitor enhanced anti-tumor effect of PD-1 blockade in syngeneic tumor model**
  *I.A. Kim (Korea Republic of), J.M. Park, J.H. Lee, D. Kim, Y. Lim*
16:25 > IDO inhibition strongly enhances effects of combined hRT and PD1/PD-L1 checkpoint blockade
_T. Watanabe_ (Japan), _G. Niedermann_ OC-0152

16:35 > Immune infiltrate modulation induced by preoperative radiotherapy in breast cancer patients
_A. Matias Perez_ (Spain), _A. Bardet, M. Lacroix-Triki, F. Riet, M.C. Mathieu, E. Deutsch, S. Michiels, S. Rivera_ OC-0153

16:45 > Radiation abrogates fibroblast-mediated immunosuppressive effects on dendritic cells
_T. Hellevik_ (Norway), _R. Berzaghi, M.A. Akhtar, S. Tornaas, I. Martinez-Zubiaurre_ OC-0154

16:55 > LXR signaling regulates macrophage survival & phenotype polarization response to ionizing radiation
_P.C. Lara Jimenez_ (Spain), _C. Tabraue, M. Mirecki, J.V. De La Rosa, F. López-Blanco, L. Bosco, L. Fernandez, A. Castrillo_ OC-0155

17:05 > High-intensity focused ultrasound and radiotherapy: a promising combination?

17:15 > Radiation and immunotherapy to fight cancer: a ‘pushing the gas and releasing the brakes’ approach

**PROFFERED PAPERS**

**CL 3: Proffered papers: Prostate and Bladder**
16:15 - 17:30 | Gold Plenary
*Chair: A. Zapatero (Spain)*
*Chair: A. Napieralska (Poland)*

16:15 > Effect of EBRT underutilization in prostate cancer on overall survival & local control, NSW, Australia
_G. Gabriel_ (Australia), _M. Barton, J. Shafiq, G. Delaney_ OC-0158

16:25 > Long-Term Results of RTOG 0321: HDR Brachytherapy and External Beam Radiotherapy for Prostate Cancer
16:35 > When PI-RADS and ISUP meet each other: identification of candidates for pelvic lymph node dissection

16:45 > Validation of clinical/dosimetric/genetic risk factor models for late RT-induced rectal bleeding

16:55 > PSMA PET/CT for intraprostatic tumor delineation and characterization based on radiomic features

17:05 > Risk classification for PSA relapse after PSMA-PET-guided RT for oligorecurrent prostate cancer
M. Vogel (Germany), S.G.C. Kroeze, C. Henkenberens, N.S. Schmidt-Hegemann, S. Kirste, J. Becker, H. Christiansen, C. Belka, A.L. Grosu, A.-C. Müller, M. Guckenberger, S.E. Combs

17:15 > Hypoxia modification in bladder preservation: relating long term outcomes to necrosis and hypoxia
Y.P. Song (United Kingdom), H. Mistry, L. Yang, S. Chin, C. West, A. Choudhury, P. Hoskin

PROFFERED PAPERS

CL 4: Proffered papers: CNS and Paediatrics
16:15 - 17:30 | Brown 3
Chair: S. Combs (Germany)
Chair: S. Scoccianti (Italy)

16:15 > Patterns of treatment and outcomes for 1p19q co-deleted gliomas

16:27 > Cumulative metastases volume, not number of brain metastases predicts survival in melanoma patients

OC-0160
OC-0161
OC-0162
OC-0163
OC-0164
OC-0165
OC-0166
16:39 > Identifying No Fly Zones to prevent long-term thinning of the cerebral cortex in glioma after RT  
*S. Nagtegaal* (The Netherlands), S. David, H. Mesri, M. Philippens, A. Leemans, J. Verhoeff  
OC-0167

16:51 > Dose-dependent atrophy of the amygdala after radiotherapy  
*M. Huynh-Le* (USA), R. Karunamuni, V. Moiseenko, N. Farid, C. McDonald, J. Hattangadi-Gluth, T.M. Seibert  
OC-0168

17:03 > Spinal change after craniospinal irradiation for pediatric patients  
*Y. Oshira* (Japan), M. Mizumoto, H. Pan, S. Kaste, T.E. Merchant  
OC-0169

Proton beam radiation results in pediatric Head and Neck Rhabdomyosarcoma  
Abstract withdrawn

17:15 > Hypofractionated SBRT in childhood cancer: preliminary results of a national prospective study  
*L. Claude Defez* (France), S. Bolle, E. Blanc, A. Laprie, A. Huchet, C. Vigneron, A. Escande, M. Morelle, C. Carrie, S. Supiot  
OC-0171

**PROFFERED PAPERS**

**BT 2: Cervix brachytherapy**  
16:15 - 17:30 | Brown 2  
Chair: I. Jürgenliemk-Schulz (The Netherlands)  
Chair: M. Schmid (Austria)

16:15 > Performance of ring vs ovoids and intracavitary vs intracavitary-interstitial in the EMBRACE study  
OC-0172

16:25 > Dosimetric comparison of T-O brachytherapy with/without interstitial component in FIGO I-IIIB tumors  
*M. Federico* (Spain), A. Perez Fustero, C. Catarina, I. Fernandez, J.L. Perez Molina, I. Morales Orue, M. Lloret  
OC-0173

16:35 > Advancement of brachytherapy for locally advanced cervical cancer in the era of image guidance  
*L.C. Lindegaard* (Denmark), L.U. Fokdal, P. Petric, S.K. Nielsen, K. Tanderup  
OC-0174
16:45 > 3D printed tandem-needle-template for image guided adaptive brachytherapy in cervical cancer
P. Petric (Denmark), L.U. Fokdal, A. Traberg Hansen, S. Kynde Nielsen, K. Tanderup, J.C. Lindegaard
OC-0175

16:55 > A systematic analysis of delineation performance seen in EMBRACE-II brachytherapy quality assurance
OC-0176

17:05 > The value of kV-CBCT in adaptive HDR brachytherapy of cervical cancer patients
C. Constantinescu (Saudi Arabia), N. Jastaniyah, S. Wadi-Ramahi
OC-0177

17:15 > Indirect Excess Dose Volume Ratio (iRex): A Novel predictor of Late Toxicity in Cervical Cancer IGBT
T. Prasartseree (Thailand), P. Dankulchai
OC-0178

PROFFERED PAPERS

PH 3: Proffered paper: New developments in automated treatment planning
16:15 - 17:30 | Space 1-2
Chair: B. Heijmen (The Netherlands)
Chair: L.B. Hysing (Norway)

16:15 > Clinical implementation of plan quality control for automated prostate planning
M. Kusters (The Netherlands), F.J. Dankers, P. Van Kollenburg, R.J. Smeenk, R. Monshouwer
OC-0179

16:25 > Towards a comprehensive automatic planning with deep neural networks: dose prediction for lung IMRT
OC-0180

16:35 > Prostate auto-planning in clinical practice: evaluation of plan acceptance and manual adaptations
R. Van Der Bel (The Netherlands), D.A. Eekhout, G.H. Wortel, G. Van der Veen, R.H. Harmsen, F.J. Pos, T.M. Janssen, E.M.F. Damen
OC-0181

16:45 > Automated (non-coplanar) beam selection for IMRT in young female lymphoma patients reduces OAR doses
P. Cambraia Lopes (The Netherlands), L. Rossi, J. Leitão, C. Janus, M. Van de Pol, J. Penninkhof, B. Heijmen
OC-0182
16:55 > Multi-Institutional Evaluation of a Pareto Navigation Guided Automated Planning Solution  
OC-0183

17:05 > Predicting patient specific treatment planning Pareto fronts based on anatomy only  
*E. Van der Bijl* (The Netherlands), Y. Wang, S.F. Petit, T. Janssen  
OC-0184

17:15 > A multi-centre knowledge-based treatment planning model for radiotherapy of cervical cancer  
*E. Adams* (United Kingdom), M. Hussein, S. Currie, C. Thomas, C. South, A. Greener, G. Currie, A. Nisbet  
OC-0185

**PROFFERED PAPERS**

**PH 4: Proffered paper: New technologies**  
16:15 - 17:30 | Space 3-4  
Chair: J. Malicki (Poland)  
Chair: K. Tiigi (Estonia)

16:15 > A system of materials capable of mimicking soft tissues and bone with both CT and MR imaging  
*K. Singhrao* (USA), J. Fu, Y. Gao, P. Hu, Y. Yang, J.H. Lewis  
OC-0186

16:25 > Comparison of proton range predictions between Single- and Dual-Energy CT using prompt gamma imaging  
*T. Boon-Keng* (USA), Y. Xie, F. O’Grady, A. Lalone, J. Petzoldt, J. Smeets, G. Janssens  
OC-0187

16:35 > Development and commissioning of a set-up optimization routine for ocular proton therapy  
OC-0188

16:45 > Brain and Head-and-Neck MRI in immobilization masks: a novel and practical setup for radiotherapy  
OC-0189

16:55 > Development of Compton-scattered imaging technology for stereotactic radiotherapy of lung cancer  
*L. Chu* (USA), K. Jones, J. Strologas, G. Redler, G. Marwaha, J. Turian  
OC-0190

17:05 > MLC-tracking latencies on Elekta Unity  
*M. Glitzner* (The Netherlands), P. Woodhead, J. Lagendijk, B. Raaymakers  
OC-0191
17:15 > Prerequisites for using "rapid learning" to optimise technical radiotherapy
M. Aznar (United Kingdom), C. Johnson-Hart, A. McWilliam, M. Van Herk, G. Price

RTT 2: A patient centered approach to follow up
16:15 - 17:30 | Ambra 1-2
Chair: I. Kristensen (Sweden)
Chair: S. Goldsworthy (United Kingdom)

16:15 > Mobile application for daily patient scheduling during radiotherapy treatment course
J. Kauppinen (Finland), M. Kokkonen, M. Kaunisto, J. Seppälä

16:25 > Continuous improvement by crossing patient satisfaction surveys, adverse events and complaints
S. Cucchiaro (Belgium), M. Delgaudine, F. Princen, P. Coucke

16:35 > Towards a Patient-Focused Organizational Model for Radiation Therapists
A. Shessel (Canada), E. Moyo, A. Koch, J. Ringash, J. Waldron, F.F. Liu, M. Velec

16:45 > Predictors for radiation-induced oesophagitis in breast cancer patients
K. West (Australia), M. Schneider, C. Wright, R. Beldham-Collins, N. Coburn, K. Tiver, V. Gebski, K. Stuart

16:55 > A survey of UK practice of radiotherapy skin care for breast patients
H. Nisbet (United Kingdom), S. Matthews, R. Cooke

17:05 > Using PROs and PROMs in routine head and neck cancer care: what do RTs perceive as barriers?
H. Nguyen (Australia), P. Butow, H. Dhillon, L. Morris, A. Brown, K. West, P. Sundaresan

17:15 > Patient-reported outcomes after stereotactic body radiotherapy in lung cancer: The Lung PLUS study
L. Van der Weijst (Belgium), R. Bultijnck, A. Van Damme, M. Van Eijkeren, V. Surmont, Y. Lievens
POSTER VIEWING

Poster viewing 4: Head-Neck and Lung
16:15 - 17:30 | Poster area
Chair: J. Giralt (Spain)
Chair: S. Petit (The Netherlands)

> Accelerated- vs chemo-radiation as organ sparing strategies for laryngeal/hypopharyngeal carcinoma
  PV-0200

> Development and validation of prediction models for salivary dysfunction in HN cancer patients
  L. Van den Bosch (The Netherlands), A. Van der Schaaf, F.J.P. Hoebers, H.P. Van der Laan, E. Schuit, E. Bakker, O.B. Wijers, A.M. Van der Wel, R.J.H.M. Steenbakkers, J.A. Langendijk
  PV-0201

> 3-D reconstruction of radiotherapy dose associated with advanced osteoradionecrosis after IMRT
  PV-0202

> Adaptive proton therapy for patients with head and neck tumors involving skull base
  PV-0203

> Mortality after radiotherapy or surgery in early stage NSCLC: a population based study
  C. Ostheimer, F. Palm, E. Christoph, M. Katharina, M. Rafael, D. Vordermark, D. Medenwald (Germany)
  PV-0204

> Quantification of Changes in Lung Cancer during Radiotherapy: a comparison between CT and MRI
  E. Huang (Australia), S. Kumar, D. Moses, L. Holloway, S. Vinod
  PV-0205

> Gross endobronchial disease: predictor of clinical outcomes for early stage NSCLC treated with SBRT
  PV-0206
> Is V37Gy a Better Dose Predictor for Radiation Pneumonitis for Lung Proton Therapy?
*W. Harris (USA), S. O'Reilly, V. Jain, B.K. Teo, L. Dong, S. Feigenberg, A. Berman, W. Zou*

> Immune-related pneumonitis in NSCLC patients treated with ICI: impact of previous thoracic RT

**AWARD LECTURE**

**Award Lecture: Honorary Members award lectures**

**17:35 - 18:20 | Gold Plenary**

*Chair: B. Slotman (The Netherlands)*
*Chair: U. Ricardi (Italy)*
*Chair: Y. Lievens (Belgium)*

17:35 > Multidisciplinary approaches as the keys to defeat lung cancer
*Speaker: G. Scagliotti (Italy)*

17:50 > Are radiation specialists good global cancer citizens?
*Speaker: J. Torode (Switzerland)*

18:05 > Putting down the scalpel. The evolution of rectal cancer treatment
*Speaker: A. Habr-Gama (Brazil)*
Sunday 28 April 2019

**TEACHING LECTURE:**
**Re-irradiation for breast cancer**  
08:00 - 08:40 | Auditorium  
*Chair: V. Strnad (Germany)*

08:00 > Re-irradiation for breast cancer  
*Speaker: P. Poortmans (France), O. Kaidar-Person, S. Oldenborg*  

**TEACHING LECTURE**  
**Extracellular vesicles; are we there yet?**  
08:00 - 08:40 | Brown 1  
*Chair: P. Span (The Netherlands)*

08:00 > Extracellular vesicles and potential implications for radiation therapy  
*Speaker: A. Dal Pra (USA)*

**TEACHING LECTURE**  
**Update on the management of SCLC**  
08:00 - 08:40 | Gold Plenary  
*Chair: F. McDonald (United Kingdom)*

08:00 > Update on the management of SCLC  
*Speaker: C. Le Pechoux (France), A. Botticella, A. Levy*  

**TEACHING LECTURE**  
**How to combine checkpoint inhibitors with radiotherapy?**  
08:00 - 08:40 | Brown 3  
*Chair: E. Deutsch (France)*

08:00 > How to combine checkpoint inhibitors with radiotherapy?  
*Speaker: K. Harrington (United Kingdom)*
### How does brachytherapy fit in the modern management of penile cancer?
**08:00 - 08:40 | Brown 2**
*Chair: A. Henry (United Kingdom)*

**How does brachytherapy fit in the modern management of penile cancer?**
*Speaker: J. Crook (Canada)*

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### Detector specific output correction factors: How to use them in clinical practice
**08:00 - 08:40 | Space 1-2**
*Chair: J. De Pooter (The Netherlands)*

**Detector specific output correction factors: How to use them in clinical practice**
*Speaker: S. Huq (United States)*

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### Uncertainties in Radiomics
**08:00 - 08:40 | Space 3-4**
*Chair: L. Wee (The Netherlands)*

**Uncertainties in Radiomics**
*Speaker: M. Hatt (France)*

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### New technology and modalities in Radiotherapy - What can the ESTRO School offer?
**08:00 - 08:40 | Ambra 1-2**
*Chair: Y.M. Tsang (United Kingdom)*

**New technology and modalities in Radiotherapy - What can the ESTRO School offer?**
*Speaker: J.G. Eriksen (Denmark)*
TEACHING LECTURE

Precision medicine and systems biology - transforming cancer research in the 21st century
**08:00 - 08:40 | Ambra 3-4**
*Chair: M. Bittner (Germany)*

08:00  >  Precision medicine and systems biology - transforming cancer research in the 21st century  
*Speaker: W. Kolch (Ireland)*  

SYMPOSIUM

Balancing the risks and benefits of re-irradiation
**08:45 - 10:00 | Auditorium**

When, and how, to re-irradiate? Still today, defining the risk-benefit balance of re-irradiation is a major challenge in radiation oncology. In case of a radio-recurrent disease, the patient’s selection process is a critical step, particularly in view of the potential interplay with modern systemic therapies. From an experimental perspective, understanding the biological mechanisms involved in re-treatment tolerance is of utmost importance. The presenters will provide an evidence-based overview on re-irradiation in different clinical scenarios. The suitability of modern external-beam techniques and brachytherapy for re-treatment will be discussed, with a focus on their intrinsic properties (such as dose conformality) and clinical workflow implications.

*Chair: TBC*
*Co-chair: P. Bonomo (Italy)*

08:45  >  Indications for re-irradiation – changes in the era of effective systemic treatment options?  
*Speaker: M. Hoyer (Denmark)*  

09:03  >  Radiobiology of normal tissue repair – what are the implications for reirradiation?  
*Speaker: R. Coppes (The Netherlands)*  

09:21  >  Protons, stereotactic radiotherapy and adaptive radiotherapy – what is their value for reirradiation?  
*Speaker: A. Richter (Germany)*  

09:39  >  Brachytherapy in the reirradiation situation – what are benefits and limitations compared to modern EBRT?  
*Speaker: C. Gutiérrez Miguélez (Spain)*
SYMPOSIUM

Circulating biomarkers for patient stratification and treatment monitoring
08:45 - 10:00 | Brown 1
Chair: G. Hanna (Australia)
Co-chair: S. Meltzer (Norway)

08:45 > Blood biomarkers to predict radiotherapy response
   Speaker: G. Hanna (Australia)  SP-0225

09:03 > ctDNA as a non-invasive liquid biopsy for patient stratification
   and treatment monitoring
   Speaker: D. Gale (United Kingdom)  SP-0226

09:21 > Cancer detection using methylated cell-free DNA
   Speaker: S. Bratman (Canada)  SP-0227

09:39 > Circulating biomarkers tumor immune response
   Speaker: D. De Ruysscher (The Netherlands)  SP-0228

DEBATE

This house believes that Proton-beam be used routinely in the treatment of lung cancer
08:45 - 10:00 | Gold Plenary

Proton therapy is an attractive treatment option for lung cancer patients who need radiotherapy. Due to its physical properties, it has the potential to reduce side-effects. Yet, proton therapy is very challenging in thoracic tumors because of the movement due to breathing, and of the large differences in tissue density. It will be discussed whether there is enough clinical evidence to treat lung cancer patient with proton therapy in routine practice, and which patients to select for this treatment. Furthermore, the technical challenges of treating moving tumors will be addressed, and whether the current state-of-the-art proton techniques are able to tackle all these challenges.

Chair: Y. Lievens (Belgium)
Co-chair: S. Peeters (The Netherlands)

08:45 > For the motion
   C. Simone (USA)

09:00 > Against the motion
   S. Ramella (Italy)

09:15 > For the motion
   M. Hoogeman (The Netherlands)
09:30 > Against the motion  
_D. Verellen (Belgium)_

09:45 > Discussion

**SYMPOSIUM**

**Radiation-drug combinations on the 2019 horizon**  
08:45 - 10:00 | Brown 3

This session will focus on pending questions about radiation-drug combinations on the 2019 horizon. First will be pointed out the barriers and the potential solutions to improve the research in this domain, from the preclinical model to the clinical trial designs. Then, speakers will develop the specific questions of Tyrosine Kinase inhibitors and DNA damage response inhibitors in combination with radiation therapy: early data studies and clinical evidence. Finally, several cost-estimates models regarding radiation combined with biomarker-agnostic use of a given drug or with molecularly matched medication will be presented.

_Chair: M. Krause (Germany)_  
_Co-chair: S. Bockel (France)_

08:45 > Barriers and solutions to increase the number of clinical trials of new drug-radiotherapy combinations  
_Speaker: R. Sharma (United Kingdom)_

09:03 > Radiation and TKIs - what is the 2019 evidence?  
_Speaker: C. Belka (Germany)_

09:21 > Radiotherapy in combination with DNA damage response inhibitors in 2019: are we any closer to clinical benefit?  
_Speaker: A. Chalmers (United Kingdom)_

09:39 > Cost-estimate models for radiation-drug combinations  
_Speaker: A.H. Ree (Norway)_

**SYMPOSIUM**

**Inverse planning in brachytherapy - A one click solution?**  
08:45 - 10:00 | Brown 2

In brachytherapy (BT) inverse planning can be used for automatic dose optimization. Similar to external beam IMRT treatment planning dose constraints are defined and an optimization algorithm computes the “best” solution. In particular in prostate low-dose-rate (LDR) and high-dose-rate (HDR) treatment planning inverse planning is commonly used.
Nevertheless, sometimes automatic calculated treatment plans need manual refinement.
In this symposium three experts in BT inverse planning discuss the use and usability of inverse planning in BT. In particular the question if inverse planning is a “one click solution” or if manual optimization in still necessary should be answered; this not only for prostate BT, but as well for other treatment sites like gynecological BT, breast cases, and others. The experts will give insights into the applied algorithms of BT inverse planning and new approaches of these methods. This symposium is for sure not only of interest for BT users but for all medical physicists and physicians who would like to learn on new strategies in automatic treatment planning.

Chair: F. Siebert (Germany)
Co-chair: M. De Brabandere (Belgium)

08:45 > Optimal use of inverse optimization in brachytherapy
Speaker: D. Baltas (Germany)
SP-0233

09:10 > Inverse treatment planning in clinical practice, one click and done?
Speaker: D. Todor (USA)
SP-0234

09:35 > Intuitive and insightful evolutionary intelligent treatment planning
Speaker: P. Bosman (The Netherlands)
SP-0235

Reference and non-reference dosimetry - CoPs and beyond
08:45 - 10:00 | Space 1-2

This session focuses on TRS-398 and TRS-483. IAEA put up a project in order to update TRS-398 for MV beams as new developments have taken place (ICRU 90, FFF beams, new detectors, dosimetry for small fields). In this context, kQ results from the RTNORM project will be shown. Furthermore, the fundamentals of the TRS-483 will be explained. The current state of the art related to Appendix I of TRS-483 will be outlined, including a review of available literature on kQ for FFF beams and the implications for reference dosimetry in the clinic. Additionally, reference dosimetry with A1SL ionization chamber in Helical Tomotherapy following TRS-483 concepts will be discussed.

Chair: C.E. Andersen (Denmark)
Co-chair: C. Boydev (France)
08:45  >  MV reference dosimetry in TRS-398: State-of-the art and research supporting an updated code of practice  
Speaker: F. Delaunay (France), C. Andersen, L. De Prez, S. Duane, M. Pimpinella, P. Teles, J. Tikkanen, K. Zink  
**SP-0236**

09:03  >  Clinical application of kQ factors for reference dosimetry in flattening filter free (FFF) photon beams  
Speaker: L. De Prez (The Netherlands), C. Andersen, J. De Pooter, H. Palmans  
**SP-0237**

09:21  >  TRS 483: past, present and future  
Speaker: H. Palmans (Austria)  
**SP-0238**

09:39  >  Following TRS 483: reference and relative dosimetry in Tomotherapy  
Speaker: M.D.C. Lopes (Portugal), T. Santos, T. Ventura, M. Capela  
**SP-0239**

**SYMPOSIUM**

**New advances in image reconstruction in CBCT**  
**08:45 - 10:00 | Space 3-4**

While cone beam computed tomography (CBCT) has been introduced to radiation therapy nearly two decades ago, improving the technology and finding new applications remain very active areas of research. In this session, both fundamental aspects of image reconstruction and limitations of CBCT in terms of image quality will be summarized, along with a presentation of cutting edge advancements in CBCT. Topics will range from motion-compensated CBCT using sparse projection data to the use of deep learning to correct CBCT artefacts online. Applications of improved CBCT images for dose calculation and as novel biomarkers will finally be discussed.

*Chair: M. Aznar (United Kingdom)*  
*Co-chair: G. Landry (Germany)*

08:45  >  Breathing motion in cone-beam CT  
Speaker: S. Rit (France)  
**SP-0240**

09:10  >  Deep image formation algorithms for CT and CBCT  
Speaker: M. Kachelriess (Germany)  
**SP-0241**

09:35  >  Hounsfield corrected CBCT images – dose calculation and potential for bio-markers  
Speaker: C. Brink (Denmark)  
**SP-0242**
SYMPOSIUM
New technology and modalities
08:45 - 10:00 | Ambra 1-2

Advanced practice roles for radiation therapists (RTTs) is an ongoing request for contemporary Radiotherapy. The development of innovative strategies and technologies, require multi and interdisciplinary approach to enhance practices and patient/focused outcomes. Implementing new technologies and methodologies becomes even more challenging and complex which demands for advanced education and training, as a continuous professional and personal development for a long term life learning process. This session intent to give crucial information for deliver and optimize current and future and advanced technologies as well as personalized approaches for enhanced patient care and treatment outcomes.

Chair: F. Moura (Portugal)
Co-chair: A. Smit (The Netherlands)

08:45 > How to secure the right competencies when new modalities are implemented - a clinical aspect in proton therapy
Speaker: H. Pennington (United Kingdom)

09:10 > Personalized treatment planning and automation in modern radiotherapy
Speaker: T. Piotrowski (Poland)

09:35 > Advanced practice role in breast cancer radiation therapy
Speaker: G. Lee (Canada)

SYMPOSIUM
Combining research and (clinical/ professional) training/ practice
08:45 - 10:00 | Ambra 3-4

In this session, part of the Young Estro track, various aspects of training in clinical and translational research will be covered: 1/ The benefit of taking time off for full-time research will be presented, with perspective from young radiation oncologists; 2/ A presentation on the basis and prerequisite for biostatic analyses will underscore the need to avoid misuse and pitfalls of an inappropriate research and provide some highlights on how to have a critical analysis of available literature; 3/ Research and training in medical physics will be addressed with a special focus on how to acquire (and keep on having) a staff medical physicist position; 4/ the possibility, practical aspects and difficulties to combine research and training will be presented, with perspectives on how to deal
with limiting factors to keep radiation oncologists interested in research;
5/ Finally, the vision from a young head of department will be given.

Chair: C. Chargari (France)
Co-chair: G. Reggiori (Italy)

08:45  >  Taking time off for full-time research - is it worth it?
Speaker: A. Levy (France)  SP-0246

09:00  >  Why do we need to be trained in statistics? Need and pitfalls
Speaker: A. Escande (France), L. Lebellec  SP-0247

09:15  >  Research and training in medical physics
Speaker: S. Petit (The Netherlands)  SP-0248

09:30  >  Clinical vs lab research for clinicians
Speaker: D. Milanovic (United Kingdom)  SP-0249

09:45  >  Lessons learnt from a young head of department
Speaker: R. Baumann (Germany)  SP-0250

● POSTER VIEWING

Poster viewing 5: Health Services Research and Health-Related Quality of Life
08:45 - 10:00 | Poster area
Chair: D. Rodin (Canada)
Chair: Y. Anacak (Turkey)

> Inuit radiotherapy utilization: a multinational study of low-income regions in high-income countries

> From theory to practice: assessing the use of radiotherapy in population based cancer registries

> A critical quality appraisal of studies estimating the cost of radiotherapy
*N. Defourny* (Belgium), Y. Lievens, C. Monten, J. Monnet, P.B. Dunscombe, C. Grau, L. Perrier  PV-0253

> Advocating for radiation oncology through the development of a massive open online course
  M. Leech, C. Poole (Ireland), S. Gallagher, W. Fox

> European survey on electronic patient-reported outcomes by the EORTC young Radiation Oncology Group

> Radiotherapy impact on quality of life in localised prostate cancer: validation of EPIC-16 in Spain

> Patient reported outcome and survival analysis after stereotactic body RT (SBRT) of lung metastases
  R. Grosser (Germany), K.A. Kessel, D. Marciana-Nona, M. Oechsner, S.E. Combs

> Cosmetic outcome in irradiated breast cancer patients and association with patient reported outcomes
  M. Batenburg (The Netherlands), M. Gregorowitsch, D. Van den Bongard, W. Maarse, H. Verkooijen

NETWORKING SESSION

Speed Dating
10:00 - 11:45 | Ambra 3-4
Chairs: M.I. Bittner (United Kingdom) and C. Chargari (France)
JOINT SYMPOSIUM

ESTRO-JASTRO: Clinical trials for particle therapy: which ones to run and how?

10:30 - 11:45 | Auditorium

The aim of this interdisciplinary session is to address the important topic of clinical trials for proton therapy. First, the importance of international research networking to design and perform trials cannot be overexpressed. High-quality data collection is key in producing high-quality data that particle therapy is critically lacking. Second, quality assurance (QA) performed within the framework of a clinical trial, as in conventional radiotherapy, assures that particle radiation is delivered accurately as per protocol and consistently between accruing centers. Fundamental questions such as to why QA is needed for clinical trials with particles, what is currently being done for particle trials by clinical trial QA groups and most importantly what is missing in the QA process relating to particles. From a radiobiological point of view the limitations of current RBE models and their implication for clinical particle trials are important and should be debated. Finally, an overview of clinical trials in carbon ion therapy will be given in the final talk.

Chair: D.C. Weber (Switzerland)
Chair: Y. Nagata (Japan)

10:30 > International collaborations in proton therapy: networks, trials and data collection
Speaker: C. Grau (Denmark)

10:48 > Trial quality assurance and audits for proton therapy
Speaker: C. Clark (United Kingdom)

11:06 > Limitations of current RBE models and their implication for clinical trial design
Speaker: N. Matsufuji (Japan)

11:18 > Clinical trials on carbon ion radiotherapy for locally advanced pancreatic cancer
Speaker: T. Ohno (Japan)
PROFFERED PAPERS

RB3: Tumour sensitization
10:30 - 11:45 | Brown 1
Chair: C. Limoli (USA)
Chair: D. Martin (Germany)

10:30 > CDK4/CDK6 inhibition radiosensitises HPV-neg HNSCC through inhibition of homologous recombination
E. Gottgens (The Netherlands), K. Leszczynska, J. Bussink, E. Hammond, P. Span

10:45 > MiR-205 enhances radiation sensitivity of prostate cancer cells through PKCe and ZEB1 inhibition
R. El Bezawy, S. Tinelli, A. Cicchetti, R. Valdagni, P. Gandellini, N. Zaffaroni (Italy)

11:00 > Pancreatic ductal adenocarcinoma sensitization to radiotherapy by bioactive food components
V. Vendrely (France), S. Amintas, C. Noël, I. Moranvillier, I. Lamrissi, B. Rousseau, S. Coulibaly, A. Bedel, F. Moreau-Gaudry, E. Buscail, L. Chiche, G. Belleannée, C. Dupin, S. Dabernat

11:15 > Imaging the effect of Atovaquone on the hypoxia-related marker CAIX in head and neck cancer models
F. Huizing (The Netherlands), B.A. Hoeben, O.C. Boerman, S. Heskamp, J. Bussink

11:30 > Intrinsic radiosensitivity, genomic-adjusted radiation dose and patterns of failure of penile cancer
P. Johnstone (United States Minor Outlying Island), G.D. Grass, M. Azizi, K. Ahmed, G.S.J. Yoder, E. Welsh, W. Fulp, J. Dhillon, J. Torres-Roca, A. Giuliano, Z. Yuan, P. Spiess

PROFFERED PAPERS

CL 5: Proffered papers: Randomised Clinical Trials
10:30 - 11:45 | Gold Plenary
Chair: C. Rödel (Germany)
Chair: V. Valentini (Italy)

10:30 > A randomized phase III trial for alleviating radiation-induced xerostomia with chewing gum
J.K. Kaage (Denmark), L. Stenfeldt, B. Hyrup, C. Brink, J.G. Eriksen

OC-0264
OC-0265
OC-0266
OC-0267
OC-0268
OC-0269
10:42  >  Antihormones with or without irradiation in breast cancer: 10-year results of the ABCSG 8A trial
OC-0270

10:54  >  First randomized study of Hafnium nanoparticles activated by radiotherapy in soft tissue sarcoma
OC-0271

11:06  >  Hyoprofractionated vs conventional radiotherapy for prostate cancer: 7 yr results from the HYPROtrial
L. Incrocci (The Netherlands), K. De Vries, R. Wortel, E. Oomen, W. Heemsbergen, F. Pos
OC-0272

11:18  >  Organ preservation after chemoradiotherapy for rectal cancer: 5-year results of the GRECCAR2 trial
OC-0273

11:30  >  5x5 Gy and consolidation chemotherapy vs. chemoradiation for rectal cancer: a phase III study
K. Bujko (Poland), on behalf of the polish colorectal study group
OC-0274

PROFFERED PAPERS

CL 6: Proffered papers: Radiation and Targeted Agents
10:30 - 11:45  |  Brown 3
Chair: A. Fiorentino (Italy)
Chair: M. Hecht (Germany)

10:30  >  Safety and efficacy of concurrent SRT and targeted- or immunotherapy for melanoma brain metastases
OC-0275
10:40  >  Stereotactic radiosurgery plus immunotherapy or targeted therapy for brain metastases from NSCLC
   OC-0276

10:50  >  Interim safety analysis of RAPPORT trial - SABR with pembrolizumab in oligometastatic RCC
   OC-0277

11:00  >  Radiation-induced lymphopenia: Fractionation effect and association with infections and mortality
   C. Terrones Campos (Denmark), B. Ledergerber, I. Vogelius, M. Helleberg, L. Specht, J. Lundgren
   OC-0278

11:10  >  Concurrent and adjuvant effect of bevacizumab on hypofractionated tailor-made IMRT for glioblastomas
   OC-0279

11:20  >  ReRT with bevacizumab is related to lower rate of radionecrosis as reRT alone for recurrent glioma
   D. Fleischmann (Germany), J. Jenn, S. Corradini, V. Ruf, R. Forbrig, M. Unterrainer, N. Thon, F.W. Kreth, C. Belka, M. Niyazi
   OC-0280

11:30  >  Phase I/II trial of hafnium oxide nanoparticles activated by SBRT in the treatment of liver cancers
   OC-0281

PROFFERED PAPERS

BT 3: Prostate HDR brachytherapy
10:30 - 11:45 | Brown 2
Chair: C. Salembier (Belgium)
Chair: J. Van der Voort - van Zyp (The Netherlands)

10:30  >  HDR brachytherapy Monotherapy for prostate cancer: a one-day schedule phase II trial acute toxicity
   M. Jolicoeur (Canada), T.V. Nguyen, T. Derashodian, E. Hill, M. Mondat, M. Nachabe, E. Antebi, G. Wokil, R. Héliou
   OC-0282
10:40 > Pattern of relapse and dosimetric analysis of a single dose 19Gy HDR-brachytherapy phase II trial
OC-0283

10:50 > Radiomic and dosimetric analysis of urethral strictures following prostate HDR monotherapy
Y.M. Tsang (United Kingdom), D. Vignarajah, A. Mcwilliam, H. Tharmalingam, A. Choudhury, P. Hoskin
OC-0284

11:00 > Clinical outcomes of focal salvage high-dose-rate brachytherapy for radiorecurrent prostate cancer
M. Peters (The Netherlands), M.J. Van Son, M.A. Moerland, J.J.W. Lagendijk, J.R.N. Van der Voort van Zyp
OC-0285

11:10 > Focal high-dose-rate brachytherapy for localized prostate cancer: long-term clinical follow-up
M. Van Son (The Netherlands), M. Peters, M.A. Moerland, J.J.W. Lagendijk, J.R.N. Van der Voort van Zyp
OC-0286

11:20 > Dose to the dominant intraprostatic lesion using HDR vs. LDR monotherapy: Phase II Randomized trial
J. Crook (Canada), D. Batchelar, M. Hilts, D. Anderson, F. Bachand, S. Tissaverasinghe, B. Farnquist, T. Bainbridge, C. Araujo
OC-0287

11:30 > Long-term results of 15Gy HDRBT boost in intermediate risk-prostate cancer: Analysis of 500+ patients
OC-0288

PROFFERED PAPERS

PH 5: Proffered paper: Innovations in dosimetry and dose measurements
10:30 - 11:45 | Space 1-2
Chair: L. De Prez (The Netherlands)
Chair: A. Latorre Musoll (Spain)

10:30 > A water calorimeter as a primary standard for absorbed dose in magnetic fields
OC-0289

10:40 > Consistency of PTW30013 and FC65-G ion chamber magnetic field correction factors
S. Woodings (The Netherlands), B. Van Asselen, T. Van Soest, L. De Prez, J. Lagendijk, B. Raaymakers, J. Wolthaus
OC-0290
10:50 > Development of a deformable phantom for validation of adaptive irradiation methods in MRgRT
_A. Elter_ (Germany), S. Dorsch, P. Mann, A. Runz, W. Johnen, S. Klüter, C.P. Karger

11:00 > When we have to apply volume corrections in dosimetry?
_K. Zink_ (Germany), C. Andersen, L. De Prez, F. Delauny, S. Duane, C. Gomà, M. Pimpinella, P. Teles, J. Tikkanen, M. Pinto

11:10 > Cerenkov emission-based dosimetry is a promising perturbation-free technique
_Y. Zlateva_ (Canada), B. Muir, I. El Naqa, J. Seuntjens

11:20 > Separating initial and general recombination in reference dosimetry of proton pencil beam scanning
_J.B. Christensen_ (Denmark), E. Almhagen, L. Stolarczyk, M. Liszka, A. Vestergaard

11:30 > Comparison of PENH, FLUKA and Geant4/TOPAS for radiation transport calculations in proton beams
_K. Baumann_ (Germany), F. Horst, K. Zink, C. Gomà

PROFFERED PAPERS

PH 6: Proffered paper: X-ray guided tumour tracking
10:30 - 11:45 | Space 3-4
Chair: M. Aznar (United Kingdom)
Chair: S. Russo (Italy)

10:30 > Validation of motion-including dose reconstruction on a ground-truth time-resolved moving anatomy
_J. Bertholet_ (United Kingdom), B. Eiben, M.J. Menten, E.H. Tran, D.J. Hawkes, S. Nill, J.R. McClelland, U. Oelfke

10:40 > Detailed PTV margin assessment for liver SBRT with CBCT-guidance or realtime monitoring and gating
_E. Worm_ (Denmark), R. Hansen, M. Høyer, J. Bertholet, B. Weber, A. Dolcet, P.R. Poulsen

10:50 > MLC tracking for lung cancer SABR is clinically feasible: results of first-in-human clinical trial
_J. Booth_ (Australia), V. Caillet, A. Briggs, N. Hardcastle, D. Jayammane, K. Szymura, O. Ricky, T. Eade, P. Keall

11:00 > Fully automatic detection of heart irradiation in cine MV images during breast cancer radiotherapy
_P.R. Poulsen_ (Denmark), M.S. Thomsen, R. Hansen, E. Worm, E. Yates, H. Spejlborg, B. Offersen
11:10  >  Experimental validation of an MLC tracking treatment simulator with dose reconstruction  
A. Hagner (Denmark), T. Ravkilde, S. Skouboe, C.G. Muurholm, R. Hansen, E.S. Worm, P.R. Poulsen  
OC-0300

11:20  >  Real-time kV image guidance in the treatment of pancreatic SBRT: quantifying the purpose and impact  
B. Jones (USA), Y. Vinogradskiy, W. Campbell, Y. Ding, T. Schefter, K. Goodman, M. Miften  
OC-0301

11:30  >  Dose-guided motion management during liver SBRT delivery using real-time reconstructed tumor DVHs  
C.G. Muurholm (Denmark), T. Ravkilde, S. Skouboe, E. Worm, R. Hansen, M. Høyer, P.J. Keall, P.R. Poulsen  
OC-0302

PROFFERED PAPERS
RTT 3: Impact of variations on treatment planning  
10:30 - 11:45  |  Ambra 1-2  
Chair: M. Mascarin (Italy)  
Chair: L. Shelley (United Kingdom)

10:30  >  Dosimetric benefit of a clinically applied adaptive plan selection strategy for rectal cancer  
R. De Jong (The Netherlands), J. Visser, N. Van Wieringen, K. Crama, J. Wiersma, D. Geijsen, A. Bel  
OC-0303

10:45  >  Dosimetric impacts of VMAT FFF large-field on standard dose fractionation  
D. Julian (France), S. Muraro, O. Lauche, A. Moustamia, K. Serre  
OC-0304

11:00  >  Organ sparing potential and inter-fraction robustness of IMPT for cervical cancer  
OC-0305

11:15  >  Using CBCT and VelocityTM Software for delivered dose verification during head and neck radiotherapy  
L. Hay (United Kingdom), A. Duffton, P. McLoone, E. Miguel, S. Currie, C. Paterson  
OC-0306

11:30  >  Feasibility of cardiac sparing in isotoxic dose escalated radiotherapy for NSCLC  
L. Turtle (United Kingdom), A. Willett, J. Leadbetter, M. Brada, J. Fenwick  
OC-0307
POSTER VIEWING
Poster viewing 6: Radiobiological modelling and quantitative imaging
10:30 - 11:45 | Poster area
Chair: M. Philippens (The Netherlands)
Chair: I.R. Vogelius (Denmark)

> MRI based radiomics improves prognostic assessment in soft tissue sarcoma patients
  J. Peeken (Germany), A. Ott, M.B. Spraker, D. Münzel, M. Devecka, A. Thamer, M.A. Shouman, F. Nüsslin, N.A. Mayr, M.J. Nyflot, S.E. Combs

> Pretreatment ADC does not predict local recurrences in head and neck squamous cell carcinoma
  B. Peltenburg (The Netherlands), J. Driessen, J. Vasmel, R. De Bree, C. Terhaard, M. Philippens

> A field strength independent MR radiomics model for pathological complete response in rectal cancer

> MRI-based tumour control probability model in particle therapy

> Distributed learning in radiomics to predict overall survival in Head and Neck cancer

> Ventilation functional lung volumes obtained from SPECT and 4D-CT do not identify the same voxels
  T. Nyeng (Denmark), L. Hoffmann, K.P. Farr, A.A. Khalil, C. Grau, D.S. Møller

> Machine learning helps identifying relations and confounding factors in radiomics-based models
A risk assessment method including credible intervals for lymphatic metastatic spread for HNSCC
B. Pouymayou (Switzerland), O. Riesterer, M. Guckenberger, J. Unkelbach

Deep Learning Based Automatic Grading of Colon Cancer in Digitized Histopathology Images
S. Chen (China), J. Wang, W. Hu, Z. Zhang, M. Zhang, M. Xu, D. Huang, W. Sheng

PROFFERED PAPERS

**BT 4: Breast and Skin brachytherapy**
10:30 - 11:45 | Ambra 5-6
Chair: C. Gutiérrez Miguélez (Spain)
Chair: K. Lössl (Switzerland)

10:30 > 2nd Conservative Treatment for 2nd Breast Tumor Event: GEC-ESTRO Breast Cancer WG updated results

10:42 > 10-year clinical and cosmetic outcomes of high-dose-rate brachytherapy for early breast cancer
F. Arcidiacono (Italy), F. Trippa, P. Anselmo, M. Italiani, M. Casale, L. Draghini, S. Fabiani, A. Di Marzo, S. Terenzi, E. Maranzano

10:54 > Twelve-year clinical outcomes with APBI with interstitial multicathether brachytherapy after BCS

Comparing toxicities between multicathether brachytherapy and whole breast external beam radiotherapy
Abstract withdrawn

11:06 > Phase I-II multicenter trial Very Accelerated Partial Breast Irradiation (VAPBI): early effects
J. Guinot (Spain), V. Gonzalez-Perez, N. Meszaros, C. Polgar, T. Major, M.A. Santos, D. Najjari, C. Gutierrez

11:18 > HDR Skin applicator fabrication for clinical cases: handmade vs digitally designed and 3D printed
S. Nic A Bhaird (United Kingdom), R. Caines, C. Lee
11:30 > Perioperative interstitial high dose rate brachytherapy for keloids scars
V. Vera Barragam (Spain), M. De Juan Marín, S. Blanco Parajón, J. Fernández García, G. Juan Rijo, A.I. Alonso García

**PRESIDENTIAL SYMPOSIUM**

Presidential symposium
12:00 - 12:30 | Gold Plenary

12:00 > Speaker: U. Ricardi (Italy)

**AWARD LECTURE**

C. Regaud award Lecture
12:30 - 13:00 | Gold Plenary

12:30 > Chair: B. Slotman (The Netherlands)
12:35 > Is fractionation history?
Speaker: D. De Ruyscher (The Netherlands)

**SYMPOSIUM**

How to prevent burnout?
13:00 - 14:30 | Ambra 3-4
Chair: J. Bibault (France)
Co-chair: J. Bertholet (United Kingdom)

13:00 > Perspectives on burnout in the medical professions
Speaker: P. Franco (Italy)

13:15 > The PRO BONO survey (PROject on Burn-Out in RadiatioN Oncology)

13:30 > Report back from ESTRO mobility grants clinical: SRS & SBRT in the management of oligometastatic disease
Speaker: I. Zumbadze (Georgia)

13:45 > Report back from ESTRO mobility grants physics: Modelling Head and Neck Radiotherapy outcomes using radiomics biomarkers
14:00 > Science slam: To breathe or not to breathe. ESTRO Mobility Grant report
Speaker: S. Prcic (Slovenia)

14:15 > Discussion

SYMPOSIUM
The microbiome, inflammation and radiotherapy response
14:30 - 15:45 | Auditorium
Chair: M. Vooijs (The Netherlands)
Co-chair: A. Levy (France)

14:30 > Gut microbiota SCFAs modulate dendritic cell antigen presentation and impact radiotherapy
Speaker: A. Facciabene (USA), S. Rafail, M. Uribe-Herranz, C. Koumenis

14:48 > The Microbiome and Cancer Therapies
Speaker: V. Pazienza (Italy)

15:06 > Immune effects of the microbiome on cancer treatment
Speaker: M. Nuti (Italy)

15:24 > The Microbiome and treatment side-effects
Speaker: Y. Touchefeu (France)

SYMPOSIUM
Reducing the normal tissue effects of RT
14:30 - 15:45 | Brown 1

Salivary glands and brain tend to be most negatively affected by radiation-induced complications. This symposium will focus on the role of stem cells in preserving salivary gland function through regenerative medicine-based intervention after treatment or by using high-precision radiotherapy techniques to spare the stem cell region during radiotherapy delivery. The mechanisms and clinical consequences of radiation-induced neurocognitive dysfunction will be discussed, including the identification of new molecular targets as well as the use of modern neuroimaging technologies.

Chair: F. Paris (France)
Co-chair: L. Barazzuol (The Netherlands)

14:30 > Stem cell replacement to overcome RT induced xerostomia
Speaker: C. Von Buchwald (Denmark), C. Groenhoej, C.D. Lynggaard
14:48 > Reducing normal tissue damage by sparing of stem cells using protons  
*Speaker: P. Van Luijk (The Netherlands)*  

15:06 > Mechanisms of radiotherapy-induced neurocognitive decline  
*Speaker: L. Barazzuol (The Netherlands)*  

15:24 > Neurocognition and brain irradiation  
*Speaker: S. Deprez (Belgium)*  

**SYMPOSIUM**  
*Radiotherapy in the era of the silver Tsunami: Demographic characteristics of cancer patients*  
**14:30 - 15:45 | Gold Plenary**  
*Chair: J. Overgaard (Denmark)*  
*Co-chair: J. Van Loon (The Netherlands)*  

14:30 > Cancer epidemiology in Europe with focus on indications for RT  
*Speaker: J. Overgaard (Denmark)*  

14:45 > Does normal tissue in the elderly have different sensitivity and tolerance/are tumors in elderly of different biology and shall they be treated differently  
*Speaker: C. Herskind (Germany)*  

15:05 > Influence of age and comorbidity on outcome and compliance to RT  
*Speaker: C.R. Boeje (Denmark), J. Overgaard*  

15:25 > From geriatric assessment in radiation oncology to interventions: experience from the PIVOG trial  
*Speaker: D. Vordermark (Germany)*  

**DEBATE**  
*This house believes that margin reduction is the key to improved outcome*  
**14:30 - 15:45 | Brown 3**  
*Chair: V. Kouloulias (Greece)*  
*Co-chair: A.L. Appelt (United Kingdom)*  

14:30 > For the motion  
*V. Grégoire (France)*  

14:45 > Against the motion  
*E. Sterpin (Belgium)*
15:00 > For the motion  
*M. Van Herk (United Kingdom)*

15:15 > Against the motion  
*E. Troost (Germany)*

15:30 > Discussion

### DEBATE

**Which is the best brachytherapy technique to deliver partial breast irradiation?**  
**Pitfalls, results and current recommendations**  

*14:30 - 15:45 | Brown 2*

Chair: *E. Van Limbergen (Belgium)*  
Co-chair: *R. Galalae (Germany)*

14:30 > Postoperative multicatheter brachytherapy  
*Speaker: J. Hannoun-Levi (France)*  
*SP-0343*

14:45 > Intraoperative multicatheter brachytherapy  
*Speaker: K. Lössl (Switzerland)*  
*SP-0344*

15:00 > Single catheter balloon brachytherapy (Mammosite, Contura)  
*Speaker: P. Niehoff (Germany)*  
*SP-0345*

15:15 > Single catheter brachytherapy (SAVI) - Pitfalls, results and current recommendations  
*Speaker: A. Chichel (Poland)*  
*SP-0346*

15:30 > Discussion

### SYMPOSIUM

**Big data – big problems?**

*14:30 - 15:45 | Space 1-2*

Chair: *D. Sarrut (France)*  
Co-chair: *T. Janssen (The Netherlands)*

14:30 > The need and potential for use of big data for research and development of radiotherapy  
*Speaker: L. Wee (The Netherlands), J. Van Soest, I. Bermejo, R. Fijten, A. Dekker*  
*SP-0347*

14:55 > Challenges of collection, sharing and analysis of data at scale  
*Speaker: M. Modat (United Kingdom)*  
*SP-0348*

15:20 > Practicalities and issues of setting up the infrastructure to collect big data in a hospital environment  
*Speaker: G. Price (United Kingdom)*  
*SP-0349*
SYMPOSIUM
From grid therapy to microbeam radiotherapy
14:30 - 15:45 | Space 3-4

Invited speakers will cover the challenges of different clinical implementations of spatially fractionated radiation therapy (SFRT). Dr Schültke will address the origins of GRID therapy and discuss the use of synchrotron-generated x-ray microbeam (MRT) in SFRT. Dr Prezado will instead discuss the use of charged particles in minibeam (MBRT) and its potential advantage over MRT. Dr Lye will talk about the absolute dosimetry challenges in a synchrotron beam focusing on reference dosimetry in MRT and the choice of appropriate detectors. Finally, Dr Bartzsch will discuss the use of compact sources as well as the challenges of treatment planning in MRT.

Chair: J. Cashmore (United Kingdom)
Co-chair: M. Zeverino (Switzerland)

14:30 > Introduction to microbeam radiation therapy: radiosurgical grid therapy at the microscopic scale
Speaker: E. Schültke (Germany)

14:48 > Spatial fractionation of the dose: from photons to charged particles
Speaker: Y. Prezado (France)

15:06 > Dosimetry measurement in microbeam therapy
Speaker: J. Lye (Australia), P. Harty, D. Butler

15:24 > Compact microbeam sources and microbeam treatment planning
Speaker: S. Bartzsch (United Kingdom)

SYMPOSIUM
Focus on the lung
14:30 - 15:45 | Ambra 1-2

In this session adaptive radiotherapy in the treatment of lung cancer patients will be discussed. The session will start with a clinical overview of implementing image-guided adaptive radiotherapy in the treatment of lung cancer patients. With focus on the dosimetric and clinical outcome. After that practical guidelines will be highlighted how to evaluate the CBCT images and adapt the treatment plans following a specific workflow. The third speaker will weigh the benefits of IGRT and DIBH for motion management, compared to its limitations and evaluate on the feasibility of clinical implementation.
Chair: M. Mast (The Netherlands)
Co-chair: A. Botticella (France)

14:30 > Image-guided adaptive radiotherapy in the treatment of lung cancer patients
Speaker: M. Tvilum (Denmark), M. Marquard Knap, L. Hoffmann, A. Ahmed Khalil, C.M. Lutz, D. Sloth Møller

14:55 > Selection of lung cancer patients for adaptive radiotherapy using cone-beam CT imaging
Speaker: D. Hattu (The Netherlands)

15:20 > Image-guided radiotherapy and motion management in lung cancer
Speaker: V. Remberg Gram (Denmark)

SYMPOSIUM

Stronger together - news and projects in the young national societies
14:30 - 15:45 | Ambra 3-4

In this session, we will explore the perspectives of the young national societies from Poland, Spain and Romania and of the young radiation oncology group (YROG) of the EORTC. The main focus will be on the following questions: How did the groups establish themselves and what were the main developments and projects since? Where do these young clinical and scientific societies see their contributions to the field of radiation oncology? What are their current and planned projects, with a particular emphasis on collaborative projects with other young academic groups?

The speakers will address these questions in their lectures, followed by a panel discussion focussing on how to strengthen cooperation and collaboration in our field between young researchers and practitioners and their respective associations across Europe.

Chair: N. Ebert (Germany)
Co-chair: O. Kaidar-Person (Israel)

14:30 > Perspective of an established young society: the Spanish Young Society
Speaker: V. Morillo (Spain), R. Hernanz

14:45 > An emerging young society: Young Romanian Radiotherapists and Oncologists Group (YRROG)
Speaker: M. Zerbea (Romania)
15:00 > Creating a new young radiation oncology society - the case of Poland
Speaker: M. Spalek (Poland)  
SP-0359

15:15 > Working together across borders: Young Academics in Radiation Oncology
Speaker: C. Ostheimer (Germany)  
SP-0360

15:30 > Panel discussion

POSTER VIEWING
Poster viewing 7: CNS, Paediatrics, Haematology and Gynaecology
14:30 - 15:45 | Poster area
Chair: T. Boterberg (Belgium)
Chair: E. Fokas (Germany)

> Minor changes in neurocognition and quality of life after proton therapy for brain tumour patients
A. Dutz (Germany), L. Agolli, C. Valentini, R. Bütof, E.G.C. Troost, M. Baumann, A. Lühr, M. Krause, S. Löck  
PV-0361

> Long term outcomes of high-dose single-fraction radiosurgery for chordomas of the spine and sacrum
C.J. Jin (USA), J. Berry-Candelario, A. Reiner, E. Lis, M. Bilsky, I. Laufer, A. Schmitt, D. Higginson, Y. Yamada  
PV-0362

> Cognitive Outcomes after Conformal Radiotherapy in Pediatric Patients with Supratentorial Ependymoma
M. Mizumoto (Japan), Y. Oshiro, S. Wu, T.E. Merchant  
PV-0363

> Pulmonary function after high dose chemotherapy + total lung irradiation for pediatric Ewing sarcoma
B. Diletto (Italy), E. Pecori, N. Puma, O. Alessandro, S. Meroni, M. Podda, A. Busia, F. Allegrini, A.C. Ogliari, C. Materazzo, R. Boffi, E. Pignoli, R. Luksch, L. Gandola  
PV-0364

> Adoption of expansion margins to reduce the dose received by coronary arteries in lymphoma patients
PV-0365

> Helical Total Lymphoid Irradiation: radiotherapy still works in lymphoma transplantation
S. Vagge (Italy), F. Guolo, A. Dominietto, S. Agostinelli, M. Gustinu, A. Ibatici, F. Ballerini, R.M. Lemoli, E. Angelucci, M. Gobbi, R. Corvò  
PV-0366
> TMLI-based low-toxic myeloablative conditioning regimen in haploidentical HSCT for AML
C. Aristei, V. Lancellotta, A. Carotti, C. Zucchetti, S. Saldi (Italy), A. Pierini, L. Ruggeri, S. Piccinini, L. Amico, M. Iacco, A. Velardi, M.F. Martelli

> Persistence of late substantial patient reported symptoms (LAPERS): A report from the EMBRACE study

> Radiomics in Magnetic Resonance Imaging for prediction of radiotherapy outcomes in cervical cancer
N. Thanamitsomboon (Thailand), N. Kosaisawe, K. Thephamongkhol, P. Dankulchai

**MULTIDISCIPLINARY TUMOUR BOARD**

**Prostate cancer**
14:30 - 15:45 | Ambra 5-6
Chair: V. Khoo (United Kingdom)

> yESTRO
S. Buus (Denmark)

> Medical Oncologist
M. Tucci (Italy)

> Radiation Oncologist
G. De Meerleer (Belgium)

> Urologist
A. Briganti (Italy)

> Diagnostic radiologist
G. Petralia (Italy)

**NETWORKING SESSION**
Quiz and Young networking cocktail
16:00 - 17:00 | The Stage
**JOINT SYMPOSIUM**

**ESTRO-ASTRO: Translating discovery to cure**

16:15 - 17:30 | Auditorium

In this joint ESTRO-ASTRO session, a number of very exciting developments will be addressed. These included immunotherapy and the integration of immunotherapy with radiotherapy, development and implementation of the MRI-linac and adaptive radiotherapy, and the use of hypofractionation in breast cancer. These topics will be addressed by four excellent speakers who will not only address the basic aspects, but also the translation into clinical practice.

*Chair: B. Slotman (The Netherlands)*
*Chair: T. Eichler (USA)*

16:15 > Integrating Immunotherapy with Radiation  
*Speaker: J. Schoenfeld (USA)*  

16:33 > A retrospective overview and future perspectives of developments in MRgRT  
*Speaker: J. Lagendijk (The Netherlands)*  

16:51 > Real Time Adaptive Radiation, Lessons from Clinical Practice Teams  
*Speaker: M. Bassetti (USA)*

17:09 > Fractionation and breast cancer: towards more efficient schedules  
*Speaker: J.R. Yarnold (United Kingdom)*

**PROFFERED PAPERS**

**RB 4: Normal tissue effects of radiotherapy**

16:15 - 17:30 | Brown 1

*Chair: M. Vozenin (Switzerland)*
*Chair: V. Jendrossek (Germany)*

16:15 > GWAS identifies new susceptibility loci for late toxicity following prostate cancer radiotherapy  
*C. West (United Kingdom), S. Kerns, L. Dorling, G. Barnett, D. Dearmaley, L. Fachal, L. Veldeman, M. Parliament, A. Vega, A. Dunning, B. Rosenstein*  

16:27 > Improving lung cancer outcome by reducing normal lung tissue toxicity  
*L. Giuranno (The Netherlands), E. Roig Moreno, R. Iannone, M. Vooijs*
16:39 > Radio-selective effects of natural occurring muscle-derived dipeptide in A549 and normal cell lines
N. Ybarra (Canada), J. Seuntjens

16:51 > Individual radiation toxicity prediction, how does mtDNA influence normal tissue response?

17:03 > Regeneration after radiation and T cell-induced tissue injury is not enhanced by type III interferon
J. Fischer (Germany), C. Lin, S. Heidegger, A. Wintges, M. Schlapschy, M. Beudert, S.E. Combs, F. Bassermann, A. Skerra, T. Haas, H. Poeck

17:15 > Radiation response mechanisms of mesenchymal stem cells in dependence on their tissue of origin
N. Nicolay (Germany), A. Rühle, R. Lopez Perez, R. Saffrich, S. Sisombath, T. Trinh, J. Debus, P.E. Huber

PROFFERED PAPERS

CL 7: Proffered papers: GI
16:15 - 17:30 | Gold Plenary
Chair: K. Bujko (Poland)
Chair: F. Cellini (Italy)

16:15 > Dose response relation in esophageal cancer after neoadjuvant therapy: multi-institutional analysis

16:25 > Benchmark case in the ongoing PRODIGE 26 trial: quality assurance of dose escalated radiatherapy

16:35 > Patterns of local failure after SBRT for pancreatic cancer: implications of target volume design
X. Zhu (China), C. Yangsen, Z. Xianzhi, S. Yuxin, J. Xiaoping, Q. Shuiwang, C. Fei, J. Zhen, F. Fang, G. Lei, Z. Huojun
16:45 > Randomised controlled trial for dose-escalated radiotherapy in locally advanced rectal cancer

16:55 > QoL after multimodal treatment of rectal cancer with/without oxaliplatin (phase 3, CAO/ARO/AIO-04)

17:05 > Gender associated differences in outcome after neoadjuvant chemoradiotherapy for rectal cancer

17:15 > A PET-based patterns of failure analysis in the context of contouring guidelines in anal cancer
H. Dapper (Germany), K. Schiller, S. Münch, J. Peeken, K. Borm, W. Weber, S.E. Combs

PROFFERED PAPERS

CL 8: Proffered papers: Head and Neck
16:15 - 17:30 | Brown 3
Chair: J. Bourhis (Switzerland)
Chair: F. Duprez (Belgium)

16:15 > Radiotherapy with paclitaxel/cisplatin vs. fluorouracil/cisplatin for head and neck cancer

16:25 > A prospective multicenter DAHANCA study of hyperfractionated accelerated RT for Head and Neck cancer
M. Saksø (Denmark), E. Andersen, J. Bentzen, M. Andersen, J. Johansen, J. Overgaard, J.G. Eriksen
16:35 > Individualized prophylactic irradiation based on sentinel lymph node(s) identification in cN0 HNSCC
*E. Longton* (Belgium), G. Lawson, S. Deheneffe, B. Bihin, I. Mathieu, F. Hanin, T. Vander Borght, J. Daisne

16:45 > TCGA molecular subclassification is prognostic for LRC of HNSCC after postoperative RCTx

16:55 > Treatment outcome of 265 patients with sinonasal adenoid cystic carcinoma (ACC)
*S. Akhaba* (Germany), D. Ahmed, A. Mock, K. Lang, T. Held, K. Herfarth, S. Rieken, P. Plinkert, J. Debus, S. Adeberg

17:05 > Risk of ischemic cerebrovascular events is associated with carotid artery radiation dose

17:15 > Impact of sarcopenia on survival and late toxicity in head and neck cancer patients treated with RT

**PROFFERED PAPERS**

**BT 5: Optimising dose distribution**

16:15 - 17:30 | Brown 2

*Chair: A. De Leeuw* (The Netherlands)

*Chair: G. Fröhlich* (Hungary)

16:15 > Brachytherapy quality assurance in the PORTEC-4a trial for high-intermediate risk endometrial cancer

16:25 > Bi-objective optimization of dosimetric indices for HDR prostate brachytherapy within 30 seconds
*A. Bouter* (The Netherlands), T. Alderliesten, B.R. Pieters, A. Bel, Y. Niatsetski, P.A.N. Bosman
16:35 > Robust HDR prostate brachytherapy planning accounting for organ reconstruction settings
M.C. Van der Meer (The Netherlands), P.A.N. Bosman, B.R. Pieters, Y. Niatsetski, T. Alderliesten, A. Bel
OC-0396

16:45 > Intensity modulated brachytherapy for prostate cancer: plan quality, robustness and delivery time
G. Famulari (Canada), S.A. Enger
OC-0397

16:55 > Clinical introduction of 3D printed applicators for endocavitary and interstitial brachytherapy
OC-0398

17:05 > Comparison of high-dose interstitial brachytherapy vs. stereotactic treatment in patients with HCC
F. Walter (Germany), S. Gerum, J. Well, R. Shpani, N. Lukas, M. Cornelius, F. Streitparth, J. Rieke, C. Belka, S. Corradini
OC-0399

17:15 > Are prostate contours affected by the RO’s clinical experience in prostate HDR brachytherapy?
H. Lavoieegagnon (Canada), E. Poulin, A. Martin, L. Pilote, E. Vigneault, W. Foster, L. Archambault, F. Lacroix
OC-0400

PROFFERED PAPERS
PH 7: Proffered paper: Outcome modelling
16:15 - 17:30 | Space 1-2
Chair: T. Rancati (Italy)
Chair: C. Rønn Hansen (Denmark)

16:15 > Pre-treatment radiomic features predict individual nodal failure in head and neck cancer
OC-0401

16:25 > Tumour blood perfusion from baseline contrast-based MRI predicts radiation outcome in rectal cancer
K. Bakke (Norway), S. Melzer, E. Grøvik, A. Negård, H. Stein Harald, A. Hansen Ree, K. Gjesdal, K. Røe Redalen
OC-0402

16:35 > Type 4 TRIPOD external validation of a larynx survival model
OC-0403
16:45 > Dose to vascular calcifications is predictive for overall survival in lung cancer patients
E.M. Vasquez Osorio (United Kingdom), F. Brewster, A. McWilliam, A. Scaife, K. Banfill, A. Abravan, D. Cobben, C. Faivre-Finn, M. Van Herk
OC-0404

16:55 > Registry-based modelling of early mortality following radiotherapy of lung cancer
OC-0405

17:05 > Early survival prediction in non-small cell lung cancer with PET/CT size aware longitudinal pattern
M. Astaraki (Sweden), C. Wang, G. Bulza, I. Toma-Dasu, M. Lazzeroni, Ö. Smedby
OC-0406

17:15 > CT-based Radiomics for Risk Stratification in Prostate Cancer
OC-0407

PROFFERED PAPERS

PH 8: Proffered paper: Handling intra-fraction motion in MR guided RT
16:15 - 17:30 | Space 3-4
Chair: P. Keall (Australia)
Chair: J. Bertholet (United Kingdom)

16:15 > Impact of bladder filling on the magnitude of prostate intra-fraction motion assessed in 3D Cine-MR
OC-0408

16:25 > Comparison of different strategies to derive time-resolved volumetric MRI in MRI-guided radiotherapy
C. Paganelli (Italy), S. Portoso, N. Garau, G. Meschini, R. Via, P. Keall, M. Riboldi, G. Baroni
OC-0409

OC-0410

16:35 > Geometric efficacy of breath-hold gated MR-guided SABR for adrenal metastases
J. Van Sornsen de Koste (The Netherlands), M. Palacios, A. Bruynzeel, F. Spoelstra, B. Slotman, F. Lagerwaard, S. Senan
OC-0411
<table>
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<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>16:45</td>
<td>Dosimetric impact of marker-based intrafraction motion from cine-MRI in prostate SBRT</td>
<td>C. Kontaxis (The Netherlands), D. De Muinck Keizer, L. Kerkmeijer, H. De Boer, B. Raaymakers</td>
</tr>
<tr>
<td>17:05</td>
<td>Intrafraction displacement of breast tumor (bed) and individual axillary lymph nodes on cine MRI</td>
<td>M. Groot Koerkamp (The Netherlands), H.J.G.D. Van den Bongard, M.E.P. Philippens, J.J.W. Logendijk, A.C. Houweling</td>
</tr>
</tbody>
</table>

**PROFFERED PAPERS**

**RTT 4: Reducing uncertainties in volume definition**

16:15 - 17:30 | Ambra 1-2

**Chair:** TBC

**Chair:** D. Bodusz (Poland)

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>16:25</td>
<td>Assessing the quality of oesophageal cancer target volume delineation in the SCOPE1 trial</td>
<td>S. Cox (United Kingdom), S. Gwynne, J. Staffurth, T. Crosby</td>
</tr>
<tr>
<td>16:35</td>
<td>Impact of CT myelogram vs. MR imaging on spinal cord delineation in spine stereotactic radiosurgery</td>
<td>C.J. Lin (USA), N. Tyagi, E. Lis, M. Patel, J. Haseltine, P. McLaughlin, X. Cai, X. Huang, Y. Yamada</td>
</tr>
<tr>
<td>16:45</td>
<td>Residual misalignment of supraclavicular lymph nodes for NSCLC patients, to determine GTV-PTV margin</td>
<td>J. Stam, S. Gerrets (The Netherlands), R. De Haan, J. Belderbos, E. Damen, P. Remeijer</td>
</tr>
</tbody>
</table>
17:05  >  How accurate is automatic determination of the Mid-Ventilation position and tumour motion?

A. Van Nunen (The Netherlands), D. Schuring

OC-0420

17:15  >  Stage migration in planning PET/CT scans in lung cancer patients referred to radiochemotherapy

S. Kivistik (Estonia), L. Randle, M. Vardja, A. Aasa, J. Jaal

OC-0421

● POSTER VIEWING

Poster viewing 8: TP Developments
16:15 - 17:30 | Poster area
Chair: U. Oelfke (United Kingdom)
Chair: P. Aljosa (Slovenia)

> Consequences of respiratory motion variability in lung 4DMRI datasets

M. Krieger (Switzerland), A. Giger, D.C. Weber, A.J. Lomax, Y. Zhang

PV-0422

> Fast automated IMRT sequencing using deep-learned dose from generative adversarial networks

C. Kontaxis (The Netherlands), G. Bol, J. Lagendijk, B. Raaymakers

PV-0423

> Deliverable multi-criteria navigation for VMAT in RayStation

R. Bokrantz (Sweden)

PV-0424

> Automated configuration of an algorithm for fully automated Pareto-optimal treatment planning

R. Van Haveren (The Netherlands), B. Heijmen, S. Breedveld

PV-0425

> First system for fully automated multi-criterial planning for an MR-Linac applied to rectal cancer

R. Bijman (The Netherlands), L. Rossi, T. Janssen, P. De Ruijter, C. Carbaat, B. Van Triest, S. Breedveld, J.J. Sonke, B. Heijmen

PV-0426

> Improving cumulative dose evaluation for re-irradiation: first results from the STRiDeR project

L. Murray (United Kingdom), S. Gregory, M. Nix, M. Aldred, L. Aspin, J. Uzan, J. Lilley, B. Al-Qaisieh, A. Appelt

PV-0427

> A multi-centre study for implementation of MRI-only prostate planning

P. Greer (Australia), P. Pichler, T. Young, J. Martin, P. Hunter, C. Wratten, J. Denham, L. Holloway, M. Sidhom, J. Dowling

PV-0428

> A machine learning method to improve duodenum dose prediction for pancreatic cancer radiotherapy

Z. Feng (China), K. Ding

PV-0429
Automated IMRT planning integrating knowledge-based model with Auto-Planning for cervical cancer

C. Tao (China), B. Liu, C. Li, J. Zhu, J. Lu, Y. Yin

PROFFERED PAPERS

BT 6: Innovative and uncommon indications
16:15 - 17:30 | Ambra 5-6
Chair: P. Petric (Denmark)
Chair: A. Stewart (United Kingdom)

16:15 > Esophageal brachytherapy: Institut Gustave Roussy’s experience
M. Kissel (France), E. Chirat, P. Annede, P. Burtin, I. Fumagalli,
E. Bronsart, F. Mignot, A. Schernberg, I. Dumas, C. Haie-Meder,
C. Chargari

16:25 > Endoluminal brachytherapy with induction chemotherapy and
definitive chemoradiation in Ca. Esophagus
S. Raghunath (India), R. Tiwari, G. Narayanan, B. Vishwanathan,
R. Sultana

16:35 > Feasibility and early clinical response of interstitial BT for
hepatocellular carcinoma
S. Corradini (Germany), F. Walter, C. Maihöfer, M. Rottler, J. Well,
L. Nierer, M. Seidensticker, R. Seidensticker, T. Streitparth,
F. Streitparth, J. Ricke, C. Belka

16:45 > Sphincter function after EBRT and Pulsed Dose Rate
Brachytherapy (PDR-BT) in anal cancer patients
T. Brahmi (France), A.A. Serre, F. Gassa, M. Sandt, F. Lafay, P. Pommier

16:55 > Contact X-Ray Brachytherapy (CXB) after local excision (LE) for
early rectal adenocarcinoma
J. Gérard (France), S.M. Arthur, F. Antoine, D. Amandeep

17:05 > 13 SCC penis treated with HDR brachytherapy, results and
dosimetric analysis
M. Marban Orejas (Canada), J. Crook, M. Keyes, D. Batchelor,
R. Dubash, F. Bachand

17:15 > Update of moderate dose-escalation with perioperative HDR
brachytherapy in soft tissue sarcomas
X. Chen (Spain), A. Montero, J. De las Heras, E. Sanchez, O. Hernando,
M. Lopez, J. Garcia, M.A. De la Casa, D. Zucca, R. Ciervide,
M. Garcia-Aranda, J. Valero, R. Alonso, J. Marti, L. Alonso,
P. Garcia de Acilu, P. Fernandez-Leiton, C. Rubio
AWARD LECTURE
J. Overgaard Legacy Award Lecture
17:40 - 18:00 | Gold Plenary

17:40 > Chair: J. Overgaard (Denmark)
17:45 > Back to the future, a tale of volumes
P. Poortmans (France)

AWARD LECTURE
Honorary Physicist Award Lecture
18:00 - 18:20 | Gold Plenary

18:00 > Chair: N. Jornet (Spain)
18:05 > Precision medicine – an opportunity for medical physics and radiation oncology
Speaker: M. Guckenberger (Switzerland)
ESTRO SCHOOL OF RADIOTHERAPY AND ONCOLOGY

www.estro.org

POSTGRADUATE COURSES IN EUROPE

- **Image-Guided Radiotherapy in Clinical Practice**
  17-21 February 2019 | Porto, Portugal

- **Basic Clinical Radiobiology**
  3-7 March 2019 | Brussels, Belgium

- **Comprehensive and Practical Brachytherapy**
  3-7 March 2019 | Athens, Greece

- **Particle Therapy**
  18-22 March 2019 | Groningen, The Netherlands

- **Lower GI – Technical and Clinical Challenges for Radiation Oncologists**
  20-22 March 2019 | Amsterdam, The Netherlands

- **Upper GI – Technical and Clinical Challenges for Radiation Oncologists**
  23-26 March 2019 | Amsterdam, The Netherlands

- **Foundation of Leadership in Radiation Oncology**
  26 April 2019 | Milan, Italy

- **Advanced Skills in Modern Radiotherapy**
  19-23 May 2019 | Brussels, Belgium

- **Multidisciplinary Management of Prostate Cancer**
  19-23 May 2019 | Pisa, Italy

- **Dose Modelling and Verification for External Beam Radiotherapy**
  19-23 May 2019 | Lisbon, Portugal

- **Target Volume Determination – From Imaging to Margins**
  2-5 June 2019 | Athens, Greece

- **IMRT and Other Highly Conformal Techniques in Practice**
  2-6 June 2019 | Budapest, Hungary

- **Brachytherapy for Prostate Cancer**
  13-15 June 2019 | Prague, Czech Republic

- **Evidence Based Radiation Oncology**
  24-29 June 2019 | Montpellier, France

- **Clinical Practice and Implementation of Image-Guided Stereotactic Body Radiotherapy**
  1-5 September 2019 | Florence, Italy

- **Physics for Modern Radiotherapy: A joint course for clinicians and physicists**
  8-12 September 2019 | Riga, Latvia

- **Advanced Treatment Planning**
  22-26 September 2019 | Budapest, Hungary

- **Imaging for Physicists**
  29 September - 3 October 2019 | Manchester, UK

- **Image-Guided Radiotherapy and Chemo-therapy in Gynaecological Cancer: Focus on MRI Based Adaptive Brachytherapy**
  12-16 October 2019 | Cluj, Romania

- **Comprehensive Quality Management in Radiotherapy – Quality Assurance and Improvement**
  13-16 October 2019 | Dublin, Ireland

- **Best Practice in Radiation Oncology**
  Train the RTT (Radiation Therapists) Trainers - Part II
  14-16 October 2019 | Vienna, Austria

- **Positioning and Immobilisation for Radiation Therapy**
  19-20 October 2019 | Brussels, Belgium

- **Multidisciplinary Management of Breast Cancer**
  27-30 October 2019 | Budapest, Hungary

- **Research Course in Radiation Oncology**
  How to develop research/validation programmes when implementing new technology? Edition 1: MRI Linac
  3-6 November 2019 | Madrid, Spain

- **Research Course in Radiotherapy Physics**
  3-6 November 2019 | Madrid, Spain

- **ESTRO/ESOR Multidisciplinary Approach of Cancer Imaging**
  4-5 November 2019 | Amsterdam, The Netherlands

- **Multidisciplinary Management of Non-Melanoma Skin Cancer**
  7-9 November 2019 | Brussels, Belgium

- **Multidisciplinary Management of Brain Tumours**
  1-3 December 2019 | Brussels, Belgium

POSTGRADUATE COURSES OUTSIDE EUROPE

- **3D Radiotherapy with a Special Emphasis on Implementation of MRI/CT Based Brachytherapy in Cervical Cancer**
  14-17 March 2019 | Rishikesh, India

- **Palliative Care and Radiotherapy**
  A course on prognosis, symptom control, re-irradiation, oligometastases
  26-28 March 2019 | Manila, Philippines

- **Combined Drug-Radiation Treatment: Biological Basis, Current Applications and Perspectives**
  7-9 June 2019 | Seoul, South Korea

- **Multidisciplinary Management of Head and Neck Oncology**
  28-31 October 2019 | Mexico City, Mexico

- **Advanced Technologies**
  3-6 November 2019 | Shenzhen, China

- **Advanced Technologies**
  9-12 November 2019 | India, venue to be announced

PRE-MEETING COURSES

Eight Pre-Meeting Courses at ESTRO 38
26 April 2019 | Milan, Italy

UNDERGRADUATE COURSES

- **Medical Science Summer School Oncology for Medical Students**
  15-27 July 2019 | Vienna, Austria

- **ESO-ESSO-ESTRO Multidisciplinary Course in Oncology for Medical Students**
  26 August - 6 September 2019 | Turin, Italy

- **Multidisciplinary Cancer Treatment**
- **Radiotherapy Treatment Planning and Delivery**
- **Biology**
- **Imaging**
- **Research**
- **Best Practice**
Monday 29 April 2019

• TEACHING LECTURE

Extreme hypofractionation in the treatment of localized prostate cancer
08:00 - 08:40 | Auditorium
Chair: A. Bossi (France)

08:00 > Extreme hypofractionation in the treatment of localized prostate cancer
Speaker: F. Alongi (Italy)

SP-0439

• TEACHING LECTURE

Immunotherapy and Radiotherapy: challenges and opportunities
08:00 - 08:40 | Ambra 5-6
Chair: R. Orecchia (Italy)

08:00 > Immunotherapy and Radiotherapy: challenges and opportunities
Speaker: S. Formenti (USA)

SP-0440

• TEACHING LECTURE

Inhibiting mitochondrial TCA cycle unravels tumor growth inhibitory and radi-osensitizing effects
Chair: M. Koritzinsky (Canada)

08:00 > Inhibiting mitochondrial TCA cycle unravels tumor growth inhibitory and radi-osensitizing effects
Speaker: O. Feron (Belgium)

SP-0441

• TEACHING LECTURE

Machine learning in radiomic analyses to predict radiotherapy outcome
08:00 - 08:40 | Gold Plenary
Chair: P. Lambin (The Netherlands)

08:00 > Machine learning in radiomic analyses to predict radiotherapy outcome
Speaker: S. Löck (Germany)

SP-0442
**TEACHING LECTURE**

**Importance of volumetric staging and biological dose inhomogeneity in IMRT**

*08:00 - 08:40 | Brown 3*

*Chair: D. Gabrys (Poland)*

08:00 > Importance of volumetric staging and biological dose inhomogeneity in IMRT  
*Speaker: B. Maciejewski (Poland)*

**TEACHING LECTURE**

**In-vivo dosimetry: Possibilities and Pitfalls**

*08:00 - 08:40 | Space 1-2*

*Chair: N. MacDougall (Gibraltar)*

08:00 > In-vivo dosimetry: Possibilities and Pitfalls  
*Speaker: V.N. Hansen (Denmark)*

**TEACHING LECTURE**

**The vital role of physicists in clinical trials: from design to data analysis**

*08:00 - 08:40 | Space 3-4*

*Chair: S. Kry (USA)*

08:00 > The vital role of physicists in clinical trials: from design to data analysis  
*Speaker: A.L. Appelt (United Kingdom)*

**Teaching Lecture**

**New developments in the treatment of brain metastases: better prognostic tools, improved outcomes**

*08:00 - 08:40 | Ambra 1-2*

*Chair: B. Wisgrill (Austria)*

08:00 > New developments in the treatment of brain metastases: better prognostic tools, improved outcomes  
*Speaker: C. Nieder (Norway)*

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**SP-0443**

**SP-0444**

**SP-0445**

**SP-0446**
SYMPOSIUM
Radiotherapy in bladder cancer: Standard of care and future perspectives
08:45 - 10:00 | Auditorium

This session will cover the role of Radiotherapy in the management of muscle-invasive bladder cancer (MIBC). The data available comparing cystectomy vs radio-chemotherapy in MIBC, particularly focusing on the importance of the correct evaluation of the results, based on retrospective analysis, where similar oncological outcome has been reported between the two modalities (also in elderly population). External beam radiotherapy has evolved enormously in the past 10 years through technological innovation resulting in improved quality of bladder external beam radiotherapy. Besides technological innovation radiosensitization strategies have also let to improvement in outcome. A review and consideration of these developments will be presented. An underused, but efficacious technique is brachytherapy for limited stage MIBC. Data will be presented on the historical open retro-pubic approach as well as the laparoscopic, robot-assisted implantation technique, highlighting the importance of a multidisciplinary approach.

Chair: B. Pieters (The Netherlands)
Co-chair: G. Marvaso (Italy)

08:45 > Do we have the evidence for radiation therapy as standard of care in bladder cancer?
Speaker: V. Fonteyne (Belgium)  
SP-0447

09:03 > Bladder brachytherapy: an undoubtable importance of close multidisciplinary collaboration
Speaker: E. Van Der Steen-Banasik (The Netherlands), B. Oosterveld, M.A.D. Haverkort, C. Wijburg, G. Smits  
SP-0448

09:21 > Stepwise development of personalized radiation therapy for bladder cancer
Speaker: V. Kong (Canada), P. Chung, S. Chen, T. Craig, T. Rosewall  
SP-0449

09:39 > Radiosensitization strategies for the treatment of bladder cancer
Speaker: A. Choudhury (United Kingdom)  
SP-0450

JOINT SYMPOSIUM
ESTRO-EACR: Radio-immunotherapy: from concept to clinical practice
08:45 - 10:00 | Ambra 5-6
Chair: U. Ricardi (Italy)
Chair: A. Bardelli (Italy)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>08:45</td>
<td>Opposition and opportunity for immunotherapy via the irradiated tumor microenvironment</td>
<td>MH Barcellos-Hoff (United States)</td>
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<tr>
<td>09:03</td>
<td>Radiotherapy and cisplatin increase immunotherapy efficacy by enabling local and systemic intratumoral T-cell activity</td>
<td>P. Kroon, E. Frijlink, V. Iglesias-Guimarais, A. VOLKOV, M. Van Buuren, T. Schumacher, M. Verheij, J. Borst, I. Verbrugge (The Netherlands)</td>
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<td>09:39</td>
<td>Trial design: early clinical studies and learning from the laboratory</td>
<td>T. Illidge (United Kingdom)</td>
</tr>
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**SYMPOSIUM**

**Tumor Metabolism and Radiotherapy**

**08:45 - 10:00 | Brown 1**

As tumors have a different regulated metabolism that drives tumor growth and influence treatment response, manipulation of the metabolism can potentially benefit different treatment modalities such as radiotherapy. In this session new approaches, insights and clinical promises to impair different aspects of the tumor metabolism, hypoxia tolerance and associated DNA damage will be discussed.

*Chair: J. Bussink (The Netherlands)*  
*Co-chair: M. Van Gisbergen (The Netherlands)*

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<tr>
<th>Time</th>
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<tr>
<td>08:45</td>
<td>Inhibition of glycolysis and redox metabolic pathways in cervical cancer</td>
<td>J. Schwarz (USA)</td>
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<tr>
<td>09:03</td>
<td>Sex differences in cancer metabolism: implications for therapy</td>
<td>J. Ippolito (USA)</td>
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<tr>
<td>09:21</td>
<td>Metabolic targeting of tumor cells</td>
<td>C. Pecqueur (France)</td>
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<tr>
<td>09:39</td>
<td>Targeting metabolism to sensitize hypoxic tumor cells</td>
<td>M. Koritzinsky (Canada)</td>
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JOINT SYMPOSIUM

ESTRO-ESR: Current status and future challenges in MR-integrated radiotherapy
08:45 - 10:00 | Gold Plenary
Chair: B. Slotman (The Netherlands)
Chair: L. Derchi (Italy)

08:45  >  Clinical status of MR-integrated photon therapy  
Speaker: L. Boldrini (Italy)  
SP-0459

09:03  >  Integration of MR and particle therapy – how far are we?  
Speaker: A. Hoffmann (Germany)  
SP-0460

09:21  >  MR-based functional imaging  
Speaker: R. Beets-Tan (The Netherlands)  
SP-0461

09:39  >  Adaptive workflow - current status and challenges  
Speaker: S. Kharuzhyk (Belarus)  
SP-0462

SYMPOSIUM

Improved outcome by smarter use of radiotherapy
08:45 - 10:00 | Brown 3

The symposium ‘Improved outcome by smarter use of radiotherapy’ will address the changing role of radiotherapy in the management of three important oncological indications. Emerging insights into individual risk factors that determine locoregional tumor control and toxicity, the availability of new imaging technologies and better understanding of the underlying radiobiology, have allowed the clinical introduction of new treatment concepts, including dose and volume reduction, adaptive strategies and multimodal combinations. These new approaches of individualized and smarter use of radiotherapy will be discussed in the context of breast cancer, head and neck cancer, and soft tissue sarcoma.

Chair: M. Verheij (The Netherlands)
Co-chair: N. Ebert (Germany)

08:45  >  Towards less radiotherapy in breast cancer treatment  
Speaker: I. Meattini (Italy)  
SP-0463

09:10  >  Image-guided elective neck irradiation in Head and Neck cancer  
Speaker: A. Al-Mamgani (The Netherlands)  
SP-0464

09:35  >  Adapting RT in soft tissue sarcoma: the influence of anatomy, biology and re-sponse  
Speaker: B. O’Sullivan (Canada)  
SP-0465
SYMPOSIUM

Quantitative Imaging for Radiation Oncology
08:45 - 10:00 | Space 1-2

In this session the possibilities and challenges associated with quantitative imaging for radiation oncology will be presented. Potential clinical applications and efforts to standardize imaging parameters, test of repeatability/reproducibility across vendors and sites, as well as quality assurance will be discussed. In short, how far away is clinical implementation of quantitative imaging in radiation oncology, and what are the challenges we face toward this goal?

Chair: K. Tanderup (Denmark)
Co-chair: T. Hompland (Norway)

08:45 > A critical look of quantitative dynamic contrast enhanced MRI: from QIBA guidelines to clinical implementation
Speaker: C. Chung (USA)

09:10 > Quality assurance for quantitative MRI in a multicenter trial
Speaker: P. Van Houdt (The Netherlands)

09:35 > Quality assurance and validation for quantitative PET in multicenter trials
Speaker: M. Lubberink (Sweden)

SYMPOSIUM

Advanced methods to account for proton range uncertainties in treatment planning
08:45 - 10:00 | Space 3-4

In proton radiotherapy highly-modulated dose distributions tailored to the individual patient can eradicate the disease while sparing the majority of surrounding tissue. Unfortunately, the accuracy of proton radiotherapy deliveries is compromised by uncertainties, most prominently the range uncertainty. In this symposium the sources of range uncertainties and their clinical impact will be briefly discussed. Next, advanced imaging options ranging from dual or multi-energy CT to proton radiograph/CT, that improve the estimation of stopping powers and thus reduce proton range uncertainty, will be highlighted. Finally, current research in the areas of robust plan optimisation and adaptive proton therapy will be disseminated.

Chair: K. Parodi (Germany)
Co-chair: M. Fast (The Netherlands)
08:45 > Mitigation of range uncertainties with probabilistic IMPT optimization
Speaker: M. Bangert, N. Wahl, H. Wieser (Germany)  SP-0469

09:03 > Multi-energy CT for improved SPR determination: Proposed methods and their experimental validation

09:21 > Treatment planning and verification with proton CT and proton radiography to reduce range uncertainties in proton therapy
Speaker: R. Schulte (USA)  SP-0471

09:39 > Accounting for organ motion in proton therapy at the planning stage
Speaker: T. Lomax (Switzerland)  SP-0472

SYMPOSIUM
Care, communication and new technology in brain radiotherapy
08:45 - 10:00 | Ambra 1-2

This session will start with an overview of SRS peer reviewed published evidence and the technology available to treat multiple brain metastases. Key technical factors for accurate application of the prescription including management of tumour margins, the impact on tumour margins of location and stability of the isocentre and simple, accurate and quick measurement of isocentric characteristics. The session will conclude with a novel approach to the provision of social support for patients and carers through network meetings. The process of preparing and conducting network meetings will be discussed and their impact on the patient experience.

Chair: M. Coffey (Ireland)
Co-chair: E.R. Andersen (Norway)

08:45 > Stereotactic radiosurgery for brain metastases: treating multiple lesions
Speaker: A. Williamson (United Kingdom)  SP-0473

09:10 > Linac isocentric accuracy and its influence on treatment margins
Speaker: E. Kouwenhoven (The Netherlands), J. Van Egmond, J. Van Santvoort  SP-0474

09:35 > Communication care and side effect - brain radiotherapy - What`s the role of the RTT?
Speaker: H. Simonsen (Denmark)  SP-0475
POSTER VIEWING

Poster viewing 9: Applied dosimetry
08:45 - 10:00 | Poster area
Chair: H. Palmans (Austria)
Chair: S. Ceberg (Sweden)

- Effect of updated ICRU90 data on Monte Carlo kQ calculations: results from the Australian PSDL
  M. Hanlon (Australia), C. Oliver, T. Bailey, J. Lye, D. Butler
  PV-0476

- A Monte Carlo study of collimator angle dependence of extra focal dose during VMAT
  E. Ghareeb (Portugal), J. Lencart, J. Oliveira, J. A. M. Santos
  PV-0477

- A new tool to test tracking systems based on tumour detection
  S. Pallotta (Italy), S. Calusi, L. Masi, L. Marrazzo, C. Talamonti, L. Livi, G. Simontacchi, L. Foggi, R. Lisci
  PV-0478

- Development of an anthropomorphic multimodality pelvis phantom for PET/MRI- and CT-based RT planning
  PV-0479

- Plastic-scintillator based PET detector for proton beam therapy range monitor-ing: preliminary study
  A. Rucinski (Poland), J. Baran, M. Garbacz, M. Pawlik-Niedzwiecka, P. Moskal
  PV-0480

- IMRT/VMAT QA in heterogeneous media: first experience with a 2D solid-state detector prototype
  PV-0481

- Dosimetric verification of Elekta MR-linac adaption workflow using 3D dosime-ters
  F. Costa (United Kingdom), I. Hanson, S. Doran, J. Adamovics, S. Nill, U. Oelfke
  PV-0482

- Pre-treatment portal dosimetry for the MR-Linac
  I. Torres Xirau (The Netherlands), I. Olaciregui-Ruiz, A. Mans, U. A. van der Heide
  PV-0483

- In vivo dosimetry using CBCT and EPID device: analysis of sources of errors in VMAT treatments
  S. Bresciani (Italy), L. Botez, A. Miranti, M. Stasi
  PV-0484
**JOINT SYMPOSIUM**

**ESTRO-IAEA: The role of hypofractionation in current radiotherapy and its impact in planning radiotherapy services**

10:30 - 11:45 | Auditorium

*Chair: N. Jornet (Spain)  
Chair: E.H. Zubizarreta (Austria)*

10:30 > Hypofractionation from a radiobiological perspective  
*Speaker: M.R. Horsman (Denmark)*  
SP-0485

10:48 > Clinical outcome and effectiveness of extreme hypofractionation together with the different scenarios in terms of resources and costs  
*Speaker: J.A. Polo Rubio (Austria)*  
SP-0486

11:06 > How we deliver extreme-hypofractionated radiotherapy with current technology - a physicist perspective  
*Speaker: J. Cuijpers (The Netherlands)*  
SP-0487

11:24 > What’s the impact of extreme-hypofractionated radiotherapy in operating a radiotherapy department - an RTT perspective  
*Speaker: Y.M. Tsang (United Kingdom)*  
SP-0488

**DEBATE**

**Which is the best technique for the delivery of APBI?**

10:30 - 11:45 | Ambra 5-6

Great interest is being directed toward Accelerated Partial Breast Irradiation (APBI), compared to whole-breast irradiation after breast-conserving surgery, in selected women with early low-risk breast cancer. The aim of this debate is to discuss with experts about the pros and cons of the two main APBI techniques: multicatheter interstitial brachytherapy and external beam radiation therapy. The second part of the session will focus on physics and radiobiology aspects of both techniques, in order to assist personalised decision-making for each patient.

*Chair: C. Polgár (Hungary)  
Co-chair: K. Cao (France)*

10:30 > This house believes that the EBRT is the best technique  
*Speaker: C. Coles (United Kingdom)*  
SP-0489

10:45 > This house believes that the multicatheter brachytherapy is the best technique  
*Speaker: V. Strnad (Germany)*  
SP-0490
11:00 > For which patient which technique is the best from view of the physicist?
Speaker: T. Major (Hungary)
SP-0491

11:15 > Radiobiology of APBI: aspects and limitations
Speaker: J. Guinot (Spain), V. Gonzalez-Perez
SP-0492

11:30 > Discussion

PROFFERED PAPERS
IND: Biomarkers and bioimaging in radiotherapy
10:30 - 11:45 | Brown 1
Chair: Y. Belkacemi (France)
Chair: K. Røe Redalen (Norway)

10:30 > CTCs in patients with brain metastases under radiotherapy: do they indicate treatment response?
C. Petersen (Germany), Y. Goy, A. Krüll, K. Pantel, H. Wikman, K. Borgmann
OC-0493

10:40 > Genetic variants associated with radiation-induced xerostomia in head and neck cancer: a GWA study
I.A. Langendijk (The Netherlands)
OC-0494

10:50 > Use of radiomics in the recurrence patterns after IMRT for head and neck cancer: a preliminary study
S. Li (China), K. Wang, Z. Hou, J. Yang, W. Ren, S. Gao, F. Meng, P. Wu, B. Liu, J. Liu, J. Yan
OC-0495

11:00 > Deep-learning based estimation of loco-regional control for patients with locally advanced HNSCC
OC-0496

11:10 > Predictive modelling of risk of breast fibrosis at >10 years after radiotherapy using the RILA assay
C. Herskind (Germany), P. Seibold, I. Helmbold, E. Sperk, F.A. Giordano, S. Behrens, F. Wenz, J. Chang-Claude, M.R. Veldwijk
OC-0497
11:20 > Results of the prospective trial evaluating radiation-induced lymphocyte apoptosis and prostate RT

11:30 > Neutrophilia as prognostic factor for outcome in the CAO/ARO/AIO-04 phase 3 rectal cancer trial

● PROFFERED PAPERS

CL 9: Proffered papers: Late breaking abstracts
10:30 - 11:45 | Gold Plenary
Chair: B. Slotman (The Netherlands)
Chair: Y. Lievens (Belgium)

10:30 > Radical Hemi-thoracic Radiotherapy vs. Palliative Radiotherapy for Malignant Pleural Mesothelioma

10:42 > Chemo-RT plus induction or consolidation chemotherapy for rectal cancer: a randomised phase 2 trial

10:54 > Role of consolidation RT to bulky lesions of advanced Hodgkin lymphoma: results of FIL HD0801 trial
11:06 > Phase III trial of Prophylactic Cranial Irradiation with or without Hippocampus Avoidance in SCLC
OC-0503

11:18 > Randomized phase 2 trial of adaptive dose painting vs. standard IMRT for head and neck cancer
F. Duprez (Belgium), J. Daisne, D. Berwouts, W. De Gersem, I. Goethals, L. Olteanu, T. Vercauteren, W. De Neve
OC-0504

11:30 > Evidence-based practice in the global setting: an international survey of hypofractionation
D. Rodin (Canada), M. Osama, B. Tawk, S. Grover, F. Moraes, M.L. Yap, E. Zubizarreta, Y. Lievens
OC-0505

PROFFERED PAPERS

CL 10: Proffered papers: Pelvic Tumours
10:30 - 11:45 | Brown 3
Chair: S.K. Shrivastava (India)
Chair: K. Vandecasteele (Belgium)

10:30 > Patient-reported sexual outcomes after definitive RCHT+IGABT for cervical cancer (EMBRACE study)
OC-0506

10:40 > Risk factors for bladder fistula, bleeding and cystitis in cervix cancer: an EM-BrACE analysis
OC-0507

10:50 > MRI guided chemoradiation and brachytherapy for postsurgical vaginal recurrences: A phase II study
OC-0508
11:00 > MRI radiomics analysis for predicting prognosis of cervical cancer after definitive radiotherapy
A. Takada (Japan), H. Yokota, M. Watanabe, T. Horikoshi, T. Uno

11:10 > MRI radiomics to predict tumour response in patients with locally advanced rectal cancer
P. Bulens (Belgium), A. Couwenberg, M. Intven, A. Debuquoy, V. Vandecaveye, M. Philippens, P. Mukherjee, O. Gevaert, K. Haustermans

11:20 > Organ Preservation with Image Guided and Adaptive Brachytherapy for Patients with Rectal Cancer
A. Garant (USA), S. Magnan, S. Devic, A. Martin, M. Boutros, C. Vasilevsky, S. Ferland, A. Bujold, S. Desgroisseilliers, H. Sebajang, C. Richard, T. Vuong

11:30 > Radiochemotherapy and hyperthermia in locally advanced rectal cancer - A prospective phase II trial
C. Gani (Germany), U. Lampecht, M. Bitzer, J. Gellermann, O. Voigt, A. Ziegler, M. Moll, A. Köngisrainer, D. Zips

PH 9: Proffered paper: Artificial intelligence and novel imaging approaches

10:30 - 11:45 | Space 1-2

Chair: U. Van der Heide (The Netherlands)
Chair: M. Bogowicz (Switzerland)

10:30 > Cone-beam CT intensity correction using a generative adversarial network and unpaired training

10:40 > Unsupervised deep learning for fast and accurate CBCT to CT deformable image registration
S.R. Van Kranen (The Netherlands), T. Kanehira, R. Rozendaal, J. Sonke

10:50 > Synthetic CT generation for head and neck radiotherapy by a 3D convolutional neural network

11:00 > Whole-frame 2D cineMR prediction using deep neural networks
P. Borman (The Netherlands), L. Kerkmeijer, B. Raaymakers, M. Glitzner
11:10  >  Automatic tumor delineation in rectal cancer using functional MRI and machine learning

11:20  >  Feasibility of MRI-guided VMAT: investigating image quality during gantry rotation on an MR-linac
S. Jackson (United Kingdom), M. Glitzner, R.H.N. Tijssen, B.W. Raaymakers  

11:30  >  Registration and image quality of T2w 3D TSE scans of the Unity MR-linac

PROFFERED PAPERS
PH 10: Proffered paper: Treatment planning innovations
10:30 - 11:45 | Space 3-4
Chair: C. Brink (Denmark)
Chair: C. Garibaldi (Italy)

10:30  >  Inter-observer variations in plan evaluation

10:40  >  SRS plan quality with variation in modality: Results of an international planning competition

10:50  >  Characterising dose changes due to unplanned gas cavities in Magnetic Resonance guided Radiotherapy
J. Shortall (United Kingdom), E. Vasquez Osorio, A. Green, R. Chuter, A. McWilliam, K. Kirkby, R. Mackay, M. Van Herk  

11:00  >  3He MRI for functional lung avoidance VMAT treatment planning in lung cancer

11:10  >  A two-beam non-coplanar class solution to supplement VMAT in prostate SBRT
A.W. Sharfoq (The Netherlands), L. Rossi, M. Dirkx, S. Aluwini, S. Breedveld, B. Heijmen
11:20 > 4D Monte Carlo dose calculations on different CT image sets for SBRT using patient breathing data
P. Freisleberer (Germany), A. Von Münchow, F. Kamp, C. Heinz, S. Gerum, F. Roed-er, S. Corradini, R. Floca, M. Alber, M. Söhn, M. Reiner, C. Belka, K. Parodi
OC-0525

11:30 > Dependency of the interplay effect on the fractionation for proton therapy of pancreatic cancer
K. Dolde (Germany), Y. Zhang, N. Chaudhri, C. Dávid, M. Kachelriess, A.J. Lomax, P. Naumann, N. Saito, D.C. Weber, A. Pfaffenerber
OC-0526

PROFFERED PAPERS

RTT 5: Improving accuracy in patient positioning
10:30 - 11:45 | Ambra 1-2
Chair: L. Devlin (United Kingdom)
Chair: S. Perryck (Switzerland)

10:30 > Evaluation of AlignRT for deep inspiration breath hold positioning and in-trafraction monitoring
V. Hamming (The Netherlands), C. Visser, D. Busz, E. Batin, J.A. Langendijk, S. Both, N.M. Sijtsema
OC-0527

10:42 > A clinical evaluation of the stability, patient comfort and ease in use of the new Nanor mask
L. Mesch (The Netherlands), M. Essers, T. Rozema
OC-0528

10:54 > Evaluation of the potential treatment delivery benefits of Varian HyperArc for brain metastases
A. Williamson (United Kingdom), A. James, A. Chalmers, R. Carruthers, S. Nowicki, P. McLoone
OC-0529

11:06 > Improving OAR volumes during prostate RT using daily patient feedback and standardized protocols
I. Gagne (Canada), K. Earnshaw, S. Cowan, J. Goulart, A. Alexander
OC-0530

11:18 > Can SGRT be used with open masks to set-up HNC patients and reduce in-trafractional motion?
A. Moreira, N. Weitkamp (Switzerland), M. Zamburlini, H.I. Garcia Schüler, M. Guckenberger
OC-0531

11:30 > Virtual reality animations, a new strategy to reduce patients’ anxiety induced by radiotherapy
G. Van Ooteghem (Belgium), X. Geets
OC-0532
POSTER VIEWING

Poster viewing 10: Radiobiology
10:30 - 11:45 | Poster area
Chair: M. Vooijs (The Netherlands)
Chair: R. Coppes (The Netherlands)

- HPV16 viral load may explain gender differences in treatment outcome of anal squamous cell carcinoma
  D. Martin (Germany), P. Balermpas, R. Winkelmann, U. Wieland, M. Rave-Fränk, J. Kitz, C. Rödel, E. Fokas, F. Rödel

- Carbon ions and microRNAs: new insights into hadrontherapy biology in prostate cancer
  I. Salido, R. El Bezawy (Italy), M. Ciocca, F. Valvo, A. Facoetti, P. Gandellini, R. Valdagni, N. Zaffaroni

- Pilot study on immunomodulation role of radiotherapy in oropharyngeal cancer: preliminary results
  L. Belgioia (Italy), A. Bacigalupo, F. Missale, S. Negrini, G. Filaci, D. Fenoglio, F. In-candela, S. Vecchio, G. Peretti, R. Corvò

- On the impact of HPV status and radiation dose on survival in a large cohort of anal cancer patients
  R. Kabarriti (USA), P. Brodin, R. Narang, R. Huang, J. Chuy, L. Rajdev, S. Kalnicki, C. Guha, M. Garg

- Optimized fractionated radiotherapy with anti-PD-L1 and anti-TIGIT: a promising combination

- Prostaglandin related distinct regenerative activities in hair follicles following radiation injury
  S. Lai (Taiwan), W. Huang, S. Chen, S. Lin

- Antidiabetic biguanides radiosensitize hypoxic cancer cells through a decrease in oxygen consumption
  S. De Mey (Belgium), H. Jiang, C. Corbet, H. Wang, I. Dufait, K.L. Law, T. Gevaert, O. Feron, M. De Ridder

- Tumor Microenvironment modifications recorded with IVIM and DCE-MRI after Neoadjuvant radiotherapy
  F. Lallemand (Belgium), N. Leroi, M. Bahri, E. Bolteau, A. Noël, P. Coucke, A. Plenevaux, P. Martinive

- Immune modulation by brachytherapy in peripheral blood
  M.A. Berenguer Francés (Spain), I. Linares Galiana, R. Cañas, C. Gutierrez, D. Najjari, A. Slocker, S. Marin i Borras, C. Bellobi, F. Guedea
AWARD LECTURE

Klaus Breur Award Lecture
12:00 - 12:30 | Gold Plenary

12:00 > Chair: U. Ricardi (Italy)
12:05 > A stroll in Rome, together
Speaker: V. Valentini (Italy)

AWARD LECTURE

Academic award: Jack Fowler University of Wisconsin Award
12:30 - 12:40 | Gold Plenary
Chair: C. Clark (United Kingdom)
Chair: C. Rödel (Germany)

12:30 > First clinical real-time motion-including tumor dose reconstruction during radiotherapy delivery
S. Skouboe (Denmark), T. Ravkilde, J. Bertholet, R. Hansen,
E. Worm, C.G. Muurholm, B. Weber, M. Høyer, P.R. Poulsen

AWARD LECTURE

Company Award Lectures
12:40 - 13:00 | Gold Plenary
Chair: C. Rödel (Germany)
Chair: C. Clark (United Kingdom)

12:40 > Distributed learning on 20 000+ lung cancer patients
T. Deist (The Netherlands), F.J.W.M. Dankers, P. Ojha, S. Marshall,
T. Janssen, C. Faivre-Finn, C. Masciocchi, V. Valentini, J. Wang, J. Chen,
Z. Zhang, E. Spezi, M. Button, J.J. Nuyttens, R. Vernhout, J. Van Soest,
A. Jochems, R. Monshouwer, J. Bussink, G. Price, P. Lambin, A. Dekker

SYMPOSIUM

Adaptive RT: reactive or proactive?
14:30 - 15:45 | Auditorium
Chair: C. Faivre-Finn (United Kingdom)
Co-chair: T. Gauer (Germany)

14:30 > Clinical perspective and evidence on RT adaptation, has it improved outcome?
Speaker: M. Guckenberger (Switzerland)
14:48 > Physics perspective on RT adaptation including role of predictive modelling in RT adaptation
   Speaker: J. Sonke (The Netherlands)  
   SP-0546

15:06 > Role of the RTT in the clinical implementation of adaptive radiotherapy
   Speaker: A. Baker (United Kingdom), H. Mcnair  
   SP-0547

15:24 > Adaptive and Real-time Approaches in Brachytherapy
   Speaker: T.P. Hellebust (Norway)  
   SP-0548

**SYMPOSIUM**

**Predictive models of toxicity and big data, big open issues**

14:30 - 15:45 | Ambra 5-6

This interdisciplinary session will address how to best collect data to build predictive models of toxicity. It will be discussed how implementing a methodology in the department can help ensure the quality of toxicity data in order to generate robust models. The last talk will focus on a specific example: the prediction of toxicity based on genomics.

*Chair: C. Fiorino (Italy)*
*Co-chair: A. Gasnier (United Kingdom)*

14:30 > How to organise your department to have a structured way of collecting toxicity data
   Speaker: J. Widder (Austria)  
   SP-0549

14:48 > Dreams and reality of toxicity data-sharing/farming: quality vs quantity?
   Speaker: A. Dekker (The Netherlands)  
   SP-0550

15:06 > Exploiting large data base to build robust predictive models: validation issues
   Speaker: T. Rancati (Italy)  
   SP-0551

15:24 > Radiogenomics: big data to understand genetic risk factors of toxicity
   Speaker: C.N. Andreassen (Denmark)  
   SP-0552
SYMPOSIUM

Biological Imaging for Radiotherapy
14:30 - 15:45 | Brown 1

Exciting, new imaging techniques based on PET and MRI for visualizing tumor biological features in the context of radiotherapy have emerged. Promising PET approaches for imaging of DNA damage responses using γH2AX and PARP radiotracers and to visualize infiltration of T-cells and tumor hypoxia will be discussed. Moreover, the MRI-Chemical Exchange Saturation Transfer (CEST) method and its potential for imaging of tumor acidosis will be presented.

Chair: H. Lyng (Norway)
Co-chair: A. Bunea (Switzerland)

14:30 > Imaging of tumor infiltrating lymphocytes with [18F] FB-IL2 PET

14:48 > Imaging DNA damage response
Speaker: B. Cornelissen (United Kingdom)

15:06 > MRI-CEST Imaging of tumor acidosis
Speaker: D. Longo (Italy)

15:24 > Tracing Tumor Hypoxia

SYMPOSIUM

New developments for breast cancer irradiation
14:30 - 15:45 | Gold Plenary

The management of breast cancer is multidisciplinary from the time of initial cancer diagnosis. Recently introduced systemic therapies (e.g., anti-HER2) and surgical techniques (e.g., oncoplasty, reconstruction, selective lymph node dissection) are being progressively introduced into daily practice. Parallel to that, the radiation techniques improved which allows for volume-based radiation therapy. Therefore, it is time to move forward volume-based delineation and more precisely define the target volumes with the highest risks for harbouring subclinical disease. This approach is necessary to solve issues of improved dose coverage and lowered normal tissue toxicity, thereby allowing for irradiation in cases that in the past was associated with increased toxicity (e.g., preoperative, after reconstruction). This concept also supports decreasing doses and
volumes to even entirely omitting radiation if the risk of recurrence is low. The current session will discuss several exciting new developments for breast cancer irradiation and their implementation in daily practice.

Chair: P. Poortmans (France)
Co-chair: O. Kaidar-Person (Israel)

14:30 > Neoadjuvant radiotherapy in breast cancer
Speaker: Y. Kirova (France) SP-0557

14:48 > Response to preoperative therapy - prediction, assessment and indications for adjuvant radiotherapy
Speaker: M. Jarzab (Poland) SP-0558

15:06 > Nodal irradiation with or instead axillary lymph node dissection
Speaker: M. Molla (Spain) SP-0559

15:24 > Radiotherapy after breast reconstruction
Speaker: B. Offersen (Denmark) SP-0560

JOINT SYMPOSIUM

ESTRO-EORTC: Moving radiation oncology forward to improve patient outcomes
14:30 - 15:45 | Brown 3
Chair: Y. Lievens (Belgium)
Chair: D.C. Weber (Switzerland)

14:30 > EORTC State of Science in Radiation Oncology: Overcoming barriers to practice change by collaboration; why now, and how....
R. Bristow (United Kingdom) SP-0561

14:50 > Cohorts studies versus randomised controlled trials: can we combine the best of both worlds?
L. Verkooijen (The Netherlands) SP-0562

15:10 > First experience with the model-based selection of head and neck cancer patients for proton therapy

15:20 > Discussion
DEBATE

In 10 years physicists will need different training to include more ...
14:30 - 15:45 | Space 1-2

Radiotherapy is evolving to be more personalised and adaptive. Our future physicists will need to keep up with these changes and therefore their skills may need to be different from the ones we need now. This debate will ask how (if at all) the training for medical physicists specialising in radiation oncology should develop/change in the next decade and explore in which areas these changes should be made. Each speaker will make their case for the need to train more in a different area and then at the end the audience will vote for which they believe is the most important.

Chair: C. Clark (United Kingdom)
Chair: D. Verellen (Belgium)

14:30 > Imaging Knowledge!!
D. Thorwarth (Germany)

14:40 > Predictive models and big data
L.P. Muren (Denmark)

14:50 > Deep learning, automation and computing
B. Heijmen (The Netherlands)

15:00 > Management and leadership
J. Malicki (Poland)

15:10 > Basic Physics skills
G. Gagliardi (Sweden)

15:20 > Discussion

15:30 > Rebuttal: Imaging Knowledge!!
D. Thorwarth (Germany)

15:32 > Rebuttal: Predictive models and big data
L.P. Muren (Denmark)

15:34 > Rebuttal: Deep learning, automation and computing
B. Heijmen (The Netherlands)

15:36 > Rebuttal: Management and leadership
J. Malicki (Poland)

15:38 > Rebuttal: Basic Physics skills
G. Gagliardi (Sweden)
**PROFFERED PAPERS**

**PH 11: Proffered paper: Proton range and dose verification**  
**14:30 - 15:45 | Space 3-4**  
*Chair: A. Knopf (United Kingdom)*  
*Chair: C. Richter (Germany)*

14:30  >  A novel range probing-based optimization of CT calibration curve for Proton Therapy  
   *A. Meijers (The Netherlands), J. Free, D. Wagenaar, S. Deffet, A.C. Knopf, J.A. Langendijk, S. Both*  
   [OC-0564]

14:40  >  The optimization of prompt gamma based range estimation in proton therapy using Cramér-Rao theory  
   *E. Lens (The Netherlands), E. Tolboom, D. Schaart*  
   [OC-0565]

14:50  >  Range verification in proton therapy: Can prompt-gamma imaging identify the source of deviation?  
   *C. Khamfongkhrua (Germany), G. Janssens, J. Petzoldt, J. Smeets, G. Pausch, C. Richter*  
   [OC-0566]

15:00  >  Reconstructing the 3-D proton dose distribution from the modelled iono-acoustic wave field  
   *E. Lens (The Netherlands), A. De Blécourt, D. Schaart, F. Vos, K. Van Dongen*  
   [OC-0567]

15:10  >  Experimental dosimetric characterization of a proton beam in the presence of a magnetic field  
   *F. Padilla Cabal (Austria), L. Fetty, P. Kuess, D. Georg, H. Fuchs*  
   [OC-0568]

15:20  >  A framework for variance-based sensitivity analysis of uncertainties in proton therapy  
   *J. Hofmaier (Germany), G. Dedes, D.J. Carlson, K. Parodi, C. Belka, F. Kamp*  
   [OC-0569]

15:30  >  Dosimetric study to guide preclinical trials in proton minibeam radiotherapy  
   *G. Consuelo (France), L. De Marzi, Y. Prezado*  
   [OC-0570]

**SYMPOSIUM**

**Education and Advance Practice**  
**14:30 - 15:45 | Ambra 1-2**

This session will outline the background of advanced practice in radiation therapy and give an overview of the diversity of roles that exist within the RTT profession and the benefit they have on patient care, service provision and the development of the role of the RTT within the multidisciplinary team.
Advanced practice roles must be developed together with appropriate postgraduate education. ESTRO has recently published its European Qualifications Framework Levels 7 and 8, which will be presented. A novel approach to advanced practice in Europe will illustrate how optimisation of radiation therapy practice and work-flow is possible through advanced practice.

*Chair: M. Leech (Ireland)*
*Co-chair: C. Poole (Ireland)*

14:30  >  Defining advanced practice roles specifically in radiotherapy  
Speaker: A. Duffton (United Kingdom)  
SP-0571

14:55  >  Education and Advance Practice - Defining level EQF 7 and 8 competencies  
Speaker: M. Coffey (Ireland)  
SP-0572

15:20  >  Incorporation radiation therapist RTT into radiation oncologist RO team  
Speaker: B. Bak (Poland), J. Michalewska, A. Machtyl, P. Martenka  
SP-0573

**POSTER VIEWING**

**Poster viewing 11: Novel strategies in IGRT**  
14:30 - 15:45 | Poster area  
*Chair: J. Mitchell (United Kingdom)*  
*Chair: S. Faithfull (United Kingdom)*

  >  Evaluation of a clinical decision support protocol during radiotherapy for H&N cancer patients  
PV-0574

  >  Is diaphragm dome or bone fusion adequate to IGRT in liver-SBRT compare to fiducial markers?  
*C. De la Pinta Alonso* (Spain), D. Sevillano, R. Colmenares, M. Martín, C. Vallejo, E. Fernández-Lizarbe, S. Barrio, V. Pino, J.A. Rojo, S. Sancho  
PV-0575

  >  Simulation of EHTR for prostate cancer without monitoring intra-fractional prostate motion  
*Y. Oguma* (Japan), H. Shiomi, K. Nagata, K. Okajima, H. Morikawa, Y. Watanabe, K. Mizuno, K. Komatsubara, K. Hata  
PV-0576

  >  Single-institution report of whole breast VMAT radiotherapy implemented with 3D surface imaging  
*V. Favrel* (France), O. Ruiz Achard, L. Gonzague Casabianca, F. Chabbert, A. Louis, J. Paumont, H. Mailleux, P. Eustache, A. Tallet  
PV-0577
> Image quality of cone beam CT used as image-guidance for pelvic Stereotactic Ablative Radiotherapy

_F. Slevin_ (United Kingdom), _M. Beasley, A. Needham, J. Lilley, R. Speight, L.J. Mur-ray, A.M. Henry_

> The impact of intra-thoracic anatomical changes on the delivery of lung SABR

_M. Beasley_ (United Kingdom), _S. Brown, R. Chuter, C. Faivre-Finn, K. Franks, L. Mur-ray, M. Van-Herk, A. Henry_

> CBCT-based analysis of target coverage-volume changes after prostate SABR with triggered kV-imaging


> Image Gently for pediatric IGRT on Varian Halcyon and Edge systems: dose and positioning accuracy

_Y. Zhang_ (China), _M. Wang, Y. Huang, H. Wu, W. Wang_

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**MULTIDISCIPLINARY TUMOUR BOARD**

**Bladder cancer**

14:30 - 15:45 | Brown 2

*Chair: M. Hulshof (The Netherlands)*

> yESTRO Radiation Oncologist

_Panellist: G. Marvaso (Italy)_

> Medical Oncologist

_Panellist D. Raggi (Italy)_

> Surgeon

_Panellist E. Ditrapani (Italy)_

> Radiation Oncologist

_Panellist A. Kiltie (United Kingdom)_

> Pathologist

_Panellist C. Patriarca (Italy)_
**DEBATE**

Can early-regression-guided adaptive RT (eRG-ART) improve the pathological response in neo-adjuvant treatments?

*16:15 - 17:30 | Auditorium*

Early-regression-guided adaptive radiotherapy (eRG-ART) is a strong trend in radiation oncology. It can be defined as a radiotherapy technique that aims to customize each patient’s treatment plan to patient-specific variation in response by evaluating and characterizing early response through feedback of functional images and including them in adaptive planning. Treatment adaptation based on the response could result in a better outcome, lesser toxicity, and also be an independent prognostic factor. It sounds encouraging, but the reality is more brutal. Uncertainties of imaging, risks of missing the residual tumor, lack of prediction models, and other problems may limit the use of eRG-ART in clinical practice. The proponents and opponents of eRG-ART will heatedly discuss this issue.

*Chair: E. Malinen (Norway)*
*Co-chair: M. Spalek (Poland)*

16:15 > For the motion  
*K. Haustermans (Belgium)*

16:30 > Against the motion  
*C. Rödel (Germany)*

16:45 > For the motion  
*C. Fiorino (Italy)*

17:00 > Against the motion  
*G. Meijer (The Netherlands)*

17:15 > Discussion

**SYMPOSIUM**

Recent insights into adverse cardiac effects from multimodal radiation therapy

*16:15 - 17:30 | Ambra 5-6*

The symposium will cover four aspects pertaining to cardiac effects of cancer therapy. The first presentation will discuss prediction models of acute coronary events with particular emphasis on ongoing studies that aim to improve existing models. Next, radiotherapy procedures in patients with a cardiac implantable electronic device will be discussed. This will be followed by a summary of biology-driven efforts intended at developing therapeutic approaches for prevention or reversal of radiation heart damage. Finally, as patients with cancer therapy sequela are increasingly managed in the primary health care services, the assessment of high-risk individuals and secondary prevention will be overviewed.
Chair: A.H. Ree (Norway)
Co-chair: I. Meattini (Italy)

16:15 > Prediction models for adverse cardiac effects to target optimal cardiac radiation dose distributions in breast cancer patients
A. Crijns (The Netherlands)  
SP-0582

16:33 > Practical aspects of estimating and measuring of CIED dose in radiotherapy procedures
E. Konstanty (Poland), B. Bak, W. Szyszka  
SP-0583

16:51 > From biological basis of RI cardiac toxicity to the new application of SBRT in the cardiovascular field
M. Vozenin (Switzerland)  
SP-0584

17:09 > Managing cardiotoxicity in oncology follow up and primary care services
S. Faithfull (United Kingdom)  
SP-0585

PROFFERED PAPERS
RB 6: Pre-clinical research in particle therapy
16:15 - 17:30 | Brown 1
Chair: K. Rothkamm (Germany)
Chair: N. Protti (Italy)

16:15 > Immunological contexture basis of a prognostic radiomics signature in head and neck cancers
OC-0586

16:30 > Preclinical studies of MRI guided BNCT at Torino and Pavia Universities
N. Protti (Italy), D. Alberti, A. Toppino, S. Bortolussi, S. Altieri, A. Deagostino, S. Aime, S. Geninatti-Crich  
OC-0587

16:45 > Combing hyperthermia and/or OXi4503 with low LET radiation is equivalent to high LET radiation alone
P.B. Elming (Denmark), B.S. Sørensen, H. Spejlborg, J. Overgaard, M.R. Horsman  
OC-0588

17:00 > RBE-weighted dose in carbon ion therapy: impact of the RBE model translation on clinical outcomes
OC-0589
17:15 > Avoidance of DNA replication stress by functional HR leads to radioresistance in stem cell-like TNBC
K. Borgmann (Germany), M. Felix, E. Anna Maria, B. Saskia, H. Linda, P. Claudia, D. Anna, W. Sabine, W. Harriet, R. Kai, P. Cordula

PROFFERED PAPERS

CL 11: Proffered papers: Breast
16:15 - 17:30 | Gold Plenary
Chair: P.C. Lara Jimenez (Spain)
Chair: TBC

16:15 > Response after MR-guided single dose ablative preoperative partial breast irradiation

16:27 > 5 year results of the Preoperative Accelerated Partial Breast Irradiation (PAPBI) trial
S. Bosma (The Netherlands), F. Leij van der, S. Vreeswijk, M. Vijver van der, S. Rive-ra, T. Foukakis, D. Bongard van den, E. Rutgers, A. Scholten, H. Bartelink, P. Elkhuizen

16:39 > Prone breast radiotherapy reduces acute skin toxicity – results from a multicentre single blind RCT

16:51 > Acute toxicity results after breast-conserving therapy in “boost vs no boost (BONBIS)” DCIS trial

17:03 > Does seroma predict patient-reported adverse effects following breast radio-therapy in IMPORT HIGH?
17:15 > Importance of dose to the atherosclerotic plaque in the LAD for cardiac toxicity in breast cancer  
V. Van den Bogaard, D. Spoor, A. Van der Schaaf, L. Van Dijk, J. Langendijk, J. Maduro, A. Crijns (The Netherlands)  
OC-0596

PROFFERED PAPERS

CL 12: Proffered papers: Health Economics and Health services research  
16:15 - 17:30 | Brown 3  
Chair: C. Grau (Denmark)  
Chair: J. Chan (Canada)

16:15 > Implementing a quality indicator project on a national basis: a feasibility study  
A. Vaandering (Belgium), Y. Lievens, N. Jansen, C. Weltens, L. Moretti, K. Stellamans, F. Vanhoutte, P. Scalliet, V. Remouchamps  
OC-0597

16:27 > Estimating the need for palliative radiotherapy for breast cancer: A benchmark-ing approach  
C.J. Jin (USA), W. Kong, W.J. Mackillop  
OC-0598

16:39 > Survival and local control deficits due to radiotherapy under-utilisation in NSW, Australia  
G. Delaney (Australia), G.S. Gabriel, J. Shafiq, R. Merie, S. Vinod, V. Batumalai, M.B. Barton  
OC-0599

16:51 > Assessment of non-adherence to external radiotherapy treatment in cancer pa-tients in Catalonia, Spain  
OC-0600

17:03 > Stereotactic body radiotherapy for oligometastatic disease in Belgium: costs and budgetary impact  
D. Nevens (Belgium), I. Kindts, N. Defourny, M. Rosskamp, C. Mercier, H. De Schutter, C. Van de Voorde, Y. Lievens  
OC-0601

17:15 > Pattern of care of radiotherapy practice for EBRT patients in Spain  
OC-0602
PH 12: Proffered paper: Multi centre analysis of quality
16:15 - 17:30 | Space 1-2
Chair: E. Clementel (Belgium)
Chair: P. Taylor (USA)

16:15 > A 2018 IPEM audit of MRI in external beam radiotherapy treatment planning in the UK
   OC-0603

16:25 > The first UK survey of dose indices from radiotherapy treatment planning CT scans for adult patients
   M. Williams (United Kingdom), T. Wood, A. Davis, J. Earley, R. Plaistow, R. Lindsay, A. Palmer, A. Nesbit, S. Edyvean, U. Findlay
   OC-0604

16:35 > Is DIBH more robust than FB in VMAT left breast irradiation? Multicenter and multivendor analysis
   OC-0605

16:45 > IMRT QA: comparing independent recalculation against measurement based methods
   S. Kry (USA), M. Glenn, C. Peterson, D. Branco, H. Mehrens, A. Steinmann, D. Fol-lowill
   OC-0606

16:55 > IAEA supported national ‘end-to-end’ IMRT audit in Portugal
   T. Santos (Portugal), M.D.C. Lopes, E. Gershkevitsh, J. Izewska
   OC-0607

17:05 > Credentialing of spine stereotactic ablative body radiotherapy in a multi-centre trial
   N. Hardcastle (Australia), O. Cook, P. Mitchell, S. Siva
   OC-0608

17:15 > Urethra-sparing SBRT for prostate cancer: quality assurance of a randomized phase II trial
   OC-0609
PROFFERED PAPERS

PH 13: Proffered paper: Modelling toxicity
16:15 - 17:30 | Space 3-4
Chair: A. Van Der Schaaf (The Netherlands)
Chair: O. Casares Magaz (Denmark)

16:15 > Modelling of xerostomia after radiotherapy for head and neck cancer: a registry study
E. Onjukka (Sweden), C. Mercke, A. Discacciati,
G. Alexandersson von Döbeln, E. Björgvinsson, H. Carstens,
S. Friesland, G. Gagliardi, C. Lenneby Helleday, H. Sjödin,
G. Wickart Johansson, I. Lax
OC-0610

16:25 > Planned and delivered DVHs of the skin predict acute cutaneous toxicity after IGRT for HN cancer
M. Mori (Italy), S. Foti, I. Dell’ Oca, M. Branchini, S. Broggi,
G.M. Cattaneo, N. Di Muzio, C. Fiorino
OC-0611

16:35 > A case-control study of brainstem substructures and morbidity following pedi-atic proton therapy
C. Stokkevåg (Norway), D.J. Indelicato, L.F. Fjæra, Y. Lassen-Ramshad,
K.S. Ytre-Hauge, Z. Li, L. Toussaint, O. Casares-Magaz, S. Flampouri,
R. Mikkelsen, C. Pedro, O. Dahl, L.P. Muren
OC-0612

16:45 > Spatial dose patterns of radiation pneumonitis in lung cancer patients treated by photons or protons
G. Palma (Italy), S. Monti, T. Xu, E. Scifoni, P. Yang, S. Hahn,
M. Durante, R. Mohan, Z. Liao, L. Cella
OC-0613

16:55 > NTCP models of late rectal morbidity after proton therapy in 1036 prostate cancer patients
J. Pedersen (Denmark), S. Flampouri, C. Bryant, Z. Li, N. Mendenhall,
L.P. Muren
OC-0614

17:05 > Predicting urinary toxicity via 2D and 3D dose map analyses in prostate cancer radiotherapy
E. Mylona (France), A. Cicchetti, T. Rancati, F. Palorini, S. Supiot,
N. Magné, G. Cre-hange, O. Acosta, R. De Crevoisier
OC-0615

17:15 > Introducing information on gut microbiota into toxicity modeling: preliminary results from a trial
T. Rancati (Italy), N. Bedini, L. De Cecco, B. Avuzzi, S. Morlino,
B. Noris Chiorda, M. Dispinzieri, S. Villa, T. Di Florio, F. Badenchini,
F. Palorini, T. Giandini, A. Cicchetti, E. Mancinelli, M.S. Serafini,
A. De Vecchi, E. Orlandi, R. Valdagni
OC-0616
PROFFERED PAPERS

RTT 6: Education and quality management for optimising patient care
16:15 - 17:30 | Ambra 1-2
Chair: L. Van den Berghe (Belgium)
Chair: A. Kostovski (Bosnia and Herzegovina)

16:15 > Work interruptions in radiotherapy and their impact on patient safety
S. Cucchiaro (Belgium), M. Delgaudine, N. Gourmet, P. Coucke  OC-0617

16:30 > Clinical audits as a quality improvement tool in radiotherapy departments: the Belgian experience
A. Vaandering, P. Scalliet, F. Vanhoutte (Belgium)  OC-0618

16:45 > Using continuous quality improvement to improve safety and reduce imaging errors in radiotherapy
D. Tan, L. Davies, M. Williams, S. Jones, N. Bales, C. Beswick, P. Wheeler (United Kingdom)  OC-0619

17:00 > Stop: No! Take Action: Yes! A new approach to act on anatomical changes seen on CBCT
M. Buijs (The Netherlands), F. Pos, M. Frantzen-Steneker, F. Koetsveld, P. Remeijer  OC-0620

17:15 > Changing responsibilities for RTTs on the MR-linac

POSTER VIEWING

Poster viewing 12: GI and Urological Cancers
16:15 - 17:30 | Poster area
Chair: C. Gani (Germany)
Chair: K. Bujko (Poland)

> NCTP model for postoperative pulmonary complications after trimodality thera-py in esophageal cancer
M. Thomas (Belgium), G. Defraene, M. Lambrecht, W. Deng, J. Moons, P. Nafteux, S.H. Lin, K. Haussternans  PV-0622

> Tumor-stroma ratio for predicting pathologic response after chemoradiotherapy in esophageal cancer
> Pathologic response in pancreatic cancer treated with neoadjuvant MRI-guided radiation therapy  
*S. Rudra* (USA), R. Brenneman, S. Badiyan, A. Wang-Gillam, W. Hawkins, R. Fields, S. Strasberg, M. Roach, H. Kim  

> Biological factors influencing outcomes in SBRT for colorectal cancer oligome-tastases (OM)  
*S. O’Cathail* (United Kingdom), T. Smith, R. Owens, Y. Tsang, M. Harrison, M. Hawkins  

> Mismatch Repair System Deficiency increases response to neoadjuvant chemo-radiation in rectal cancer  

> IL17F-rs641701 polymorphism as prognostic factor in rectal cancer after pre-operative chemoradiation  
*E. Palazzari* (Italy), E. Dreussi, I. Maretto, F. Navarria, R. Innocente, C. Belluco, F. Matrone, G. Fanetti, A. Revelant, M. Montico, G. Toffoli, S. Pucciarelli, E. Cecchin, A. De Paoli  

> Association of androgen deprivation duration and cardiovascular mortality in prostate cancer men  
*A. Yorozu* (Japan), S. Sutani, K. Toya, Y. Shiraishi, S. Saito  

> Late toxicity and PROMs in pelvic or prostate RT in high risk prostate cancer: A randomized trial  

> 10-year multi-centre experience of adjuvant radiotherapy in pN3 squamous cell carcinoma of the penis  
Abstract withdrawn

**AWARD LECTURE**

**Donald Hollywood Award lecture**

17:40 - 17:50 | Gold Plenary  
*Chair: C. Rödel (Germany)*

17:40 > Stem cell sparing IMRT for head and neck cancer patients: a double-blind ran-domized controlled trial  
AWARD LECTURE

Highlights of proffered papers
17:50 - 18:30 | Gold Plenary
Chair: C. Clark (United Kingdom)
Chair: B. Pieters (The Netherlands)
Chair: M. Vooijs (The Netherlands)
Chair: B. Bak (Poland)

17:50  >  Radiotherapy-related lymphopenia affects overall survival in patients with lung cancer
A. Abravan (United Kingdom), C. Faivre-Finn, J. Kennedy, A. McWilliam, M. Van Herk

18:00  >  Single dose high dose-rate (HDR) brachytherapy as monotherapy for localised prostate cancer
H. Tharmalingam (United Kingdom), Y.M. Tsang, P. Hoskin

18:10  >  Implementation of plan of the day adaptive radiotherapy: Compliance to guide-lines
A. Webster (United Kingdom), S. Hafeez, E. Hall, V. Hansen, H. McNair, R. Lewis, H. Robert

18:20  >  Targeting TEMPRSS2: ERG fusion to achieve a tumor-specific radiosensitization in prostate cancer
S. Köcher, B. Beyer, T. Lange, L. Nordquist, S. Burdak-Rothkamm, T. Schlomm, C. Petersen, K. Rothkamm, W. Mansour (Germany)
World Congress of Brachytherapy

2-4 April 2020
Vienna, Austria
TEACHING LECTURE
The DNA damage response to radiotherapy: mechanisms and therapeutic opportunities
08:30 - 09:10 | Ambra 5-6
Chair: M. Van Vugt (The Netherlands)

08:30 > The DNA damage response to radiotherapy: mechanisms and therapeutic opportunities
Speaker: M. Morgan (USA)  

TEACHING LECTURE
Are adolescents and young adults (AYA) a specific patients’ population?
08:30 - 09:10 | Brown 2
Chair: K. Dieckmann (Austria)

08:30 > Are adolescents and young adults (AYA) a specific patients’ population?
Speaker: D. Walker (United Kingdom)  

TEACHING LECTURE
Hypofractionation: can the DNA damage response deliver a biological rationale?
08:30 - 09:10 | Brown 1
Chair: K. Borgmann (Germany)

08:30 > Hypofractionation: can the DNA damage response deliver a biological rationale?
Speaker: K. Rothkamm (Germany)  

TEACHING LECTURE
Recent insights into radiotherapy tolerance from the REQUITE Consortium
08:30 - 09:10 | Auditorium
Chair: D. De Ruysscher (The Netherlands)

08:30 > Recent insights into radiotherapy tolerance from the REQUITE Consortium
Speaker: C. West (United Kingdom)
TEACHING LECTURE
Integration of PET imaging in radiation treatment planning
08:30 - 09:10 | Brown 3
Chair: A. Loft (Denmark)

08:30 > Integration of PET imaging in radiation treatment planning
Speaker: U. Nestle (Germany)

TEACHING LECTURE
Implementation and practice of SRS and SBRT: Consensus guidelines and protocols
08:30 - 09:10 | Space 1-2
Chair: M.d.C. Lopes (Portugal)

08:30 > Implementation and practice of SRS and SBRT: Consensus guidelines and protocols
Speaker: J. Seuntjens (Canada), E. Lartigau

TEACHING LECTURE
How to select patients for radiotherapy with protons instead of photons
08:30 - 09:10 | Space 3-4
Chair: L.P. Muren (Denmark)

08:30 > How to select patients for radiotherapy with protons instead of photons
Speaker: J. Balosso (France), J. Thariat, J.L. Habrand, T. Tessonnier, P. Lesueur, A. Chaikh, D. Stefan, J.M. Fontbonne

TEACHING LECTURE
MR-guided radiotherapy in the pelvic region
08:30 - 09:10 | Ambra 1-2
Chair: L. Mullaney (Ireland)

08:30 > MR-guided radiotherapy in the pelvic region
Speaker A. Tree (United Kingdom)

SYMPOSIUM
Radiotherapy biomarkers: a confluence of imaging, genetics and pathology
09:15 - 10:30 | Ambra 5-6
Chair: JL Perfettini (France)
Co-chair: L. Marignol (Ireland)
09:15  >  Advances in imaging to predict and monitor radiation response  
Speaker U. Van der Heide (The Netherlands)  
SP-0644

09:35  >  New approaches to Radiotherapy biomarkers, the data has gotten big  
Speaker E. Medico (Italy)  
SP-0645

09:55  >  Translation of biomarker signatures in daily clinical use?  
Speaker: M. Krause (Germany)  
SP-0646

10:15  >  Analysis of biomarkers for late radiotherapy toxicity in the REQUITE project  
C. Talbot (United Kingdom), D. Azria, T. Burr, J. Chang-Claude,  
A. Dunning, M. Farcy-Jacquet, C. Herskind, D. De Ruysscher, R. Elliott,  
S. Gutiérrez-Enríquez, P. Lambin, A. Müller, T. Rancati, T. Rattay,  
B. Rosenstein, P. Seibold, R. Valdagni, A. Vega, L. Veldeman,  
M. Veldwijk, F. Wenz, A. Webb, C. West  
OC-0647

SYMPOSIUM
Palliation in RT - How much is enough?  
09:15 - 10:30 | Brown 2

In this interdisciplinary session, the role of palliative radiotherapy will be discussed and special focus will be set on patient selection criteria and how to choose different radiation techniques and dose schedules. Moreover, an overview of beneficial indications for single fraction treatment in palliation will be discussed. The radiation therapists’ role in this field including the knowledge and experience required to conduct palliative radiotherapy planning and their relationship with patients referred to palliative radiotherapy will also be addressed. Finally, the importance of individual radiosensitivity including the risk of adverse tissue reactions and reliable predictive assays will be presented.

Chair: P. Hoskin (United Kingdom)  
Co-chair: J. Cacicedo (Spain)

09:15  >  Criteria for choosing dose and irradiation techniques for palliative treatment  
Speaker: Y. Van Der Linden (The Netherlands)  
SP-0648

09:33  >  Uncertainties in single fraction treatment  
Speaker: J. Dhont (Belgium)  
SP-0649

09:51  >  The role of the RTT in the palliative patients journey  
Speaker: K. Moore (United Kingdom)  
SP-0650
10:09 > Healthy tissue response to a single fraction treatment: Impact of the individual radiosensitivity  
Speaker: N. Foray (France)  

SYMPOSIUM  
Mechanisms of treatment resistance in glioma  
09:15 - 10:30 | Brown 1  

In this session, novel insights into glioma resistance and therapeutic opportunities are presented. How glioma stem cells use DNA replication stress to survive, how glioma cells connect and communicate with astrocytes to control their resistance, how glioma cells respond to temozolomide on the transcriptional level to form interaction nodes between sensitive and non-sensitive subpopulations, and how defective signaling pathways in glioma cells can be exploited with novel therapeutic approaches using combinations of radiotherapy plus biologicals are some of the fundamental questions discussed.  

Chair: N. Cordes (Germany)  
Co-chair: TBC  

09:15 > The role of DNA replication stress in glioma stem cell radiation resistance  
Speaker: R. Carruthers (United Kingdom), S. Ahmed, K. Strathdee, A. Chalmers  

09:33 > Tumor cell connections causing radiation resistance  
Speaker: F. Winkler (Germany)  

09:51 > Transcriptional response to temozolomide in Glioblastoma reveals critical role of long non-coding RNAs  
Speaker: S. Niclou (Luxembourg), S. Fritah, M. Sarmini, W. Jiang, A. Muller, M. Dieterle, R. Mitra, A. Golebiewska, Z. Zhao, F. Azuaje  

10:09 > Irradiation and targeted inhibition of the PI3K/AKT and MAPK pathways in glioma  
DEBATE

This house believes that there is still a role for radiotherapy in pancreatic cancer
09:15 - 10:30 | Auditorium

Overall pancreatic cancer has a very poor survival. To date, the sole curative treatment for non-metastasized pancreatic cancer is surgery. The role of radiation therapy in the management of pancreatic cancer has been subject of debate for decades. Recent results from clinical trials and the introduction of novel techniques such as SBRT may support the use of radiotherapy in the treatment of localized pancreatic cancer. However, systemic treatment options and other ablative therapies have evolved as well. The role of radiotherapy in both primary resectable and locally advanced pancreatic cancer will be debated in view of the latest insights.

Chair: K. Haustermans (Belgium)
Co-chair: M. Berbée (The Netherlands)

09:15 > For the motion: resectable pancreatic cancer
Speaker: T. Brunner (Germany)
SP-0656

09:30 > Against the motion: resectable pancreatic cancer
Speaker: M. Falconi (Italy)
SP-0657

09:45 > For the motion: locally advanced pancreatic cancer
Speaker: F. Huguet (France)
SP-0658

10:00 > Against the motion: locally advanced pancreatic cancer
Speaker: E. Van Cutsem (Belgium)
SP-0659

10:15 > Discussion

SYMPOSIUM

New developments in Head and Neck Cancer treatment
09:15 - 10:30 | Brown 3

Head and Neck oncology is being transformed by a series of major developments that relate to the epidemiology of the disease, the use of advanced forms of radiotherapy planning and delivery, and the introduction of immunotherapy. In this session these three areas will be discussed by key experts. Dr. Lassen will discuss the impact of Human Papilloma Virus in oropharyngeal cancers, and will review the latest TNM staging. She will discuss how to optimally treat HPV positive OPC integrating an overview of the design and rationale of ongoing clinical trials and a presentation of lessons learned from completed clinical trials. Dr. Langendijk will present prediction models that and their integration in head and neck radiotherapy.
He will show how the model-based approach allows for a continuous improvement and validation of newly introduced radiation techniques and ultimately the most optimal outcome for patients. Last, Dr. Licitra will discuss the rationale for using immunotherapy in head and neck cancers, the latest results in the recurrent/metastatic setting and the development of prognostic/predictive biomarkers to guide patient selection.

Chair: P. Blanchard (France)
Co-chair: I. Desideri (Italy)

09:15 > p16+ oropharyngeal cancer: new disease, new staging – what about treatment?
Speaker: P. Lassen (Canada)

09:40 > Predictive models in treatment of head and neck cancer
Speaker: H. Langendijk (The Netherlands)

10:05 > Immunotherapy in HNC – when and for whom, biomarkers of response
Speaker: L. Licitra (Italy)

SYMPOSIUM
New detector developments
09:15 - 10:30 | Space 1-2

This session focuses on developments in detector technology. The new UK primary standard calorimeter for proton radiotherapy is discussed covering of why this is needed, how the device is built and validated, its operation and ultimately its implementation. The next talks gives an update on the present status of the two commercial scintillation detectors available and the third system in development for HDR brachytherapy. The third talk discusses the different methods of multichannel film dosimetry and associated uncertainties, and the final presentation covers high spatial and time resolution silicon detectors with application in motion adaptive radiotherapy and synchrotron microbeam radiotherapy.

Chair: J. Lye (Australia)
Co-chair: E. Dabrowska-Szewczyk (Poland)

09:15 > Update on compact graphite calorimeter for absolute dosimetry measurements
Speaker: R. Thomas (United Kingdom)

09:33 > Update on commercial scintillators
Speaker: S. Beddar (USA)
09:51 > Multichannel film dosimetry  
*Speaker: I. Mendez Carot (Spain)*  
SP-0665

10:09 > Developments in time-resolved detectors  
*Speaker: A. Rozenfeld (Australia)*  
SP-0666

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**Proffered Papers**

**PH 14: Proffered paper: Treatment planning of proton therapy**

**09:15 - 10:30 | Space 3-4**

*Chair: H. Nyström (Denmark)*

*Chair: R. Amos (United Kingdom)*

09:15 > Experimental assessment of inter-centre variation and accuracy in SPR prediction within the EPTN  
OC-0667

09:25 > MRI-only proton therapy treatment planning with synthetic CT images generated using deep learning  
*A.M. Barragán Montero, K. Souris (Belgium), S. Kazemifar, R. Timmerman, S. Jiang, X. Geets, E. Sterpin, A. Owrangi*  
OC-0668

09:35 > Development of a novel MRI-only treatment planning approach for ocular proton therapy  
*E. Fleury (The Netherlands), P. Trnková, E. Erdal, K. Hassan, J. Beenakker, J. Herault, J. Pignol, M. Hoogeman*  
OC-0669

09:45 > Temporal lobe sparing radiotherapy for cognitive preservation in pediatric brain tumor patients  
OC-0670

09:55 > Which planning strategy is better for Head&Neck Cancer: PTV based or CTV based robust IMPT?  
OC-0671

10:05 > Proton radiotherapy for left-sided breast cancer in patients with pectus excavatum anatomy  
*S. Korreman (Denmark), S. Andreasen, J.B.B. Petersen, B. Offerersen*  
OC-0672

10:15 > LET variation as a function of different optimization approaches in proton beam therapy  
*G. Martino (Austria), N. Van Lobenstein, A. Carlino, A. Resch, M. Stock, G. Kragl*  
OC-0673
SYMPOSIUM

Focus on the Pelvic Region
09:15 - 10:30 | Ambra 1-2

In this session with the focus on the pelvic region you will be able the get an overview of different adaptive strategies as well as an insight on practical issues and the reporting of those techniques. Furthermore, the impact of bladder filling on anatomic structures in the pelvis will be demonstrated, including the possibilities to assess and evaluate bladder filling. Additionally, the role of MR for treatment planning will be presented and the possibilities of MRI-only treatment planning and the required QA procedures will be discussed.

Chair: P. Scherer (Austria)
Co-chair: L. Turtle (United Kingdom)

09:15 > Status on adaptive strategies in the pelvic region – how far are we?
Speaker: Y. Seppenwoolde (Austria)
SP-0674

09:40 > Bladder filling - does it matter?
Speaker: D. Bodusz (Poland)
SP-0675

10:05 > MR-based treatment planning for prostate cancer
Speaker: E. Persson (Sweden)
SP-0676

JOINT SYMPOSIUM

ESTRO-RANZCR: Radiotherapeutical management of oligometastatic disease
11:00 - 12:15 | Ambra 5-6

Radical radiotherapy for oligometastatic disease (OMD) has gained rapid and broad acceptance in the last few years. This is in part related to the evolving technical and imaging capabilities. Yet, strong clinical evidence from prospective clinical trials is lacking in many indications, while randomized evidence in particular remains scarce. Lung cancer OMD is to date the best studied clinical indication.

In this session the available clinical evidence supporting OMD will be critically discussed, along with the challenges from a medical physics perspective. In addition, the specific situation of OMD in lung cancer will be addressed in more detail.

Chair: Y. Lievens (Belgium)
Chair: M. Chilkuri (Australia)
11:00 > Oligometastatic Prostate SBRT: The How, What, Where and When  
SP-0677

11:18 > SBRT for oligometastatic NSCLC  
*Speaker:* S. Senan (The Netherlands)  
SP-0678

11:36 > Challenges in SBRT physics  
*Speaker:* T. Kron (Australia)  
SP-0679

11:54 > Hints on optimal dose and fraction number from lung SBRT  
*Speaker:* R. Ruggieri (Italy)  
SP-0680

**SYMPOSIUM**

**Plan of the day - present status and future aims**  
**11:00 - 12:15 | Brown 2**

This multidisciplinary state-of-the-art session will focus on personalizing radiotherapy treatment through delivery of a “plan of the day”. Omar Bohoudi (NL) will focus on MR-guided on-line adaptive stereotactic radiotherapy for pancreatic cancer; Uwe Oelfke (GB) will discuss future developments in adaptive strategies; Shaista Hafeez (GB) will review currently available results of adaptive strategies, trials in development and the challenges of evaluating adaptive technologies; and Vincenzo Valentini (IT) will focus on opportunities and pitfalls in online MRI-guided adaptive radiotherapy including dealing with uncertainty, adaptive segmentation strategies and adapted-vs-planned dosimetry.

*Chair:* M. Dahele *(The Netherlands)*  
*Co-chair:* E. Fokas *(Germany)*

11:00 > Online adaptive planning in pancreatic cancer  
*Speaker:* O. Bohoudi *(The Netherlands)*  
SP-0681

11:18 > Future developments in adaptive strategies  
*Speaker:* U. Oelfke *(United Kingdom)*  
SP-0682

11:36 > Clinical results of PotD strategies  
*Speaker:* S. Hafeez *(United Kingdom)*  
SP-0683

11:54 > MRI online ART: opportunities and pitfalls  
*Speaker:* V. Valentini *(Italy)*  
SP-0684
**DEBATE**

**This house believes that immunotherapy is really changing radiation oncology**

11:00 - 12:15 | Brown 1

*Chair: A. Chalmers (United Kingdom)*

*Co-chair: R. Baumann (Germany)*

11:00 > For the motion

*Sponsor: E. Deutsch (France)*

11:15 > Against the motion

*Sponsor: M. Baumann (Germany), N. Ebert*

11:30 > For the motion: combining radiotherapy with immunotherapy: focus on immunocytokines


11:45 > Against the motion: we don't need Costalotamab when we have SBRT

*Sponsor: M. Joiner (USA)*

12:00 > Discussion

**DEBATE**

**This house believes that patients with squamous cell cancer of the esophagus no longer need surgery**

11:00 - 12:15 | Auditorium

Efficacy of chemoradiotherapy (CRT) in esophageal squamous cell carcinoma (SCC) will be discussed, with focus on potential subgroups of patients that could benefit from definitive CRT (dCRT) as an organ-sparing approach, the need for a prediction model for histopathological response, and quality of life after dCRT and surgery. Locoregional control and overall survival in SCC patients will be compared between dCRT and neoadjuvant CRT + surgery. Role of surgery in poor-responders and as salvage treatment will be discussed. Current approaches across Europe contrasting use of surgery +/- neoadjuvant therapies vs dCRT will be outlined.

*Chair: C. Belka (Germany)*

*Co-chair: J. Socha (Poland)*

11:00 > For the motion

*Sponsor: F. Cellini (Italy)*
11:15 > Against the motion  
*Speaker:* B. Wijnhoven *(The Netherlands)*  

11:30 > For the motion  
*Speaker:* M. Hulshof *(The Netherlands)*  

11:45 > Against the motion  
*W. Allum* *(United Kingdom)*  

12:00 > Discussion

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**SYMPOSIUM**

**Controversies in the management of brain metastases**  
**11:00 - 12:15 | Brown 3**

This session will deal with controversies in the management of brain metastases. Indications of whole brain radiotherapy will be debated in the context of new techniques of hippocampus sparing with the recent data of prospective trials. The emerging role of upfront systemic therapy as an alternative treatment to local treatment will be discussed mainly for NSCLC, as for breast cancer and melanoma. Several issues will be developed concerning radiosurgery (SRS): its role for multiple brain metastases, its integration with surgery (upfront SRS vs surgery? preoperative versus postoperative SRS?), and technical aspects (target volumes? Single vs multiple fractions?). Presentations will emphasize these topics in the perspective of radiation toxicities (neurocognitive impairment and radiation necrosis).

*Chair:* M. Niyazi *(Germany)*  
*Co-chair:* G. Louvel *(France)*

11:00 > Whole brain irradiation with hippocampal avoidance  
*Speaker:* A. Grosu *(Germany)*  

11:18 > Radiosurgery alone in multiple brain metastases  
*Speaker:* J. Zindler *(The Netherlands)*  

11:36 > Systemic treatment as alternative or addition to radiotherapy  
*Speaker:* N. Andratschke *(Switzerland)*  

11:54 > Integration of surgery and radiosurgery  
*Speaker:* S. Blamek *(Poland)*
**SYMPOSIUM**

**Improving delineation in RT: not only for the doctor**

*11:00 - 12:15 | Space 1-2*

Our current state of the art radiotherapy techniques provided the means to deliver dose conformal to the target at sub-millimeter precision. However, the target and normal structures as such still contain a significant level of uncertainty, and delineation can therefore be seen as the weakest link in the radiotherapy chain.

Apart from generating consensus delineation guidelines and organizing education, advances in imaging can play an important role in reducing interobserver variability. Also, dedicated software tools for delineation including auto-contouring can contribute to better and more consistent delineation practice.

This session will provide an introduction to interobserver variability measures and implications, show the value of DECT and MR techniques for delineation, and finally place delineation uncertainty in the bigger picture of uncertainties in radiotherapy.

*Chair: T. Nyholm (Sweden)*

*Co-chair: C. Brouwer (The Netherlands)*

11:00  >  How to handle clinical inter-observer variation in contouring assessment
*Speaker: M. Gooding (United Kingdom)*  

11:18  >  CT-based delineation: What can we gain from state-of-the-art CT image acquisition and reconstruction techniques
*Speaker: C. Richter (Germany), F. Negwer, E.C. Troost, P. Wohlfahrt*  

11:36  >  Development of MR techniques focused on improved delineation
*Speaker: M. Philippens (The Netherlands)*  

11:54  >  The future of margins in the era of new (multi-modality) imaging technology
*Speaker: J. Stroom (Portugal), S. Vieira, C. Greco*

**SYMPOSIUM**

**A new era for radiotherapy (anthropomorphic) phantoms**

*11:00 - 12:15 | Space 3-4*

*Chair: L. Cozzi (Italy)*

*Co-chair: D. Franceschini (Italy)*
11:00 > Personalized phantoms through 3D printing  
*Speaker: S. Crowe (Australia)*  
*SP-0701*

11:15 > Do we need to touch? Latest developments in physical and digital phantoms for 4D radiotherapy  
*Speaker: C. McGarry (United Kingdom)*  
*SP-0702*

11:30 > MR Linac anthropomorphic end-to-end QA phantoms: IROC-Houston’s experience  
*Speaker: A. Steinmann (USA), D. Followill*  
*SP-0703*

11:45 > Phantoms in particle therapy to verify Monte Carlo dose calculation  
*Speaker: P. Wohlfahrt (Germany)*  
*SP-0704*

12:00 > Discussion

**DEBATE**

*Workload/clinic logistics, and not technical uncertainties, are the main barrier to widespread implementation of adaptive RT practice*

11:00 - 12:15 | Ambra 1-2

There has been a lot of discussion amongst Radiation Therapy departments and the implementation of adaptive practice, concerning to workload/clinic logistics and not technical uncertainties. In this session, we are approaching different perspectives about adapting a radiation therapy treatment to each patient, since it may require special education for RTT’s and new organization paradigms. Can we really implement adaptive RT practice to our departments, in a daily basis, or is it impossible? Shall we change our capacity of conceiving a RT plan and change it, during the treatment, aiming to achieve different and better results to the patients?

RTT’s Michael Velec, from Canada and Elizabeth Forde, from Ireland, will be the specialists who will answer our doubts and questions, and maybe, promote changes in our departments.

*Chair: I. Lobato (Portugal)*  
*Co-chair: B. Bak (Poland)*

11:00 > For the motion: practicalities and not technical uncertainties limit the clinical implementation of adaptive radiotherapy  
*Speaker: M. Velec (Canada), E. Forde*  
*SP-0705*

11:20 > Against the motion  
*Speaker: E. Forde (Ireland)*  
*SP-0706*
11:40 > For the motion rebuttal: Practicalities and not technical uncertainties limit the clinical implementation of adaptive RT  
*M. Velec* *(Canada)*

11:50 > Against the motion rebuttal  
*E. Forde* *(Ireland)*

12:00 > Discussion

> Debates and closing remarks

**CLOSING DEBATE**

**Data mining or data farming?**  
**12:20 - 13:20 | Space 1-2**

How do we best provide evidence that can help us to shape future radiotherapy: through access to large amounts of retrospective data (data mining) or by investing in high quality (hypothesis driven) prospective data collection (data farming)? Currently, only a fraction of radiotherapy patients enter clinical protocols - what are the priorities to improve on this? Furthermore, much of the progress in radiotherapy is aimed towards reduction of morbidity. What is the role of data mining versus data farming on addressing questions on morbidity and does patient reported outcome play a role in data mining/farming?

*Chair: U. Ricardi* *(Italy)*
*Chair: B. Slotman* *(The Netherlands)*

12:20 > For the motion  
*Speaker: Y. Lievens* *(Belgium)*

12:35 > Against the motion  
*Speaker: P. Blanchard* *(France)*

12:50 > For the motion rebuttal  
*Speaker: A. Dekker* *(The Netherlands)*

13:05 > Against the motion rebuttal  
*Speaker: M. Aznar* *(United Kingdom)*
POSTERS AND ELECTRONIC POSTERS

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Clinical track: Head and Neck

- External beam radiotherapy for metastatic lesions of differentiated thyroid cancer
  M. Kenji (Japan), Y. Hamamoto, Y. Urashima, N. Takata, K. Kikuchi, M. Miyagawa, T. Mochizuki
  PO-0709

- IMRT+Carbon Ion Boost for Adenoid Cystic Carcinoma of the Minor Salivary Glands of the Oral Cavity
  K. Lang (Germany)
  PO-0710

- Second Primary Cancer in Salivary gland cancer in South Korea: A Nationwide Population-based Study
  J. Heo (Korea Republic of), Y. Oh, O.K. Noh, M. Chun, O. Cho
  PO-0711

- A new prediction model for patient reported xerostomia; external validation in postoperative setting
  PO-0712

  F. Postore (Italy), A. Rese, G. Panelli, A. Pepe, D. Toledo, V. Iorio
  PO-0713

- Toxicity profile of a SBRT boost as first-line treatment in oropharyngeal cancer patients
  W. Heemsbergen (The Netherlands), S. Baker, S. Petit, J. Nuyttens, G. Verduijn
  PO-0714

- Nutritional intervention in head and neck cancer patients undergoing radiotherapy
  PO-0715
> Skull-base chordoma treated with proton and carbon ion radiotherapy: CNAO clinical experience
PO-0716

> Addition of chemotherapy to hyperfractionated radiotherapy in advanced head and neck cancer
H. Jan, T. Balint, E. Boelke (Germany), D. Freddy Noel, B. Wilfried, K. Kai, M. Christiane
PO-0717

> Patterns of care for local recurrence of NPC after definite IMRT – a study by the HKNPCSG
PO-0718

> head and neck contour peer review improves quality of radiotherapy targets
L. Mcgee (USA), J. Rwigema, M. Halyard, T. DeWees, J. Gagneur, S. Patel
PO-0719

> Tumor volume/metabolism improve prognostication of anatomy-based stage for nasopharyngeal cancer?
Y. Jeong (Korea Republic of), K.K. Lee, S.R. Moon, S.Y. Noh, J. Kwak, S. Lee
PO-0720

> Prognostic Value of Inflammatory Markers in Patients with Head and Neck Cancer
J. Mrochem-Kwarcia (Poland), T. Rutkowski, A. Wygoda, A. Chmura, K. Składowski
PO-0721

> Carbon ion radiotherapy for adenoid cystic carcinoma in the head-and-neck
PO-0722

> Benefits of deep learning for delineation of organs at risk in head and neck cancer
J. Van der Veen, S. Willems, D. Robben, W. Crijns, F. Maes, S. Nuyts (Belgium)
PO-0723

> Multimodality imaging employing FDG-PET/CT paves the way for de-escalation of the elective dose
PO-0725
> Lower toxicity incidence after SPECT/CT-guided elective nodal irradiation for head and neck cancer


> Voice outcome following radiotherapy or laser microsurgery in patients with early glottic cancer


> Reirradiation of salivary gland tumors with carbon ion radiotherapy (CIRT) at CNAO


> Prognostic factors analysis in a cohort of Nasopharyngeal cancer patients with 5-year follow-up


> NTCP model for penetration/aspiration after (chemo)radiation including DVH parameters

_A. Gawryszuk_ (The Netherlands), H.P. Van der Loan, R.J.M. Steenbakkers, J.G.M. Van den Hoek, H.P. Bijl, J.A. Langendijk

> Transition from anatomical to geometric expansion modality for high-risk CTV in oropharyngeal cancer

_P. Bonomo_ (Italy), I. Desideri, C. Becherini, L. Visani, V. Salvestrini, M. Mariotti, P. Garlatti, L. Dominici, L. Livi

> NTCP model for osteoradionecrosis after definitive radiotherapy in head and neck cancer patients


> Non-invasive imaging for tumor hypoxia: a novel validated CT and FDG-PET-based Radiomic signature

Clinical track: CNS

> Patterns of Care in the Management of WHO Grade II and III Spinal Ependymomas

*D. Yeboa* (USA), K. Liao, B.A. Guadagnolo, G. Rao, A. Bishop, C. Chung, J. Li, C.E. Tatsui, L. Rhines, S. Ferguson, A. Paulino, A. Ghia

> Cognitive function after radiation therapy for brain tumours

*L. Haldbo-Classen* (Denmark), A. Amidi, L. Wu, S. Lukacova, G. Von Oettingen, R. Zachariae, J. Kallehauge, M. Høyer

> Radiation necrosis after a combination of EBRT and iodine-125 brachytherapy in gliomas

*I. Hadi* (Germany), D. Reitz, R. Bodensohn, O. Roengvoraphoj, M. Niyazi, C. Belka, F. Kreth, S.B. Nachbildung

> Retrospective analysis of hypofractionated stereotactic radiotherapy for tumors larger than 2 cm

*Y. Koide* (Japan), T. Kodaira, H. Tachibana, H. Tanaka, N. Tomita

> Extent of resection is potent prognostic factor next to molecular subtype in low-grade glioma


> Sense and radiosensitivity – CyberKnife® stereotactic radiotherapy in patients with meningiomas


> Can HSRS on tumor bed replace WBRT in resected brain metastases? Results of a phase II study


> Active spot-scanning proton therapy for intracranial meningiomas: CNAO experience


> The survival impact of the time between surgery and chemoradiotherapy in Glioblastoma patients

*O. Kaidar-Person* (Israel), I. Zur, T. Tzuk-Shina
> Single dose versus FSRT for brain metastases: a retrospective study
C. De la Pinta Alonso (Spain), E. Fernández, M. Martín, R. Hernanz, C. Vallejo, M. Martín, A.B. Capúz, J.A. Rojo, I. Villodre, S. Sancho

> Efficacy of single-fraction or fractionated SRS combined with CPIs in melanoma brain metastases
G. Minniti (Italy), D. Arzellini, C. Reverberi, F. Bianciardi, B. Tolu, C. Scaringi, M. Osti, P. Gentile

> Fractionated SRS (fSRS) or surgery plus fSRS to resection cavity for NSCLC large brain metastases
G. Minniti (Italy), C. Scaring, D. Arzellini, F. Bianciardi, B. Tolu, R. Morace, M. Osti, P. Gentile

> The utility of functional magnetic resonance imaging in target delineation of high-grade gliomas
L. Qian (China), Q. Fei, Y. Zhang, W. Guo, X. Bian, L. Yin, P. Yan, T. Wang, P. Qian, Z. Guo, X. He

> Results at long-term after linac-based radiosurgery of vestibular schwannomas
P. Anselmo (Italy), M. Casale, F. Trippa, F. Arcidiacono, S. Fabiani, A. Di Marzo, L. Draghini, S. Terenzi, E. Maranzano

> Prognostic factors of distant brain failure free survival after stereotactic RT for brain metastasis
Y. Pin (France), M. Loo, A. Paix, P. Meyer, D. Antoni, F. Proust, G. Noël

> New aspects regarding the treatment of glioblastoma
C. Matuschek, B. Tamaskovics, E. Boelke (Germany), W. Budach, F. Djiepmo, J. Haussmann, A. Kumar, H. Pokhylevych, D. Schomer, A. Hayman

> VMAT for CNS tumors and alopecia: results of an observational study and new constraints for the scalp

> Neutrophil lymphocyte ratio and Platelet lymphocyte ratio as a prognostic factor in brain metastases
> Hypofractionated stereotactic radiotherapy for inoperable arteriovenous malformations
  PO-0752

> radiotherapy quality assurance-POLCA trial-patients with anaplastic oligodendroglial tumors
  PO-0753

> Radiation-induced nausea and vomiting: how to delineate the Dorsal Vagal Complex?
  PO-0754

> Patterns of Re-irradiation for Recurrent Gliomas and Validation of a Prognostic Score
  J. Verhoeff (The Netherlands), C. Post, M. Kramer, E. Smid, H. Van der Weide, K. Kleynen, M. Heesters
  PO-0755

> Evaluating the DS-GPA in patients with 1-10 brain metastases treated with stereotactic radiosurgery
  S. Nagtegaal (The Netherlands), A. Claes, T. Snijders, J. Verhoeff
  PO-0756

> Radiosurgery for cranial and spinal haemangioblastomas: monoinstitutional analysis
  V. Pinzi (Italy), A. Viola, E. De Martin, C. Iezzoni, M. Cerniauskaite, M. Marchetti, L. Fariselli
  PO-0757

**Clinical track: Haematology**

> Whole brain RT plus concomitant Temozolamide in PCNSL after MTX-HD: a prospective phase II study
  F. Catucci (Italy), S. Chiesa, M. Giraffa, E. Maiolo, F. Beghella, T. Zinicola, S. Hohaus, V. Rufini, V. Valentini, M. Balducci
  PO-0758
Clinical track: Breast

> Radiotherapy After Primary CHEMotherapy (RAPCHEM): protocol adherence in a Dutch registration study
  PO-0759

> Heterogeneity of Radiosensitivity, Recurrence, and PD-L1 in Breast Tumor Single Cell RNA-Seq Data
  B. Jang (Korea Republic of), W. Han, I.A. Kim
  PO-0760

> Hypofractionated whole breast irradiation safety after breast-conserving surgery for young patients
  I. Meattini (Italy), Y. Kirova, C. Saieva, L. Visani, E. Olmetto, V. Salvestrini, J. Kim, W. Jung, I. Desideri, A. Fourquet, P. Poortmans, L. Livi, K. Kim
  PO-0761

> Low predictive value of mean heart dose for coronary artery dosimetry in breast cancer radiotherapy
  PO-0762

> Prognostic role of platelets-to-lymphocytes and neutrophil-to-lymphocytes ratio in breast cancer
  PO-0763

> The effect of automatic heart contouring on model performance in predicting acute coronary events
  D. Spoor (The Netherlands), F. Peters, V. Van den Bogaard, A. Van der Schaaf, B. Ta, R. Vliegenthart, R. Kierkels, H. Langendijk, J. Maduro, M. Sijtsema, A. Crijns
  PO-0764

> Oncological and cosmetic outcome after IOERT as a boost in a large cohort of breast cancer patients
  PO-0765

> The Italian Society of Radiation and Clinical Oncology (AIRO): snapshot on breast cancer management
  F. Gregucci (Italy), A. Fozza, S. Falivene, D. Smaniotto, A. Morra, A. Daidone, R. Barbara, A. Ciabattoni
  PO-0766
> Long-term results of adjuvant hypofractionated radiotherapy for breast cancer in elderly patients.
*M.J. García Anaya* (Spain), I. García Ríos, S. Segado, Á. Fernández Forne, C. Jódar López, J.A. Medina Carmona

**POSTER**

**Clinical track: Lung**

> High Heart Dose Affects Overall Survival in Lung Cancer Patients Undergoing Radiation Therapy.
*M. Fatyga* (USA), S. Schild, J. Niska, M. Herman, J. Li, X. Liu

> Lung Organ-at-Risk volumes – The need for a better definition in the era of 4DCT
*S. Vinod* (Australia), C. Choong, P. Vial, T. Kron, D. Ball

> Clinical Outcomes of Concurrent Chemoradiation vs RT alone in Elderly Patients with Stage III NSCLC
*D.Y. Kim* (Korea Republic of), J. Kim, C. Song, J.S. Lee

> Cardiac event after radical radiotherapy for lung cancer - initial results from a multi-centre study
*F. Sun* (United Kingdom), K. Banfill, S. Falk, M. Alan, L. John, W. Robert, A. Azadeh, S. Matthias, V.H. Marcel, F. Corinne, F. Kevin

> Role of Prophylactic Cranial Irradiation in Extensive Disease Small Cell Lung Cancer
*J. Chung* (Korea Republic of), S.Y. Kang, G.J. Cheon, H. Wu, Y.S. Weo, D. Kim, H.J. Kim

> CBCT is not valid for response evaluation after chemoradiotherapy for locally advanced NSCLC

> Outcomes of IMRT/VMAT vs 2D/3D-conformal thoracic radiation in limited stage small-cell lung cancer
*T.S. Toh* (United Kingdom), A. Bang, D. Pinto, H. Katrina, C. Brown, W. Xu, G. Liu, B. Lok

> Palliative lung radiotherapy: audit of prescribing practice and survival analysis
> Neutrophil-to-lymphocyte ratio dynamics predict for survival in lung cancer treated with SBRT
M. Chowdhary (USA), R. Dhawan, J. Switchenko, S. Tian, K. King, M. Batus, M. Fidler, P. Bonomi, N. Sen, K. Patel, M. Khan, M. Gaurav

> Predicting overall survival after radiotherapy for brain metastases in patients with NSCLC
N. Knotter (The Netherlands), N. Horeweg, I. Coremans, R. Wiggenraad, Y. Van der Linden

> New prognostic factors in the SBRT treatment of early stage non-small cell lung cancer
J. Di Muzio (Italy), S. Badellino, M. Levis, L. Delsedime, C. Mantovani, M. Volante, M. Papotti, U. Ricardi

> Current management of limited-stage SCLC and CONVERT trial impact: an EORTC LCG survey
A. Levy (France), L.E.L. Hendriks, C. Le Pêchoux, S. Falk, B. Besse, S. Novello, A.C. Dingemans, B. Hasan, M. Reck, T. Berghmans, C. Faivre-Finn

> Prognostic value of PD-L1 expression in locally advanced NSCLC treated with chemoradiotherapy

> 30 Gy single dose SBRT: Outcome in a large series of patients with lung oligometastatic disease
L. Nicosia (Italy), L. Agolli, M. Valeriani, C. Reverberi, S. Bracci, L. Marinelli, V. De Sanctis, E. Cortesi, M. Martelli, C. De Dominicis, M.F. Osti

> External validation of NTCP models for pneumonitis in lung cancer patients receiving proton therapy
A. Niezink (The Netherlands), V. Jain, O. Chouvalova, R. Wijsman, C. Muijs, M. Frick, A. Doucette, C. Simone, C. Chinniah, J. Widder, J. Langendijk, A. Van der Schaaf, A. Berman

> Standardizing mediastinal nodal CTV delineation in Stage III NSCLC: results of a two-phase dummy run
F. Charlier (Belgium), V. Remouchamps, M. Lambrecht, X. Geets, E. Hortobágyi, Y. Lievens, L. Moretti

> Repeat Stereotactic Body Radiation Therapy for Salvage of Local Failure after Definitive Lung SBRT
W. Kennedy (USA), P. Gabani, J. Nikitas, C. Robinson, J. Bradley, M. Roach
Clinical significance of treatment related lymphopenia in lung SBRT and a method to ameliorate them

K. Wijesooriya (USA), J. Colen, T. McMullen, S. Liyanage, C. Alonso, K. Romano, S. Peach, P. Read, J. Larner

Hemostasis radiotherapy for inoperable gastric cancer: A prospective study

O. Tanaka (Japan), A. Sugiyama, T. Omatsu, T. Taniguchi, K. Ono, Y. Kunishima, M. Matsuo

Adjuvant chemoradiation in resected gallbladder cancer: A prognostic model for overall survival

C. Solé (Chile), L. Vargas, V. Solé, F. Larsen, S. Solé

Preliminary analysis of PET/CT imaging on radiation field and relapse rates in esophageal cancer

E. Jimenez-Jimenez (Spain), P. Mateos, N. Aymar, R. Roncero, I. Ortiz, J. Pardo, S. Sabater

Evaluation of Hepatic Toxicity after Repeated Stereotactic Body RT for Hepatocellular Carcinoma

S.M. Yoon, S. Lee (Korea Republic of), H. Kim, J. Jung, J. Kwak, B. Cho

A nationwide analysis evaluating a role of local treatment including external RT for BCLC C HCCs

C.H. Rim (Korea Republic of), L. Jeongsim

Neoadjuvant treatment potentially improves outcome in resectable pancreatic cancer: meta-analysis


A randomized clinical trial on radiosensitizer effects of LMWH in Chemoradiation of esophageal SCC

S.A. Javadinia (Iran Islamic Republic of), A. Taghizadeh Kermani, S. Hosseini, A. Fanipakdel, M. Joudi Mashhad, A. Gholami

Nodal CTV selection according to primary tumor location and pT-stage for biliary tract cancers

J. Socha (Poland), D. Surdyka, L. Kępka
> Postoperative Chemoradiotherapy in Gastric Cancer with Poor Response to Neoadjuvant Chemotherapy
Y. Kundel (Israel), B. Brenner, G. Perel, N. Gordon, R. Levin

> Prediction of severe lymphopenia during chemoradiotherapy for esophageal cancer
P. Van Rossum (The Netherlands), W. Deng, D. Routman, A. Liu, C. Xu, Y. Shiraishi, M. Peters, K. Merrell, C. Hallemeyer, R. Mohan, S. Lin

> Carbotaxol definitive chemoradiotherapy for inoperable oesophageal cancer: UK multicentre study

> Impact of 99mTc-GSA SPECT image-guided inverse planning on DFH parameters for SBRT planning for HCC

> Response assessment to neoadjuvant chemoradiotherapy for esophageal cancer using PET/CT and DW-MRI

> Treatment outcomes of nodal positive unresectable thoracic esophageal carcinoma
T. Huang (Taiwan), S. Li, Y. Chen, H. Lu, C. Lo, F. Fang, S. Chou, Y. Wang

> Radiation dose escalation in pancreatic cancer: a propensity-score matching study
X. Zhu (China), C. Yangsen, Z. Xianzhi, S. Yuxin, J. Xiaoping, Q. Shuiwang, C. Fei, J. Zhen, F. Fang, G. Lei, Z. Huojun

> Esophageal Cancer: One Organ, Two Histologies, One Treatment Strategy: Why?
M. Lamande (Belgium), L. Grandjean, E. Gonne, D. Van Daele, J. Collignon, M. Polus, C. Loly, J. Vanderick, P. Coucke, P. Martinive

> Lung dose was associated with severe lymphopenia in esophageal cancer undergoing trimodality therapy
J. Lin (Taiwan), J. Lee, C. Cheng, T. Chang, Y. Chen
> Endoluminal brachytherapy with induction chemotherapy and definitive chemoradiation in Ca.Esophagus
*S. Raghunath (India), R. Tiwari, G. Narayanan, B. Vishwanathan, R. Sultana*

> Re-irradiation with SBRT for In-field Recurrence of Pancreatic Cancer After Prior SBRT
*Y. Shen (China), X. Zhu, X. Ju, Y. Cao, S. Qing, F. Cao, H. Zhang*

> Analysis of esophageal cancer patients treated with neoadjuvant therapy who never made it to surgery
*M. Thomas (Belgium), L. Depypere, J. Moons, W. Coosemans, T. Lerut, H. Prenen, K. Haustermans, H. Van Veer, P. Nafteux*

> Impact of Hospital Volume and Trimmality in Survival Outcomes for Esophageal Cancer
*M. Bringel Oliveira Duarte (Brazil), J. Barreto Campello Carvalheira, E. Baldon Pereira*

> Heterogeneous FDG-guided dose escalation in definitive oesophageal radiotherapy: a feasibility study
*H.R. Mortensen (Denmark), M. Nordmark, D.S. Møller, S.N. Risum, E. Holtved, M. Nielsen, B. Weber, M. Josipovic, L. Hoffmann*

> Definitive involved-field radiotherapy for esophageal cancer: are we missing the target?
*C. Viveiros (Portugal), G. Fernandez, C. Pedro, A. Pimenta, L. Mirones, M. Fortunato, F. Santos*


> Outcome following definitive radiotherapy in oesophageal cancer: A single UK centre experience
*S. Mehta (United Kingdom), A. Mcpartlin, C. Hodgson, G. Radhakrishna, L. Bhatt, H. Sheikh*

> SBRT compared to sorafenib in locally advanced hepatocellular carcinoma: a propensity score analysis
POSTERS

Pathological validation of endoscopically placed fiducials on tumor borders in esophageal cancer

M. Machiels (The Netherlands), M.L. Van Montfoort, N.B. Thuijs, M.I. Van Berge Henegouwen, J.E. Van Hooft, T. Alderliesten, S.L. Meijer, M.C.C.M. Hulshof

A Phase I/II Study of durvalumab and stereotactic radiotherapy in locally advanced pancreatic cancer

R. Tuli (USA), N. Nisen, S. Lo, V. Placencio, G. Gresham, A. Hendifar

Clinical track: Lower GI (colon, rectum, anus)

Clinical target volume in radiation therapy for organ preservation in T2 rectal cancer

J. Socha (Poland), L. Pietrzak, A. Zawadzka, A. Paciorkiewicz, A. Krupa, K. Bujko

Stereotactic radiation therapy in colorectal cancer brain metastasis: a multicentric cohort

A. Paix (France), F. Thillays, J. Biau, N. Vulquin, I. Pop, K. Debbi, A.L. Grosu, G. Noël

Adaptive radiotherapy concomitant with chemotherapy as preoperative treatment for rectal cancer


PHASE II study about adaptive high dose radiotherapy in high risk rectal cancer


Comparison of three different approaches for bowel delineation in patients with rectal cancer

**Stereotactic Radiation Therapy in Oligometastatic Colorectal Cancer: 102 patients and 150 lesions**

*M.A. Zerella* (Italy), V. Dell’Acqua, A. Surgo, F. Kraja Pupuleku, J. Kobiela, P. Spychalski, C.M. Francia, D. Ciardo, C. Fodor, F. Pansini, S. Vigorito, F. Cattani, M.C. Leonardi, B.A. Jereczek Fossa

**Effect of short-course radiotherapy on postoperative complications in locally advanced rectal cancer**

*S. Hoendervangers* (The Netherlands), C. Sparreboom, H. Van Grevenstein, L. Verkooijen, J. Lange, P. Doornebosch, M. Intven

**Long-term outcome of an organ preservation strategy following chemoradiotherapy in rectal cancer**

*E. Palazzari, A. Lauretta, F. Navarria* (Italy), R. Innocente, C. Bellucco, C. Bampo, L. Balestri, F. Matrone, G. Fanetti, A. Revelant, R. Cannizzaro, V. Canzonieri, A. Buonadonna, J. Polesel, G. Bertola, A. De Paoli

**Muscle density loss during cancer therapy for advanced endometrial cancer portends poor survival**

*J. Lee* (Taiwan), J. Lin, C. Chang, M. Wu, Y. Chen

**Relevance of time interval and thermal dose for the clinical outcome of cervical carcinoma patients**

*M. Kroesen* (The Netherlands), T. Mulder, N. Holthe, A. Aangeenbrug, J.W. Mens, L. Van Doorn, M. Paulides, E. Oomen-de Hoop, R. Vernhout, L. Lutgens, G. Van Rhoon, M. Franckena

**Postoperative VBT vs EBRT/VBT in patients with early stage of uterine carcinoma - our update results**

*A. Masarykova* (Slovakia), D. Scepanovic, M. Pobijakova, A. Hanicova, M. Fekete

**Differential impact of GLUT1 overexpression between HPV16-positive and -negative cervical cancer**

*B.H. Kim* (Republic of Korea), J.H. Chang

**On the value of a prognostic tumour score in locally advanced cervical cancer**

*L.C. Lindegaard* (Denmark), P. Petric, A.M. Lindegaard, K. Tanderup, L.U. Fokdal
> Comparison of clinical examination and MRI for local cervical cancer staging (FIGO and T(NM))

> Chronic Lower Extremity Lymphedema in Gynecologic Cancer Patients: EBRT versus Brachytherapy
  W.I. Chang (Korea Republic of), H. Kang, H.J. Kim, K.S. Seo, H.S. Kim

> MRI-based texture analysis of lymph node for predicting clinical outcome in cervical cancer patients

> Assessment of setup margins and additional subsite anisotropic margin expansions in cervical IGRT

> Effect of pre-treatment hematological indices on survival in cervical cancer
  U. Mahantshetty (India), P. Naga CH, L. Gurram, R. Hawaldar, S. Chopra, S. Gupta, J. Ghosh, J. Bajpai, S. Gulia, J. Agarwal

> Para-aortic lymphadenectomy and recurrence patterns in locally advanced cervical cancer
  M.M. Soraya (Spain), D.C. Moreno Santiago, J. Giralt Lopez de Sagredo, R. Verges Capdevilla

> Development of a nomogram for predicting overall survival in patients with Cervical cancer
  A.B.A. Osong (Belgium)

○ POSTER

Clinical track: Prostate

> Virtual imaging for patient information on radiotherapy planning and delivery for prostate cancer.
> 68GaPSMA11 PET/CT in prostate cancer patients with biochemical recurrence: PET positivity predictors

PO-0835

> Outcomes and factors by risk group after prostate brachytherapy: Cohort study in 2316 patients

PO-0836

> Dose-effect relationship for early late incontinence after IMRT in post-prostatectomy patients

PO-0837

> Castrate testosterone predicts biochemical relapse free survival in non-metastatic prostate cancer
G. Ozyigit (Turkey), P. Hurmuz, D. Yuce, F. Akyol

PO-0838

> Correlation of recalculated-dose based on CBCT and toxicity in postoperative prostate cancer VMAT
P. Buranaporn (Thailand), T. Jaikuna, P. Dankulchai

PO-0839

> Two StereoTactic Ablative Radiotherapy Treatments for Localized Prostate Cancer (2STAR)

PO-0840

> Salvage SBRT for local prostate cancer recurrence after radiotherapy: a GETUG retrospective study

PO-0841

> Real-Time tracking improves treatment: The TROG Stereo Prostate Ablative Radiotherapy with KIM trial

PO-0842
> Toxicity of a brachytherapy boost for prostate cancer patients
  L. Bokhorst (The Netherlands), S. Van der Pol, C. Niël, C. Hoekstra

> Target motion mitigation and dose painting in prostate cancer
  SBRT: results from a Phase II study
  C. Greco (Portugal), O. Pares, N. Pimentel, V. Louro, B. Nunes,
  J. Sroom, S. Viera, D. Mateus, Z. Fuks

> What is the dosimetric benefit of daily position control imaging
  for prostate cancer radiotherapy?
  M. Splinter (Germany), T. Bostel, C. Lang, P. Häring, N. Bougatf,
  J. Debus, N.H. Nicolay

> Dosimetric effects of a novel concept of adaptive radiotherapy
  for prostate cancer patients
  M. Splinter (Germany), T. Bostel, C. Lang, P. Häring, J. Debus,
  N.H. Nicolay

> Rapid modulation of PSMA expression by ADT: Serial PSMA PET
  in men commencing androgen blockade
  L. Emmett (Australia), V. Chalasani, A. Kneebone, G. Hruby,
  A.M. Joshua

> Early mortality of prostatectomy vs. radiotherapy as a primary
  treatment for prostate cancer
  D. Medenwald (Germany), K. Medenwald, A. Glowka, D. Vordermark,
  C. Dietzel

> Pattern of Relapse After Metastases Directed Therapy in
  Oligorrecurrent Prostate Cancer
  I. San Miguel (Spain), D. Büchser, F. Suarez, F. Casquero, I. Fernandez,
  E. Rodeño, R. Ortiz de Zarate, R. Llarena, J. Garcia Olaverri,
  L. Martinez-Indart, P. Bilbao, A. Gomez De Iturriaga

> Comparison of self-reported acute urinary incontinence in pts
  treated with adjuvant or salvage IMRT
  F. Munoz, D. Cante, E. Garibaldi, A. Peruzzo, E. Petrucci, E. Delmastro,
  G. Sanguineti, A. Faiella, B. Avuzzi, B. Noris Chiorda, T. Giandini,
  V. Vavassori, E. Villa, G. Girelli, B. Farina, J.M. Waskiewicz, A. Magli,
  E. Moretti, R. Valdagni, C. Bianconi, F. Badenchini, N. Di Muzio,
  T. Rancati, C. Fiorino, C. Cozzarini (Italy)

> Quality of life after whole pelvis RT for prostate cancer: results
  from a prospective study
  G. Sanguineti, D. Cante, F. Munoz, A. Faiella, E. Petrucci, A. Peruzzo,
  E. Garibaldi, P. Gabriele, B. Avuzzi, T. Giandini, B. Noris Chiorda,
  V. Vavassori, E. Villa, P. Salmoiraghi, G. Girelli, J.M. Waskiewicz,
  A. Magli, E. Moretti, R. Valdagni, C. Bianconi, F. Badenchini,
  N. Di Muzio, T. Rancati, C. Fiorino, C. Cozzarini (Italy)
> Stereotactic Body Radiation Therapy for Unfavorable Prostate Cancer: Large institutional experience

PO-0852

> Bladder and urethra subregions predicting urinary toxicity after prostate cancer radiotherapy
*E. Mylona* (France), O. Acosta, T. Lizee, J. Castelli, C. Lafond, G. Crehange, N. Magne, S. Chiavassa, S. Supiot, R. De Crevoisier

PO-0853

> Extreme vs moderate hypofractionation for localized Pca: a Propensity Score Matching Analisys
*G. Marvaso* (Italy), D. Ciardo, S. Gandini, G. Riva, E. Frigo, D. Zerini, S. Comi, R. Cambria, O. De Cobelli, R. Orecchia, B.A. Jereczek-Fossa

PO-0854

> Development and Validation of a Prostate Cancer Patient Decision Aid: Towards Participative Medicine
*A. Ankolekar* (The Netherlands), B. Vanneste, E. Bloemen, J. Van Roermund, E. Van Limbergen, K. Van de Beek, V. Zambon, M. Oelke, A. Dekker, P. Lambin, R. Fijten, A. Berlanga

PO-0855

> Metastasis-directed therapy for oligoprogressive castration refractory prostate cancer
*C. Berghen* (Belgium), S. Joniau, P. Ost, K. Poels, W. Everaerts, K. Haustermans, G. De Meerleer

PO-0856

> MRI-derived radiomics to select patients with high-risk prostate cancer for adjuvant radiotherapy

PO-0857

> Dosimetric correlation analysis of observed toxicities in prostate cancer patients treated with SBRT
*N. Pienimäki* (Finland), K. Vuolukka, J. Heikkilä, J. Palmgren, J. Seppälä

PO-0858

> Validation of genetic variants associated to late severe toxicity after prostate cancer RT
*A. Cicchetti* (Italy), T. Rancati, F. Ballarini, M. Dispizzi, T. Giandini, B. Avuzzi, C. Cozzarini, C. Fiorino, R. Valdagni

PO-0859

> Improving consistency of proximal seminal vesicle delineation for prostate SBRT
*K. Morrison* (United Kingdom), N. Van As

PO-0860
Analysis of nodal and prostatic bed RT in oligorecurrent PC patients treated with PSMA-PET-guided RT
S. Kirste (Germany), S. Kroese, C. Henkenberens, N. Schmidt-Hegemann, M. Vogel, J. Becker, H. Christiansen, S. Combs, A. Müller, C. Belka, M. Guckenberger, A. Grosu

P2 RCT of Home-based physical activity in pts treated by ADT & EBRT for localised prostate carcinoma
C.P. Doyle (Ireland), P. Thirion, B. O’Neill, M. Dunne, V. Curtis

Adaptive radiotherapy for carcinoma of the urinary bladder: Long term outcomes with dose escalation
P. Gupta (India), V. Murthy, K. Baruah, R. Krishnatry, G. Bakshi, G. Prakash, M. Pal, A. Joshi, K. Prabhash

Normal tissue sparing with diffusion weighted MRI informed tumour boost in bladder radiotherapy
K. Chan (United Kingdom), K. Warren-Oseni, H. Abdel-Aty, A. Dunlop, D. McQuaid, M. Koh, A. Sohaib, R. Huddart, S. Hafeez

Curative HDR brachytherapy (HDR-BT) for non-melanoma skin cancers (NMSC)
B. Emami (USA), C. Hentz, I. Rashed, K. Stang, A. Gliniewicz, M. Mysz, D. Eilers, R. Tung

Cost-effectiveness analysis of stereotactic radiotherapy in melanoma brain metastases
A. Paix (France), F. Thillays, F. Courtauld-Deslandes, I. Pop, J. Biau, O. Briard, A.L. Grosu, E.A. Sauleau, G. Noël
**POSTER**

**Clinical track: Sarcoma**

> Prognostic impact of the “Sekhar Grading System for Cranial Chordomas” - an attempt at validation
  
  A. Hottinger (Switzerland), B. Bojaxhiu, M. Walser, B. Bachtiary, A. Pica, D.C. Weber

> Total Marrow Irradiation in Myeloma

  Multiple patients candidate to allogeneic transplant
  
  A. Chiara (Italy), S. Broggi, M. Pasetti, I. Dell’oca, M. Azizi, G. Salvadori, S. Selli, M. Marcatti, A. Assanelli, J. Peccatori, M. Cattaneo, F. Ciceri, N. Di muzio

**POSTER**

**Clinical track: Paediatric tumours**

> Reducing pulmonary and renal toxicity in children receiving TBI with forward planned IMRT
  

> Treatment Outcomes for Pediatric Basal Ganglia Germinomas: A single institute experience in Taiwan
  
  Y. Kang (Taiwan), S. Lin, Y. Lee, F. Chang, M. Liang, H. Chen, Y. Liu, T. Wong, Y. Chen

> Efficacy of radiotherapy boost in incompletely resected paediatric ependymoma: a retrospective study
  
  M. Ramos Albiac (Spain), B. Gutiérrez, N. Mestre, M. Mota-Foix, S. Pérez-Hoyos, A. Llort, P. Cano, J. Giralt

> Hematological toxicity of 3DCRT and VMAT craniospinal irradiiation in pediatric medulloblastoma
  

> Associations between vessel volume and neurocognition In children treated with proton therapy
  
  A. Srivastava (USA), J. Contreras, H. Heimos, S. Perkins
> The feasibility of MR-Linac treatment planning in childhood abdominal Neuroblastoma

M. Llewelyn (United Kingdom), G. Smyth, N. Lavan, S. Nill, U. Oelfke, H. Mandeville

PO-0874

> Development of pituitary deficits after radiotherapy in pediatric patients after long follow-up

C. Satragno (Italy), E. Tornari, S. Barra, F. Giannelli, L. Belgioia, M. Giaccardi, N. Di Iorgi, M.L. Garre, R. Haupt, R. Corvò

PO-0875

**Clinical track: Palliation**

> Stereotactic Body Radiation Therapy for thoracic nodes metastases, a multi-institutional experience

D. Franceschini (Italy), F. Bianciardi, R. Mazzola, F. De Rose, P. Gentile, F. Alongi, M. Scorsetti

PO-0876

> Utilization of short course palliative radiation therapy in breast cancer bone metastasis

P. Gabani (USA), B. Fischer-Valuck, W. Kennedy, L. Ochoa, M. Thomas, M. Daly, I. Zoberi, C. Abraham

PO-0877

> Implementing a dedicated inpatient radiation team with multidisciplinary palliative care rounds

D. Mark (USA), P. Gilbo, S. Joseph, A. Goenka, B. Bloom

PO-0878

> Mobile health for monitoring of health status in palliative care patients: a feasibility study

M. Pavic (Switzerland), V. Klaas, G. Theile, J. Kraft, G. Tröster, M. Guckenberger

PO-0879

> Validation of a predictive model for survival in patients receiving radiotherapy for bone metastases


PO-0880

> Outcomes of oligometastatic bone disease treated with conventional or stereotactic radiotherapy

S. Van de Ven (The Netherlands), J.M. Van der Velden, W.S.C Eppinga, D.H.J.G Van den Bongard, H.M. Verkooijen

PO-0881

> Outcome and Toxicity of Hypofractionated Image-Guided SABR for Spinal Oligometastases

C. Billiet (Belgium), C. Mercier, F. Vandaele, P. Vermeulen, S. Van Laere, P. Huget, D. Verellen, P. Dirix

PO-0882
Phase II trial of stereotactic body radiation therapy for abdomino-pelvic lymph node oligometastases
C. Franzese (Italy), T. Comito, A. Tozzi, F. De Rose, P. Navarra, P. Mancosu, S. Tomatis, M. Scorsetti

Predicting 30-day mortality for palliative radiotherapy
A. Witztum (USA), S. Wu, E. Gennatas, G. Valdes, T. Solberg, S. Braunstein

Comprehensive geriatric assessment tools for elderly patients with early NSCLC treated with SBRT
F. Cuccia (Italy), A. Donofrio, V. Valenti, A. Tripoli, N. Luca, A. Palmeri, G. Terranova, E. Quartuccio, G. Napoli, G. De Gregorio, D. Cespuglio, G. Mortellaro, G. Ferrera, A. Lo Casto

Partial tumor irradiation exploiting immuno-mediated effects: tumor microenvironment as a new oar
S. Tubin (Austria)

Radiation toxicity in patients with collagen vascular disease: Meta-analysis of case-control studies
P. Shaikh (USA), F. Alite, V. Bakalov, B. Emami, J. Vargo, M. Wu, G. Jacobson, W. Small, M. Harkenrider

Stereotactic body radiotherapy for refractory ventricular tachycardia: clinical outcomes
R. Jumeau (Switzerland), M. Ozsahin, J. Schwitter, F. Duclos, V. Vallet, M. Zeverino, R. Moeckli, E. Pruvot, J. Bourhis

Breathing modulation in patients treated for mobile tumours: moving forward to clinical integration
G. Van Ooteghem (Belgium), D. Dasnoy-Sumell, G. Liistro, E. Sterpin, G. Xavier

Abscopal effects in metastasized cancer patients treated with PD-1 inhibition and radiation therapy
M. Trommer (Germany), S.Y. Yeo, T. Persigehl, A. Bunck, M. Schlaak, H. Grull, S. Theurich, M. Von Bergwelt, J.M. Herter, E. Celik, S. Marnitz, C. Baues
Physics track: Basic dosimetry and phantom and detector development

- Radiochromic film based output measurement for radiobiological experiments at low energy photons
  N. Tomic (Canada), L. Lieng, M. Lecavalier, J. Seuntjens, R. Aparian, S. Devic
  PO-0891

- On the orientation of ionization chambers in dosimetry of small photon fields
  B. Casar (Slovenia), E. Gershkevitsh, I. Mendez
  PO-0892

- Absolute dosimetry with polymer gels – A TLD reference system
  A. Schwahofer (Germany), P. Mann, C. Karger
  PO-0893

- Characterization of a multilayer ionization chamber for relative depth-dose curves in particle beams
  PO-0894

- Anthropomorphic breathing phantom with lung and liver components for testing MR-guided radiotherapy
  E. Colvill (Switzerland), M. Krieger, Y. Zhang, S. Safai, D.C. Weber, A.J. Lomax, G. Fattori
  PO-0895

- Motorised 3D printed water tank designed for measurements in MR linear accelerators
  PO-0896

- Development of an anthropomorphic lung phantom for imaging and radiotherapy
  A. Weidner (Germany), A. Runz, W. Johnen, G. Echner
  PO-0897

- Advanced Diamond Dosimeter for quality Assurance in Radiotherapy
  C. Talamonti (Italy), K. Kanxheri, S. Sciortino, S. Lagomarsino, L. Alunni Solestizi, M. Caprai, M. Ionica, M. Casati, S. Calusi, M. Mangoni, S. Pallotta, L. Servoli
  PO-0898
POSTER

Physics track: Dose measurement and dose calculation

> Validation of dose calculation accuracy on daily cone-beam CT scans in the thoracic region
  *L. Hoffmann* (Denmark), M. Alber, U.V. Elstrøm, L.P. Kaplan, D.S. Møller
  PO-0899

> The magnitude of dose calculation errors as a component of IROC phantom failures
  *S. Edward* (Denmark), M. Glenn, P.A. Balter, J.M. Pollard-Larkin, C.B. Peterson, R.M. Howell, D. Fallowill, S.F. Kryx
  PO-0900

> 2D solid-state array detectors: a technique for in-vivo dose verification at varying effective area
  PO-0901

> The ACDS approach to measuring dose to bone and comparing to TPS reported dose to water and medium
  *J. Lye* (Australia), M. Shaw, J. Lehmann, A. Alves, R. Brown, C. Davey, F. Kadeer, J. Kenny, J. Supple
  PO-0902

> AcurosXB dose verification of ultra-small lung lesions with EBT-XD film in a heterogeneous phantom
  *M. Öllers* (The Netherlands), A. Swinnen, F. Verhaegen
  PO-0903

> Benchmarking of a module for Monte Carlo simulation of proton transport in the PENELOPE code
  *N. Verbeek* (Germany), S. Smyczek, J. Wulff, C. Bäumer, B. Timmermann, L. Brualla
  PO-0904

> Validation of a 4D Monte Carlo optimization and planning feature for CyberKnife lung treatment
  *S. Trivellato* (Italy), E. Rondi, S. Vigorito, E. Miglietta, F. Castellini, G. Piperno, A. Ferrari, B.A. Jereczek-Fossa, F. Cattani
  PO-0905

> Perturbation techniques for optimizing IAEA phase spaces for different medical linacs
  *J.C. Martins* (Germany), R. Saxena, S. Nepl, A. Alhazmi, M. Reiner, C. Belka, K. Parodi
  PO-0906

> Gafchromic EBT3 film for absolute dosimetry in proton therapy based on averaging of beam quality
  *A. Resch*, P. Heyes, H. Fuchs, D. Georg, P. Hugo (Austria)
  PO-0907
> Determination of surface dose in pencil beam scanning proton therapy
A. Kern (Germany), C. Bäumer, K. Kröninger, L. Mertens, B. Timmermann, J. Walbersloh, J. Wulff

> Development and experimental validation of a user code for time-resolved Monte Carlo simulations
P. Sibol (Denmark), C.E. Andersen, C.F. Behrens, R.O. Cronholm, E. Heath

> Lumbosacral proton therapy treatment of a patient with large spine metal implants
C. Peucelle (France), A. Gérard, D. Maneval, M. Vidal, A. Falk, J. Hérault

> Choose before you measure. Setting gamma parameters for different QA devices on the basis of ROC
M. Giżyńska (The Netherlands), D. Blatkiewicz, M. Bukat, M. Gil-Ulkowska, S. Maluszczak, A. Paciorkiewicz, D. Szalkowski, A. Walewska

> Effect of Heart Anatomy on Radiation Related Cardiac Risk in the Childhood Cancer Survivor Study

> Cancer risk after breast proton therapy considering physiological and radiobiological uncertainties
A. Raptis (Sweden), J. Ödén, O. Ardenfors, A. Flejmer, I. Toma-Dasu, A. Dasu

> Patient specific organ dose evaluation in cone beam CT
A. Sardo (Italy), F.R. Giglioli, E. Gallio, V. Rossetti, C. Fiandra, O. Rampado

> Integral multi-scenario robustness evaluation of anatomical robust optimization in head and neck
M. Cubillos Mesías (Germany), E.G.C. Troost, F. Lohaus, L. Agolli, M. Rehm, C. Richter, K. Stützer
> Energy layer switching sequence optimization algorithm for an efficiency proton arc therapy delivery
X. Ding (USA), X. Li, G. Liu, C. Stevens, D. Yan, P. Kabolizadeh

> Deep Convolutional Network with transfer learning for dose prediction in VMAT prostate treatments
P.G. Franco (Spain), E.M. Ambroa, J. Perez-Alija, M. Ribas, M. Colomer

> Optimal parameters to perform the Pseudo Skin-Flash on VMAT on breast radiotherapy
M. Lizondo (Spain), A. Latorre-Musoll, N. Espinosa, A. Coral, C. Cases, N. Jornet, P. Carrasco, P. Delgado-Tapia, A. Ruiz-Martinez, I. Valverde-Pascual, M. Barcelo, M. Ribas

> Automatic radiotherapy treatment planning using Particle Swarm Optimization
L.A. Künzel (Germany), S. Leibfarth, O.S. Dohm, A. Müller, D. Zips, D. Thorwarth

> Knowledge-based planning significantly reduces dose to organs at risk for lung cancer
L. Hoffmann (Denmark), M.M. Knap, D.S. Møller

> Assessment of CT-based imaging biomarker of COPD in IGRT planning for lung cancer patient
T. Shiinoki (Japan), Y. Yuasa, K. Fujimoto

> Knowledge-based optimization of an adaptive, early-regression-guided, technique for rectal cancer
R. Castriconi (Italy), C. Fiorino, S. Broggi, P. Passoni, N. Di Muzio, R. Calandrino, G.M. Cattaneo

> How can a limited number of proton slots be optimally used in combined proton-photon treatments?
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  M. Ben Kacem (France), M. Benadjaooud, F. Soysouvanh, M. Dos Santos, G. Tarlet, V. Buard, A. François, O. Guipaud, F. Milliat, V. Paget
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Radiobiology track: Radiobiology of stem cells (cancer and normal tissue)

- The unique DDR mechanisms of human induced pluripotent stem cells (hiPSC)-derived chondrocytes
  E. Stelicer (Poland), K. Katarzyna, S. Wiktoria M.
  PO-1066

- High expression of CCND2 in glioblastoma is associated with an increased risk of early mortality
  C. Bouchart, A. Trépant, M. Hein, D. Van Gestel, P. Demetter
  PO-1067
POSTER

Radiobiology track: Radiobiology of particles and heavy ions

> Very high yield of double strand breaks found at the distal end of the proton Bragg peak
N.F.J. Edin (Norway), A.M. Rykkelid, A. Görgen, A. Baker, S. Siem, K. Ytre-Hauge, E. Malinen

> RBE calculation for hadrontherapy by the BIANCA biophysical model
M.P. Carante (Italy), F. Ballarini

POSTER

Radiobiology track: Radiation-induced signalling pathways

> Identification of biologically active factors in ionizing radiation regulated secretome
M. Pruschy (Switzerland)

> RIBE alters biological properties of the wound fluids
K. Kulcenty (Poland), I. Piotrowski, D. Murawa, W. Suchorska

POSTER

Radiobiology track: Immuno-radiobiology

> INTRABEAM: precision hypo-fractionated radiotherapy with a systemic immune response
I. Linares (Spain), M.Á. Berenguer, E. Martínez, M. Laplana, R. Cañas, S. Comas, H. Pérez-Montero, M. Ventura, F. Guedea

> Biomathematical modeling of fractionated irradiation on immunogenic cell death induction in vitro
F. Eckert (Germany), L. Bardoscia, P. Hausmann, Z. Daniel, D. Thorwarth, S.M. Huber

> Radiotherapy and immuno-check point inhibitors for brain metastases. A mono-institutional analysis
**POSTER**

**Radiobiology track: Radiation and tumour metabolism**

- CBX4 contributes to radioresistance of esophageal squamous cell carcinoma by targeting autophagy
  *H. Zhu* (China) *L. Chu, Q. Liu, H. Zhu, S. Lai, K. Zhao* [PO-1075]

- Concomitant association of T-DM1 and radiation: An *in vitro* study on HER2 breast cancer cells
  *M. Fabien* (France), *Y. Kirova, P. Verrelle, M. Teulade-Fichou, F. Mégnin-Chanet* [PO-1076]

- The heterogeneous metabolic and mutational landscape of non-small cell lung carcinomas
  *T. Van Zon-Meijer* (The Netherlands), *W. Peeters, M. Looijen-Salamon, R. Biemans, L. Dubois, P. Span, J. Bussink* [PO-1077]

- Superparamagnetic Iron Oxide Nanoparticle Mediated Radiosensitization at Megavoltage Radiation
  *E. Korkmaz Kirakli, G. Taken, S. Hoca, F.Z. Biber Müftüler, A. Yurt Kilçar, S. Arun Kamer, Y. Anacak* (Turkey) [PO-1078]

- Metabolic changes with the administration of radiotherapy in lung, head and neck cancer patients

**POSTER**

**Radiobiology track: DNA damage response**

- Does hyperthermia clinically alter the α/β? Insights from thermoradiotherapy vs. radiotherapy trials
  *N.R. Datta* (Switzerland), *S. Bodis* [PO-1080]

- Biological interaction of a static magnetic field (SMF) with ionizing irradiation
  *T. Schmid* (Germany), *F. Hellmundt, S. Lemmer, K. Ilicic, M. Melzner, S. Bartsch, J.J. Wilkens, S.E. Combs* [PO-1081]

- Dihydrouobain is a novel radiosensitizer identified by high throughput screening
> The dual inhibitor BEZ235 radiosensitizes HNSCC cells due to impairment of the DSB repair  
  A. Arenz, V. Balzer, K. Dreffke, T. Rieckmann, S. Köcher, E. Dikomey, R. Engenhart-Cabillic, A. Wittig, U. Schötz (Germany)  
  PO-1083

> Poly ADP-ribose polymerase-1 inhibitors enhance soft tissue sarcoma radiosensitivity: in vivo study  
  PO-1084

> Prolonged trifluridine/tipiracil treatment radiosensitises colorectal cancer cells  
  K. Rothkamm (Germany), T. Rieckmann, S. Christiansen, A. Brinker, A. Stein, U. Schumacher, T. Frenzel, C. Petersen, S. Burdak-Rothkamm  
  PO-1085

> Antitumor Efficacy of Combined Gene and Radio-therapy in Animals  
  PO-1086

> The interaction between miR-221 overexpression and radiosensitivity in mamma carcinoma cell lines  
  E. Hirmer (Germany), R. Kell, S. Winkler, K. Winkler, L. Mutschelknaus, S. Mörtl, M. Atkinson, S. Combs, T. Schmid, N. Anastasov  
  PO-1087

> DNA repair genes polymorphisms as biomarkers of tumor control in LDR BT prostate cancer patients  
  D. Carignan (Canada), É. Vigneault, L. Villeneuve, S. Desjardins, S. Magnan, P. Després, A. Martin, W. Foster, C. Guillemette, É. Lévesque  
  PO-1088

> Improvement and optimization of γH2AX foci assay as a predictive tool for radiation sensitivity  
  T. Rossamegevanon (Germany), S. Löck, M. Baumann, M. Krause, C. Von Neubeck  
  PO-1089
> A second (third, fourth...) look at the *In Vitro* Clonogenic Assay
  *R. Koch* (Germany), C. Harmel, I. Dokic, A. Abdollahi, M. Alber, E. Bahn

**RTT track: Patient preparation, positioning and immobilisation**

> Multimedia assisted information to patients with prostate cancer undergoing curative radiotherapy
  *S. Rahbek* (Denmark), I. Nordentoft

> The influence of a 6D couch and an individual head support on positioning in Head and Neck cancer
  *M. Rodrigues* (The Netherlands), S. Veen, J. Van Egmond, M. Van Hameren, T. Van Oorschot, S. De Vet, J. Van Santvoort, R. Wiggenraad, M. Mast

> Comparison of conventional dark tattoo ink versus invisible tattoo ink for breast radiotherapy
  *L.H. Lim* (Singapore), P.P.E. Pang, F.Y. Wong

> Use of an individual abdominal corset in patients with upper-GI tumors treated with proton therapy
  *J. Thiele* (Germany), S. Schneider, C. Valentini, F. Lohaus, S. Sarah, D. Haak, M. Krause, A. Hoffmann, E. Troost

> Time management and hands-on experience with ELEKTA Unity 1.5T MRI-Linac
  *C. Marks* (Germany), A. Stolte, D. Thorwarth, L.H. Braun, S. Boeke, D. Wegener, J. Boldt, C. Ortinau, M. Kammler, B. Holl-Henkel, C. Gani, D. Zips, M. Nachbar, O. Dohm, D. Männich

**RTT track: Imaging acquisition and registration, OAR and target definition**

> Geometrically correct MR imaging with optimal Signal to Noise Ratio for Hippocampus delineation
  *S. Takken* (The Netherlands), M. Frantzen-Steneker, T. Vijlbrief-Bosman, L. Ter Beek, M. Kwint, J. Belderbos, U.A. Van der Heide

> Interobserver variability in tumor bed contouring for breast cancer: comparison between RTO and RTT
  *E. La Rocca* (Italy), M. Dispinzieri, T. Giandini, V. Lici, S. Frasca, F. Bonfantini, R. Valdagni, L. Lozza, E. Pignoli, M.C. De Santis
> GTV definition agreement in brain metastasis radiosurgery using 1.5T MRI-sim: a multi-observer study
  PO-1098

> A multi-center contouring study of spinal cord comparing myelo-CT and MRI fusion
  PO-1099

> Validation of Atlas Based Segmentation for OAR in the brain
  A. Van Nunen (The Netherlands), A. De Graaf, T. Budiharto, D. Schuring
  PO-1100

> Feasibility of PSMA PET/CT for evaluation of radiotherapy toxicity in salivary glands
  N. Bruin (The Netherlands), V. Mohan, J. Van de Kamer, A. Al-Mamgani, J. Sonke, W. Vogel
  PO-1101

> Multi-atlas vs. single-atlas auto-segmentation for Head and Neck OARs: time efficiency and accuracy
  D. Gugyerás (Hungary), A. Farkas, M. Csima, Z. Cselik, J. Hadjiev, A. Gulyban, F. Lakosi
  PO-1102

> Introducing contrast-delayed magnetic resonance imaging in radiosurgery treatment of glioblastoma
  F. Padelli (Italy), E. De Martin, Y. Mardor, D. Last, V. Pinzi, M.G. Bruzzone, L. Fariselli, V. Cuccarini, D. Aquino
  PO-1103

> Implementing an automated target delineation service in multi-institutional environment in Finland
  J. Heikkilä (Finland), H. Virsunen, L. Voutilainen, K. Vuolukka, A. Nevantaus, M. Haatanen, L. Sailas, J. Seppälä
  PO-1104

> Impact of deviations in target volume delineation - time for a new RTQA approach?
  S. Cox (United Kingdom), E. Miles, J. Staffurth, S. Gwynne
  PO-1105

RTT track: Treatment planning and dose calculation / QC and QA

> Comparison of hybrid IMRT techniques for breast SIB irradiation
  C. Van den Beemd (The Netherlands), J. Penninkhof, N. Holtzer, M. Baaijens, B. Heijmen
  PO-1106
> Institutional experience of adaptation from IMRT to VMAT in post-operative cases of carcinoma tongue  
  *K. Jain (India), P. Patel*  
  PO-1107

> Comparison of VMAT plans for spine SABR according to optimization algorithm PRO and PO  
  *S. Son (Korea Republic of)*  
  PO-1108

> Plan quality and treatment time comparison between DCA and VMAT for cranial SRT  
  *Y. Kato (Japan), D. Watanabe, R. Wakabayashi, M. Inohira, S. Itoya, J. Okubo, K. Miyamoto, S. Shimizu, Y. Oshiro*  
  PO-1109

> CT-based HDR brachytherapy for salvage prostate cancer: the way to avoid or delay hormonal treatment  
  PO-1110

> Knowledge-Based Planning as a Real Time Review QA Feedback Tool in the TROG 1501 SPARK trial  
  *O. Cook (Australia), A. Moore, R. Kaderka, K. Moore, P. Keall, J. Martin*  
  PO-1111

**RTT track: Image guided radiotherapy and verification protocols**

> Real-time online matching in high dose treatments: Do RTTs perform as well as physicians?  
  *D. Levin (Israel), G. Grinfeld, G. Greenfeld, Y. Lipsky, S. Zalmanov-Faermann, Y. Tova, R. Pfeffer*  
  PO-1112

> Evaluation of CBCT and Orthogonal X-ray for Position verification in Radiotherapy of Prostate Cancer  
  *S.Y. Ng (Hong Kong (SAR) China), V.W.C. Wu, G. Chiu*  
  PO-1113

> Organ motion characterization by a novel fiducial marker in esophageal cancer radiotherapy  
  PO-1114

> The UK lung SABR survey on behalf of the Advanced Radiotherapy Technologies Network  
  *S. Brown (United Kingdom), M. Beasley, H. McNair, C. Faivre-Finn, K. Franks, L. Murray, M. Van Herk, A. Henry*  
  PO-1115
> Set-up in locoregional breast irradiation: reduced margins for subclavicular and axilar lymph nodes.  
*M. Admiraal* (The Netherlands), *S. Hoek*  
**PO-1116**

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### RTT track: Motion management and adaptive strategies

> Dosimetric effect of parotid glands geometric modifications during the IMRT for NPC  
*W. Mnejja, H. Daoud* (Tunisia) L. Farhat, N. Fourati, T. Sahnoun, W. Siala, J. Daoud  
**PO-1117**

> Verification of new respiratory gating device for clinical use in proton therapy wobbler method  
*I. Maeshima* (Japan)  
**PO-1118**

> Strategies to maintain bladder and rectum volumes do not reduce the gtv movement for rectal cancer RT  
*N. Espinosa* (Spain), A. Coral, M. Lizondo, J. Balart, S. Bermejo  
**PO-1119**

> Deformable-image-registration-based Adaptive Radiotherapy on Halcyon’s MV CBCT system  
*Y. Huang* (China), H. Qiaoqiao, W. Hao, Z. Yibao  
**PO-1120**

> Characterizing Dosimetric Uncertainties to Tumour Volume and Organs at Risk in Rectal Cancer  
*O. Babatunde* (United Kingdom), S. O’Cathail, R. Cooke, B. George, M. Robinson, F. Van den Heuvel, M. Hawkins  
**PO-1121**

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### RTT track: Patient care, side effects and communication

> Assessment of bladder volume and urinary symptoms for patients undergoing prostate radiotherapy  
**PO-1122**

> Could patient-related outcome measures help us in radiotherapy review clinics?  
*M. Sivanandan* (United Kingdom), C. Sharma, J. Christian  
**PO-1123**

> A pilot study: Utilization of PROMs in hypo-fractionated radiotherapy for localized prostate cancer  
*K. Crowther* (United Kingdom), P. Shiels, A. Cole, P. Shepherd, S. Jain, D. Mitchell  
**PO-1124**
> Helical Tomotherapy for patients with pectus excavatum treated for early stage breast cancer
A. Alexandre (France), P. Dominique, F. Alain, K. Youlia M. PO-1125

**POSTER**

**RTT track: Education and training/role development**

> Caring for Patients with Dementia Undergoing Radiation Therapy – A National Audit
A. O’Donovan, J. Flood (Ireland) PO-1126

> The development and initial evaluation of a simulated clinical radiotherapy training centre
S. Ketterer (United Kingdom), P. Bridge PO-1127

> Clinical implementation of deformable image registration (DIR)
C. Callie (Australia), G. Dinsdale, S. Deshpande, M. Jameson PO-1128

> An analytical approach to aggregate patient workflows for system dynamics modelling of radiotherapy
J. Lindberg, P. Holmström, S. Hallberg, T. Björk-Eriksson, C. Olsson (Sweden) PO-1129

> Development of an e-learning program to enhance and maintain the knowledge of experienced RTT’s
J. Gornitzka (Denmark), L. Akselbo, M. Torp, V. Matthåi, T. Bjørn, K.L. Gottlieb PO-1130

**POSTER**

**RTT track: Risk management/quality management**

> Quality assurance of the pretreatment plan review in radiotherapy
S.F. Huang (Taiwan), H.W. Cheng, C.Y. Kuo, C.C. Chang, L.J. Chen, J.T. Tsai PO-1131

> RCT evidence in 2018 ASTRO/ASCO/AUA guidelines for hypofractionated radiotherapy in prostate cancer
N. Williams (United Kingdom), C. Orczyk PO-1132
Electronic posters

Clinical track: Head and Neck

> SPECT-CT visualization of lymph flow pattern for radiotherapy planning in patients with tongue cancer
  S. Novikov (Russian Federation), P. Krzhivitsky, Z. Radzhabova, M. Girshovitch, M. Kotov, O. Ponomareva, R. Nazhmutdinov, J. Melnik, S. Kanaev
  EP-1133

> Head and neck cancer management in Chinese hospitals: a multicentre questionnaire-based survey
  C. Wu (China), G. Li
  EP-1134

> Effect of Primary Treatment on Neck Dissection Choice in Nasopharyngeal Carcinoma Regional Failure
  R. Sim (Singapore), S. Mueller, G. Iyer, N.C. Tan, K.C. Soo, R.S. Mahalakshmi, H.K. Tan
  EP-1135

> Management SCC unknown primary with contemporary diagnostic and radiotherapy techniques
  C. Paterson (United Kingdom), R. Crosbie, P. McLoone, D. Grose, A. James, C. Lamb, M. Rizwanullah, S. Schipani, C. Wilson, F. Campbell, F. Easton, M. Thomson
  EP-1136

> DW MRI as biomarker of response during RT for intermed/high risk SCC oro-pharynx: a feasibility study
  EP-1137

> Non-invasive imaging of tumour hypoxia using EF5 and PET-CT in head and neck cancer: A pilot study
  E. Tran (Canada), S. Hamilton, D. Wilson, F. Benard, A. Tran, F. Lacroix-Poisson, E. Berthelet, J. Wu
  EP-1138

> Prognostic impact of hematological profile in oropharyngeal cancer treated with chemoradiotherapy
  EP-1139
> Retropharyngeal Lymph Node Metastasis in Hypopharyngeal Carcinoma: Analysis from Multi-center Data
Z. Yin (China), X. Zhang, Y. Sun, S. Miao, C. An

> Marginal local failure in nasopharyngeal carcinoma in the era of intensity modulated radiotherapy
K. Ren (China), Z. Yin

> Death from aspiration after definitive radiotherapy for hypopharyngeal or supraglottic cancer
N. Konayama (Japan), T. Ikawa, K. Wada, T. Hirata, M. Morimoto, K. Hayashi, K. Konishi, T. Teshima

> Regional nodal failure after primary treatment for differentiated thyroid cancer
G. Fanetti (Italy), E. Borsatti, T. Baresic, C. Bampo, A. Esposito, S. Mazzone, C. Mazzone, E. Minatel, A. Revelant, S. Pisu, A. Nappo, E. Casanova Fuga, M. Burello, V. Giacomarra, G. Franchin, C. Gobetti

> Is volumetric staging an alternative to TNM staging system in radiotherapy of tongue cancer?
M. Miszczyk (Poland), A. Napieralska, B. Maciejewski

> Xerostomia and volume and CT number changes of parotid glands during IMRT for Head and Neck cancer
S. Ishikura (Japan), T. Nakabayashi, F. Kobayashi, H. Fukuma, Y. Shibamoto

> Prognostic Value of Hypoxia for Locally Advanced Hypopharynx Squamous Cell Carcinoma
F. Sert (Turkey), G. Serin, A. Veral, M. Esassolak

> Local control rate in patients with skull-base chondrosarcoma treated with particle therapy

> Long-term outcome of IMRT with simultaneous integrated boost in nasopharyngeal carcinoma
- Albumin-to-alkaline phosphatase ratio in nasopharyngeal cancer: a propensity score matching analysis
  J.S. Kim (Korea Republic of), B. Keam, D.S. Heo, D.H. Han, C. Rhee, J. Kim, K.C. Jung, H. Wu
  EP-1149

- Dosimetric benefit on adaptive IMPT for patients with locally advanced nasopharyngeal carcinoma
  W.W. Lam (Hong Kong (SAR) China), H.F.V. Lee, K.Y. Cheung, S.K. Yu
  EP-1150

- Effects of Continued Smoking in Head and Neck Cancer Patients: A Systematic Review and Meta-Analysis
  J. Smith (Australia), D. Nastasi, R. Tso, V. Vangaveti, B. Renison, M. Chilkuri
  EP-1151

- Abstract withdrawn
  EP-1151

- Tumor volume as a prognostic factor in irradiated patient for locally advanced oral cavity cancer
  N. Janmunee (Thailand)
  EP-1152

- A retrospective single institutional analysis of 175 elderly head and neck squamous cell carcinoma
  A.K. Gandhi (India), M. Rastogi, S.S. Nanda, R. Khurana, R. Hadi, K. Sahni, A. Sri-vastava, A. Bharati, S. Mishra
  EP-1153

- Definitive RT and Postoperative RT of adenoid cystic carcinoma: a propensity score analysis
  EP-1154

- Rare entities in head-and-neck cancer: A single institutional experience of carbon-ion reirradiation
  EP-1155

- Radical radio-chemotherapy in H&N cancer: retrospective comparison between weekly and 3-weekly CDDP.
  EP-1156

- Elective nodal dose of 40 Gy is sufficient for locally advanced oropharyngeal carcinoma
  K. Asai (Japan), S. Ohga, S. Nomoto, T. Yoshitake, M. Shinoto, K. Matsumoto, H. Hirata
  EP-1157

- Impact of postoperative target volumes in management of head and neck carcinoma of unknown primary

> To compare outcome of Intensive nutritional support with standard practise in Head and Neck cancer


> Quantifying the impact of radiologic revision in head and neck cancer: mo-noinstitutional experience


> Clinical response and toxicity of VMAT low-dose RT with intravenous steroids for Graves’ Orbitopathy

B. Salas (Spain), R. Cabrera, L. Ferrera, M. Lloret, M. Zajac, J. Rutllan, F. Medina-Rivero, P.C. Lara

> Post-radiotherapy sarcopenia: a new prognostic factor in oropharyngeal cancers?

C. Dupin (France), R. Poncin, A. Daste, C. Majoufre, V. Castetbon, E. De-Mones, R. Trouette, V. Vendrely

> Hypo vs conventional radiotherapy for T1 glottic cancer: A prospective cohort study

B. Salas (Spain), D.J. Domínguez Nuez, R. Cabrera, L. Ferrera, M. Lloret, P.C. Lara

> Estimated benefit of proton therapy and dose de-escalation in HPV p16-positive oropharyngeal cancer

P. Brodin (USA), R. Kabarriti, V. Gondi, M. Pankuch, M. Garg, W. Tomé

> Failure Patterns of Cervical Lymph Nodes in Metastases of Unknown Primary according to Target Volume

D.Y. Kim (Korea Republic of), D.S. Heo, B. Keam, S. Ahn, J. Kim, K.C. Jung, J.H. Kim, H. Wu

> Optimal timing for salvage surgery after definitive radiotherapy in hypopharyngeal cancer

S. Chun (Korea Republic of), B. Keam, D.S. Heo, K.H. Kim, M. Sung, E. Chung, J. Kim, K.C. Jung, J.H. Kim, H. Wu

> Sparing of high retropharyngeal lymph node irradiation in patients with oro-pharyngeal carcinoma

B. Kang (Korea Republic of), J.H. Kim, H. Wu, I.A. Kim, K. Eom
- Early radiation induced changes in salivary glands in nasopharyngeal cancer patients after IMRT
  W.W. Wu (Hong Kong (SAR) China), M.T. Ying, D.L. Kwong, G.K. Wong, P. Khong

- Evaluation of swallowing function with PSSHN scale for head and neck cancer patients undergoing IMRT
  S. Agarwal (India), P. Mukherjee, M. Roy, S. Kommineni, N. Kalyani

- Predictive factors of chemoradiation induced oral mucositis in head and neck cancer patients
  F. Arcadipane (Italy), E. Olimpo, R. Ragona, G.C. Iorio, S. Martini, E. Gallio, P. Franco, U. Ricardi

- Toxicity profile of locally advanced head and neck cancer patients treated in 30 or 33 fractions RT
  C. Franzese (Italy), A. Fogliata, D. Franceschini, F. De Rose, T. Comito, P. Navarria, L. Cozzi, S. Tomatis, M. Scorsetti

- Microstructural and physiological changes of parotid glands after RT for head and neck cancer
  M. Bruvo (Denmark), C. Behrens, R. Hvass, H. Hjorth Johannesen, A.M. Lyng Pedersen, C. Maare, E. Samsoe, F. Mahmood

- Changes in blood pressure in patients undergoing radiotherapy for head and neck cancers
  A. Nachankar (India), P. Dandekar

- Assessment of nausea and dysgeusia in head and neck cancer patients undergoing radiotherapy
  C.G. Iorio (Italy), S. Martini, F. Arcadipane, E. Olimpio, P. Franco, U. Ricardi

- Use of different RBE-models in carbon ion RT - saving OAR constraints from being lost in translation

- Comparison of patient and physician reported acute toxicities during head & neck cancer radiotherapy

- Comparative study assessing QoL in HNSCC patients treated with Radical Radiotherapy with IMRT vs 3DCRT
> Prognostic role of FDG-PET/CT during radiotherapy in patients with hypopha-ryngeal carcinoma
EP-1178

> Primary concurrent chemoradiotherapy for locally advanced laryngeal squa-mous cell carcinoma
D. Adiogatse (United Kingdom), F. De Felice, Y. Suh, J. Jeannon, R. Oakley, R. Simo, M. Lei, T. Guerrero Urbano
EP-1179

> Re-radiation in head and neck malignancies: experience from a tertiary care cen-tre in eastern India
I. Bhattacharya (India), M. Mukherjee, V. Kumar K, R. Rajan, T. Shahid, S. Goswami, L. Naha Biswas, P. Chatterjee, S. Saha
EP-1180

> Structure delineation using a deformable image registration-based contour propagation in HNC
B. Ng-Cheng-Hin (United Kingdom), D. McQuaid, A. Dunlop, S. Court, I. Petkar, C. Nutting, K. Harrington, S. Bhide, K. Newbold
EP-1181

> Selective neck irradiation for oropharynx cancer in relation with human papilloma virus status
EP-1182

> Proton therapy boost in locally advanced head and neck cancer: toxicity and clinical outcome
EP-1183

> Target volume delineation for adaptive treatment in HNSCC is highly variable among experts
R. Apolle (Germany), H.P. Bijl, P. Blanchard, A. Laprie, I. Madani, A. Ruffier, W. Van Elmpt, E.G.C. Troost
EP-1184

> QOL for HPV+ SCC of the oropharynx treated with transoral laser microsurgery and postoperative IMRT
T. DeWees (USA), J. Rwigema, L. McGee, T. Nagel, M. Golafshar, S. Patel
EP-1185

> The new target delineation impact on carotid and bulb sparing for T1 glottic cancer: VMAT vs 3DCRT
EP-1186
Different carotid contouring results in dosimetric variability and significant anatomical missing  

Carbon ion radiotherapy for recurrent pleomorphic adenoma at CNAO: preliminary results  

Adenoid cystic carcinoma of the head and neck treated with carbon ion radiotherapy at CNAO  

Preliminary evaluation of salivary cytokines in patients treated with IMRT for Head and Neck cancer  

Effect on local control of addition of chemotherapy to radiotherapy for T2 cancer of the hypopharynx  

Hair loss during intensity modulated radiotherapy for nasopharyngeal carcinoma  
N. Fourati (Tunisia), Z. Fessi, W. Mnejja, L. Farhat, T. Sahnoun, W. Siala, J. Daoud

Analysis of competing and tumor deaths and predictors factors in advanced head and neck cancer  
> **Acute toxicity in nasopharyngeal cancer patients treated with IMRT followed by proton therapy boost**  

EP-1194

> **Functional assessment of late toxicity and quality of life after IMRT for sinonasal carcinoma**  
M.B. Sharma Grau (Denmark), K. Jensen, S.F. Urbak, M. Funding, A. Amidi, C.

EP-1195

> **Treatment of elderly head and neck cancer patients: Update on comorbidity impacts and complications**  
H. HA, S.E. Combs, S.U. Pigorsch (Germany)

EP-1196

> **Pattern, timing, and detection of recurrence in HPV positive oropharyngeal cancer**  
M. Echevarría (USA), L. Harrison, A. Trott, J. Caudell

EP-1197

> **Knowing the oropharyngeal cancer associated with the human papillomavirus**  

EP-1198

> **Metastatic lymph node features with & without extracapsular extension in H&N Squamous Cell Carcinoma**  
J. Zheng (Canada), A. Flaman, D. Yegendorf, B. Purgina, S. Chakraborty, M. Gaudet, H. Alain

EP-1199

> **Is skin dose distribution a predictive factor for the development of severe radiation dermatitis?**  

EP-1200

> **Outcomes in young patients (<40) treated for oral cavity squamous cell carcinoma in the modern era**  

EP-1201

> **Associations between smoking cessation after radiotherapy for larynx cancer and patient outcomes**  
A. Srivastava, (USA) J. Contreras, M. Daly, H. Gay, W. Thorstad, A. Apicelli

EP-1202
> Characterization of DCE-MRI parameters associated with advanced mandibular osteonecrosis
A.S.R. Mohamed (USA), R. He, Y. Ding, J. Wang, B. Elgohari, H. Elhalawani, J. Johnson, J. Stafford, J. Bankson, V. Sandulache, C. Fuller, S. Lai

> Quantitative signal intensity kinetics of normal tissues of the head and neck on the MR-Linac.
F. Gregucci (Italy), H. Bahig, A.S. Mohamed, R. He, B.A. Elgohary, H. Lee, Y. Ding, J. Wang, H. Elhalawani, G.S. Ibbott, M. Chetvertkov, G. Bosco, S. Ikner, S.P. Ng, D.C. Fuller

> A new alpha particle treatment for recurrent or aggressive head and neck squamous cell carcinoma
A. Popovitzer (Israel)

> SRS/SRT for patients with brain Metastasis RPA Class II disease: Results from Single institution

> Fractionated stereotactic radiation therapy for resected brain metastases: a preliminary report
A. Di Marzo (Italy), F. Trippa, P. Anselmo, F. Arcidiacono, S. Terenzi, L. Draghini, M. Italiani, M. Casale, M. Muti, S. Fabiani, E. Maranzano

> Twenty years experience in treating Childhood medulloblastoma: Between the past and the present
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> First clinical results using HyperArcTM and Linac-based VMAT radiosurgery in brain metastases.
F. Alongi, F. Gregucci Ruggeri (Italy), R. Mazzola, N. Giaj-Levra, M. Rigo, V. Figlia, L. Nicosia, S. Corradini, F. Ricchetti, R.

> Local control and toxicity of IORT with low energy X-rays after resection of brain metastasis
H. Kahl (Germany), S. Sabine, M. Heiko, G. Ute, K. Ina, H. Volkmar, M. Christoph, B. Ansgar, K. Jürgen, S. Georg
- Radiation necrosis after SRS for intracranial metastases from lung cancer: A retrospective review
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- Clinical outcome in brain metastases from breast cancer treated with stereotactic radiotherapy
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- Prediction of new brain metastases after radiosurgery: validation of two nomograms in our serie.
  C. De la Pinta Alonso (Spain), R. Hernánz, E. Fernández-Lizarbe, M. Martín, C. Vallejo, M. Martín Martín, A.B. Capúz, S. Barrio, M. Torres, S. Sancho
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- Patterns of care: Treatment of glioblastoma in elderly patients
  C. Straube (Germany), S. Antoni, P. Schaffer, J. Gempt, C. Zimmer, B. Meyer, S.E. Combs, F. Schmidt-Graf
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- Fibroblast Activating Protein specific PET for advanced target volume delineation in Glioblastoma
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- Single- versus 2-session Gamma Knife surgery for symptomatic midsize brain metastases
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- Upfront stereotactic radiosurgery in patients with brain metastases from small cell lung cancer
  S. Yomo (Japan)
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- Prognostic factors of salvage stereotactic radiotherapy for recurrent high-grade glioma.
  K. Takehana (Japan), M. Uto, K. Ogura, Y. Arakawa, Y. Mineharu, T. Mizowaki
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Simultaneous Integrated Boost in Anaplastic Astrocytoma: a propensity score matching analysis
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Clinical experience and outcomes of radiosurgery with a single isocentre for 2-10 brain metastases.

Re-Irradiation in Recurrent Gliomas: Treatment outcome and Prognostic factors
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M. Cantarella Paiar (Italy), F. Pasqualetti, A. Gonnelli, A. Molinari, F.

Omission of WBI does not impair cerebral control in solitary brain mets treated with focal RT
H. Kahl Paiar (Italy), H. Müller, V. Heidecke, G. Stüben x

Repeated intracranial radiotherapy/SRT-Analysis of efficacy and safety including EQD2 sum plans
C. Schröder (Switzerland), I. Stiefel, S. Tanadini-Lang, I. Pytko, M. Guckenberger, N. Andratschke

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> Hypofractionated RT in very elderly patients (≥ 75 years) diagnosed with GBM

> Stereotactic radiosurgery to brain metastases using Varian HyperArc in the Beatson Cancer Centre
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> Salvage radiotherapy and radiosurgery for first progression of supratentorial glioblastoma.
  K. Nikitin (Russian Federation), A. Belyashova, A. Golanov, S. Zolotova

> Response to re-RT helps deciding dose and predicts survival in Diffuse Intrinsic Pontine Glioma
  J. Manjali (Russian Federation), T. Gupta, J. Goda Sastri, G. Chinnaswamy, V. M Patil, R. Krishnatry x

> Volumetric assessment of cerebral edema after fractionated SRT for multiple brain metastases
  H. Inokuchi (Japan), Y. Ishihara, K. Okano, A. Kawamura, K. Tsutsui, M. Hiraoka

> Vestibular schwannoma: Results of hypofractionated stereotactic radiotherapy
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> Inter-observer variability in target delineation for brain metastases in stereotactic radiotherapy

> Role of perilesional edema in patients with glioblastoma undergoing adjuvant chemo-radiation
> Hypofractionated radiotherapy for non resectable glioblastoma multiforme patients
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> Multisession radiosurgery re-irradiation for glioblastoma recurrence: a retrospective analysis
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> Evolution of non functioning pituitary adenoma after first surgery : long follow-up of 256 patients

> Outcomes and health-related quality of life in large skull base meningiomas treated with protons

> The patterns of care and management of brain metastases In a large Oncology centre
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> Stereotactic radiotherapy for brain metastasis and systemic therapies: a safe combination?

> Impact of retreatment or chemotherapy on survival in patients affected by a recurrent Glioblastoma
> Outcomes of Multiple Brain Metastases Radiosurgery with Gantry-Based Linac
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> focal hypofractionated stereotactic radiation therapy for brain metastases
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> Biological target volume using DTI-MRI in postoperative chemoradiotherapy for glioblastoma
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> When could we spare hippocampus in the WB radiation for the primary central nervous system lymphoma?
*F. Beghella Bartoli* (Italy), *T. Zinicola*, *S. Chiesa*, *F. Catucci*, *M. Giraffa*,
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> Health-Related Quality of Life in large recurrence Glioblastoma treated with protontherapy
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> Influence of PET-imaging during treatment planning on outcome in meningioma patients
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> Post-operative hypo-fractionated SBRT in a large series of patients with brain metastases
*G. Martinage* (France), *J. Geffrelot*, *D. Stefan*, *E. Bogart*, *E. Rauli*,
*N. Reyns*, *E. Emery*, *S. Martinage Makhoufi*, *R. Mouttet Audouard*,
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> Predicting Brain V12Gy for Single-Isocenter Multi-Target Stereotactic Radiosurgery (SRS)
*H. Liu* (USA), *T. Li*, *H. Zhang*, *W. Shi*
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> Retrospective Analysis of radiosurgery for ≥ 4 brain metastases from oncogene-addicted NSCLC
*Y. Wang* (USA), *C. Calbat*, *P. Allen*, *N. Guha*, *D. Gomez*, *J. Li*
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> Outcomes of Local Control and CNS Toxicity with Single and Hypofractionated SRS for Brain Metastases  
M. Patel (USA), S.R. Marcom, R.A. Popple, A.M. McDonald, K.O. Riley, B.L. Guthrie, J.M. Markert, C.D. Willey, M. Bredel, J.B. Fiveash  
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> Use of Gamma Knife Radiosurgery for Treatment of Trigeminal Neuralgia  
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> Total Skin Irradiation - 15 years of Gliwice experiences  
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> Deep Inspiration Breath-Hold versus free breathing radiotherapy in mediastinal lymphoma  
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> Primary radiation therapy in stage I/II indolent orbital lymphoma: a single-center analysis  
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- Local review of lung doses in simultaneous integrated boost (SIB) radiotherapy breast plans
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- Outcomes & toxicity of stereotactic radiotherapy for metastatic breast cancer – a retrospective study

- Effects of regular bra-wearing on acute skin toxicity in breast-conserving radiotherapy women
  P. Thongkhao (Thailand), T. Peerawong, R. Jiratrachoo, J. Pruetkitti, A. Geater

- Is hypofractionated nodal radiotherapy safe in the treatment of breast cancer patients?
  C. Matthieu (France)

- Increasing negative lymph node count prolong survival in breast cancer with neoadjuvant chemotherapy
  X. Wang (China), P. Wang

- Neoplastic brachial plexopathy in breast cancer survivors: diagnosis traps, rt-vmat feasibility
  S. Delanian (France), P. Ding, H. Huet de Froberville, C. Boguszewski, P. Pradat

- Hypofractionated whole breast irradiation and IOERT in breast cancer: Toxicity and cosmetic outcome

- A Comparison of Breast Cosmetic Evaluation Methods in Hypofractionated Whole-Breast Irradiation
Locoregionally recurrent breast cancer treated with postoperative or salvage radiotherapy  

Effect of heart’s dose reduction by IMRT in postoperative radiotherapy for left-sided breast cancer  
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M1 neck lymph node positive without distant metastasis in breast cancer: comparison with stage IIIIC  

Identification of gene profiles associated to increased risk of acute toxicity in breast cancer  

New aspects regarding the treatment of multicentric compared to unifocal breast cancer  
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Postmastectomy radiation therapy using VMAT for breast cancer patients with expander reconstructions  

Three-dimensional versus four-dimensional dose calculation for breast IMRT  
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Older age and comorbidity in breast cancer: is radiotherapy alone the new therapeutic frontier?  
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Hypofractionated irradiation in elderly breast cancer patients: an observational study  
E. La Rocca (Italy), M. Dispinzieri, E. Meneghini, A. Fiorentino, F. Bonfanti, S. Di Cosimo, M. Gennaro, V. Cosentino, M. Sant, E. Pignoli, R. Valdagni, L. Lozza, M.C. De Santis
> StrataXRT is non inferior to Mepitel Film in preventing radiation induced moist desquamation


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> Preliminary results of anthocyanin supplementation in breast cancer RT: impact on skin side effects


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> Dosimetric Comparison of Protons and Photons in Musculoskeletal Sparing During Breast Irradiation

*A. Prescott* (USA), J. Strauss, E. Donnelly, M. Gentile, R. Patel, D. Lipps, S. Oza

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> Phase I dose escalation trial using single fraction Stereotactic PBI for early stage breast cancer


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> Impact of patient and treatment factors on heart and lung dose in left-sided breast radiotherapy

*V.T. Nguyen* (Switzerland), T. Finazzi, A. Papachristofiliou, F. Zimmermann

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> Radiation Treatment Standards and Techniques in Breast Cancer in German speaking countries

*M. Mayinger* (Switzerland), C. Straube, D. Habermehl, S.E. Combs

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> Zinc-L-Carnosine prevents dysphagia in breast cancer patients treated with adjuvant radiotherapy

*S. Saldi* (Italy), E. Perrucci, V. Lancellotta, I. Palumbo, L. Falconelli, C. Mariucci, S. Chierchini, V. Bini, C. Aristei

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> Hybrid intensity modulated radiation therapy for treatment of cancer of left breast after mastectomy

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> Prognosis of patients with breast ductal carcinoma-in-situ who underwent breast-conserving surgery


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> Breast reconstruction and hypofractionated adjuvant radiotherapy: dosimetric and aesthetic analysis
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> Heart of the Matter: A study of 112 left breast cancer patients treated with DIBH
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> MR-guided delineation of target volumes in internal mammary lymph node radiotherapy
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> Lymphatics in breast cancer: healthy nodes versus metastatic nodes
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> long-term clinical outcomes of IMRT with simultaneous integrated boost for breast cancer
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> Hypofractionated adjuvant radiotherapy in elderly low risk breast cancer patients: loss or gain?
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> What is the benefit of using more beams and/or non-coplanar beams in breast PBS proton therapy?


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> Long-term results up to 15 years after IORT boost in breast cancer patients

*E. Sperk* (Germany), M. Pez, G. Welzel, A. Keller, Y. Abo-Madyan, M. Ehmmann, B. Tuschy, S. Berlit, M. Sütterlin, F.A. Giordano, F. Wenz  

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> Gated treatment of left-sided breast cancer: evaluation of lung movement, irradiated volume and mass

*M. Oechsner* (Germany), M. Duesberg, K. Borm, J.J. Wilkens, S.E. Combs, M.N. Duma  

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> Deep inspiration breath-hold technique versus free breathing in RT treatment of left-sided breast

*N. Jankarashvili* (Georgia), I. Sikharulidze, R. Sreseli, N. Kartvelishvili, M. Topeshashvili  

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> positional analysis of a personalized breast immobilization technique for whole breast irradiation

*T. Chen* (Taiwan), M. Chung, D. Tien, R. Wang, J. Chiou, T. Kuo-Hsiung, L. Long-Sheng  

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> Are OAR dose constraints for radical 3DCRT breast plans achievable? A one-year retrospective review

*S. McCauley*, B. O’Connell, C. Lyons, R. Evans (United Kingdom)  

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> Toxicity evaluation of a hypofractionated WBRT with SIB for breast cancer using TomoDirect

*S. Dicuonzo*, M.C. Leonardi, S. Raimondi, F. Miglietta (Italy), M.A. Gerardi, A. Morra, V. Dell’Acqua, A. Surgo, D.P. Rojas, F. Pansini, R. Luraschi, F. Cattani, C. Fodor, P. Veronesi, R. Orecchia, B.A. Jereczek-Fossa  

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> POLO concept: salvage whole breast radiotherapy with Tomotherapy after intraoperative radiotherapy

*M.A. Gerardi*, M.C. Leonardi, F. Miglietta (Italy), G. Riva, A. Morra, S. Dicuonzo, A. Camarda, A. Casbarra, C. Fodor, R. Orecchia, B.A. Jereczek-Fossa  

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> Evaluation of MRI-based guidelines for contouring tumors for preoperative partial breast irradiation


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> Adjuvant radiotherapy for primary squamous cell carcinoma of the breast
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> Cardiac structures doses and correlation with mean heart dose in breast radiotherapy treatment
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> The FAST approach as adjuvant whole breast irradiation for frail breast cancer patients
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> Radiotherapy in elderly breast cancer patients with hormone therapy: A population-based study
D. Medenwald (Germany), A. Glowka, D. Vordermark, K. Medenwald

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> Hyperthermic chest wall re-irradiation in recurrent breast cancer: a prospective observational study
C. De Colle (Germany), N. Weidner, V. Heinrich, S. Brucker, M. Hahn, K. MacMillan, U. Lamprecht, S. Gaupp, O. Voigt, D. Zips

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> Hypofractionated radiotherapy for breast cancer in elderly patients: 10 or 5 fractions?
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> Second primary lung cancer unlikely associated with irradiated breast cancer population in Taiwan
T.T. Ngo (Taiwan), L. Chien, L. Chen, L. Lu

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> Estimated survival benefit and cardiovascular risk due to radiotherapy for breast cancer in Chile
T. Ip (Chile), G. Martínez, C. Sánchez, R. Fernández, L. Bravo, M. Pinto, E. Vinés, T. Merino

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> Waiting times for breast cancer treatment in Chile according to public or private health insurance
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> “Every breath you take”: first results of INHALE (Inspiration Breath hold health related QoL) study
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HeartSpare Plus: A comparison of the feasibility and acute toxicity of internal mammary chain RT
A. Ranger (United Kingdom), A. Dunlop, E. Donovan, E. Harris, N.M. DeSouza, H. McNair, A. Kirby

A Dosimetric Study of Heart and Lung Dose in Breast Radiotherapy-Our Institutional Experience

Personalized Medicine in breast cancer: a nomogram from prognostic score to deescalate radiotherapy
F. Marazzi, A. Mulè, V. Masiello (Italy), R. Masetti, R. Barone, G. Franceschini, F. Cacciatori, F. Moschella, C. Cannatà, L. Boldrini, G. Mantini, D. Smaniottto, V. Valentini

Assessment of rigorous dosimetry guidelines for a multi-institutional, phase II APBI clinical trial
S. Quirk (Canada), P. Gendarova, A. Guebert, A. Frederick, I.A. Olivotto, M. Roumeliotis

Impact of neoadjuvant radiotherapy in locally advanced breast carcinoma
C. Sousa (Portugal), L. Pinto, M. Cruz, A. Neto, J. Bastos, C. Miranda, G. Melo, L. Khouri, P. Figueiredo, P. Alves

A comparison of voluntary vs ABC breath hold in combination with VMAT for pan lymph node breast RT
A. Ranger (United Kingdom), A. Dunlop, E. Donovan, E. Harris, N. DeSouza, H. McNair, A. Kirby

A Single Pre-Operative Radiation Therapy (SPORT) Phase 1 Trial For Low Risk Breast Cancer

Intraoperative electron radiotherapy (IOERT) boost in early breast cancer: toxicity analysis
C. Vidali (Italy), Z. Pellin, M. Severgnini, S. Scomersi, M. Bortul

Accelerated hypofractionated Whole Breast Irradiation with Concurrent TB Boost:Toxicity & cosmesis
S. Lasheen (Egypt), S. Shams El Din, R. Moussa, M. Hassan, F. Hagag

An Urban Institution's Experience with the Oncotype DCIS Score: Predictors and Outcomes
T.Y. Andraos (USA), A. Orisamolu, J. Fox
> Myocardial changes detected using Cardiac MRI in left breast patients treated with Radiation

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> Multimodality repeated-ablative therapies in oligorecurrent pulmonary metastatic disease

  A. Macagno (France)

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  F. Pastore (Italy), A. Rese, F. Francomacaro, F. Cammarota, G. Ametrano, D. Toledo, V. Iorio

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> Serum Lactate Dehydrogenase: A Predictor of Therapeutic Response to Radiation Therapy in SCLC?

  L. Ana Rita Carvalho da Costa (Portugal), G. Sofia, A. Gonçalo, R. Darlene, F. Paula, M. Margarida, P. Gabriela

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> A framework for systematic clinical evaluation of the MR-linac for treatment of lung cancer patients


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> “Risk adapative” dose prescription in central NSCLC lesions in early stage NSCLC and lung metastases

  M. Rigo (Italy), N. Giaj-Levra, V. Figlia, R. Mazzola, L. Nicosia, F. Ricchetti, R. Ruggieri, F. Alongi

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> Clinical outcome of one-fraction early-stage lung SBRT: is it an option in selected patients?

  L. Rodrigues (Portugal), T. Figueiredo, J. Gagean, C. Ferreira, S. Conde, L. Carvalho, J. Cardia

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> Three-d Surface Imaging as preferred tool for patients’ set up in frameless SBRT for lung cancer

  C.M.E. Perotti (Italy) C. Pisani, G. Loi, A. Belli, C. Bolchini, Y. Huang, J. Lyu, M. Krengli

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> DART-bid by VMAT for locally advanced NSCLC: Low toxicity, encouraging survival and tumor control

  K. Wurstbauer (Austria), R. Pinter, M. Meinschad, M. Kazil, T. Hernler, P. Cerkl, T. Künzler, A. De Vries

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> Long-term survival with FDG-PET directed therapy in NSCLC with synchronous solitary brain metastasis
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> Locally advanced NSCLC: performance status based eligibility for adjuvant check point inhibitor
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> Lung cancer extrecerebral oligometastases/oligoprogession stereotactic irradiation
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> Impact of Pulmonary SABR on Pulmonary Function Tests: Report of a single institution experience
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> Oligo-progressive status exhibits unfavorable survival in pulmonary oligo-recurrence treated by SABR
  H. Lee (Taiwan), J. Tsai, S. Chen, I. Lai, C. Chen, C. Ho, J. Chiou, Y. Kuo
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> Targeted therapy with or without Radiotherapy in EGFR/ALK mutant NSCLC with Brain Metastases
  I. Císcar García, M. Martín Martín (Spain)
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> Spinal metastases from non-small cell lung cancer; is it a surrogate of bad outcome?
  I. Krozkin (Israel), I. Ospovat, D. Machievsy, E. Gez, S. Soifer, B. Corn, Y. Natan Hoz, O. Gutfeld, D. Limon
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> SBRT for de novo pulmonary tumors in patients with completely resected early stage NSCLC
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> Repeated thoracic high-dose radiotherapy - Analysis of efficacy and safety including EQD2 sum plans
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- RE-STARTing after lung cancer: impact of a wellbeing event on global health status of survivors
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> Texture analysis of FDG-PET in NSCLC treated with SBRT: a validation study of two prognostic features

> Analysing stage III cN2 NSCLC treated with surgery or concurrent chemo-radiation
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> Does pneumonitis increase in irradiated lungs during immunotherapy? A generating hypotheses study

> Stereotactic body radiation therapy for central early non small cell lung cancers - Yes! Its possible
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> Managing isolated local/regional recurrences after SBRT for inoperable early lung tumors - a dilemma
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> SABR Following Pneumonectomy: A Systematic Review of Clinical and Toxicity Outcomes
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> Lowered Whole Brain Irradiation Dose for Non-Small Cell Lung Cancer Patients with Brain Metastases
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> Association between heart dose and survival for NSCLC patients underwent VMAT
C. Xie (China), X. Jin
> Stereotactic body radiotherapy using a new real-time tumor tracking system and fiducial markers
  
  Y. Hiroshima (Japan), K. Nitta, T. Saitoh, T. Ohno, K. Shinoda, Y. Tamaki

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**Clinical track: Upper GI (oesophagus, stomach, pancreas, liver)**

> Preoperative image-guided identification of response to nCRT in esophageal cancer (PRIDE study)
  
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> Prospective fiducial placement in liver tumours: Effectiveness, placement 'quality' & toxicities
  
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> Prognostication of HCC with PVT treated with SBRT: Early results from a prospective study in India
  
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> Radiation Dose to the Thoracic Vertebral Bodies is Associated with Acute Hematologic Toxicities
  
  F. Lingli, D. Xiaobo (China)

> the role of multidisciplinary team in radiotherapy for esophageal cancer
  
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> S-1 versus S-1 plus cisplatin concurrent radiationtherapy for esophageal cancer: a mid-term report
  
  Y. Wen (China), Z. Zhao, Y. Chen, Y. Gui, X. He, Q. Yang, M. Sun, J. Miao, Q. Jia, H. Tian, X. Du

> Lymphopenia and accidental splenic doses for locally advanced gastric cancer
  
  F. Sert (Turkey), D. Yalman, S. Ozkok

> A Pilot Study of Apatinib Combined with SBRT To Advanced Pancreatic Cancer
  
  G. Ma (China), M. Shuo, Z. Shuman, X. Li-ang
Comparing Treatment Plans for Proximal and Middle/Distal Stomach Cancer: IMRT, VMAT, and Tomotherapy

Y. Chen (Taiwan), J. Lin, S. Huang, Y. Chou, M. Li, J. Tsai

Practice-based clinical outcome of definitive radiation therapy for superficial esophageal cancer


Hypofractionated radiotherapy for patients with bulky unresectable biliary tract cancer

W. Kong (China), J. Yang, J. Yan, J. Liu, Z. Xia, S. Li, Y. Qiu, B. Liu

Retrospective evaluation of usefulness of MR-guided adaptive radiotherapy of gastric MALT lymphoma


SBRT as definitive treatment of adrenal gland metastases: a single center experience


Feasibility study of fiducial markers in oesophageal cancer radiotherapy

A. Morton (United Kingdom), D. McIntosh, S. Currie, A.J. Stanley, S. Paterson, D. Grose, H. Marashi, V. MacLaren

Mapping Pattern of LNMs for Postoperative Radiotherapy in TESCC: Defining the Clinical Target Volume

J. Yu (China), C. Li, W. Ouyang, Y. Xu, J. Zhang, C. Xie

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Cardiac dose and treatment-elicited inflammation are related to poor survival in esophageal cancer

Y. Ho (Taiwan), J. Lin, T. Chou, L. Hung, C. Huang, C. Pi, T. Chang, M. Liu
> QoL for Gem and ABX plus SBRT versus Gem and S-1 plus SBRT in metastatic pancreatic cancer
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> PET compared to CT in target delineation for SBRT of pancreas adenocarcinoma
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> What is the best imaging study to contouring liver metastases in SBRT?
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> Excellent pCR rate in patients with HCC after SBRT +/- TACE as bridging to liver transplantation
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> Correlation between N-L Ratio,P-L Ratio and Survival in patients with LAPC: A new prognostic factor?
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> Preliminary results of a phase II study of induction Folfirinox followed by chemoradiation in LAPC
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> Palliative Oesophageal Chemoradiotherapy: A Phase 1 Clinical Trial
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> Post-operative radiotherapy in pancreatic cancer patients. a single institution experience

> Prognostic role of neutrophil-to-lymphocytes ratio in pancreatic cancer

> Volumetric modulated arc therapy (VMAT) in the treatment of oesophageal cancer patients
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> IG-IMRT improves short-term survival for lymph node metastases from hepatocellular carcinoma
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> Can SBRT improve the prognosis of unresectable pancreatic cancer? Clinical results on 106 patients
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> Re-irradiation of abdominal malignancies: toxicity, cumulative dose and outcome
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> GTV contouring in hepatocellular carcinoma: a comparison between two imaging techniques
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> Neoadjuvant chemoradiotherapy in patients with esophageal or esophageal gastric junction cancer
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Clinical results of proton beam therapy for unresectable intrahepatic cholangiocarcinoma

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Clinical efficacy and safety of consolidative radiotherapy in the maintenance treatment of mCRC
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Effect of waiting time to radiation on local control and overall survival in rectal cancer
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Preoperative VMAT with simultaneous integrated boost for locally advanced distal rectal cancer
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Prognostic Value of Volumetric PET Parameters in Patients with Locally Advanced Rectal Cancer
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> Machine learning prediction of early distant progression after SBRT for colorectal cancer

_H. Chung_ (Canada), P. Lang, M. Kayvanrad, R. Thompson, W. Chu, E. Gennatas, G. Valdes, P. Cheung

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> Multi-parametric MRI as a biomarker in anal cancer: a prospective trial

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> Post chemoradiotherapy FDG-PET parameters predict for recurrence in anal cancer: a prospective trial

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> Clinical impact of re-irradiation with carbon ion radiotherapy for locally recurrent rectal cancer


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> Moderate hypofractionation and SIB with volumetric modulated arc therapy (RapidArc) for anal cancer


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> Acute toxicities comparing VMAT versus 3D-CRT in locally advanced rectal cancer

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> Impact of sentinel lymph-node biopsy and FDG-PET in staging and radiation treatment of anal cancer


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> Internal Margin evaluation in prone or supine rectal cancer patients using CBCT


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> Impact of diabetes on outcome and toxicity of neoadjuvant (chemo)radiation for rectal cancer
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> KRAS mutation status as predictor factor in locally advanced rectal cancer
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> Radiomics versus volume reduction for rectal cancer response prediction in hybrid MR guided RT
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> Radiation dose to pelvic floor muscles and functional outcome after treatment for anal cancer
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H.J. Kim (Korea Republic of), W.S. Koom, G.E. Kim, Y.B. Kim

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Stereotactic RT in ovarian cancer: multicentric retrospective pooled analysis (MITO-RT project)

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S. Dalwadi, M. Ludwig, N. Waheed, D. Tran, M. Bonnen, C. Mantz (USA)

Neoadjuvant CT followed by chemoradiation in locally advanced cancer cervix: feasibility and QOL study
S. Singh (India), S. Sadhan Sarangi, P. Misra, D. Kapoor, A. Rani, N. Rastogi, S. Kumar

Role of PET-CT in patients of recurrent carcinoma cervix treated with definitive chemoradiotherapy

Role of HPV DNA testing and its influence on clinical outcomes in Cervical Cancer
P. Jayaprakash (India), G. Narayanan

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S. Cordoba Largo (Spain), V. Garcia Jarabo, D. Martinez, M. Ramirez, M. Gaztañaga Boronat, C. De la Fuente, G. Marquina, A. Ortega, R. Mendez
> Treatment of early stage intermediate-risk endometrial cancer using MIS and adjuvant radiotherapy
  J. Song (Canada), T. Le, M. Gaudet, C. Ee, K. Lupe, R. Samant
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> How effective is adjuvant radiotherapy in the management of stage I high-risk endometrial cancer?
  J. Song (Canada), T. Le, M. Gaudet, C. Ee, K. Lupe, R. Samant
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> Bone mineral density correlates to pelvic fractures after radiotherapy for cervical cancer
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> Clinical outcome and toxicity of MRI-based vaginal cuff brachytherapy in endometrial cancer
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> SBRT for oligometastatic gynecological cancer: a single institution experience
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   T. Chan, P.W. Tan, J.I.H. Tang (Singapore)
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   E. Connolly (Ireland), G. Rangaswamy, O. Boychek, C. Gillham, O. McArdle
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> Prognostic value of SCC-Antigen and SUVmax value in locally advanced cervix cancer
   S. Pedraza Fernández (Spain), P. Sarandeses, D. Lora, J.F. Pérez-Regadera
   EP-1501

> Endometrial cancer. Relapse free survival rates in our medium/large hospital in the UK
   L. Price (United Kingdom), R. Allerton
   EP-1502

> Brachytherapy versus EBRT boost for cervical cancer: is the standard better?
   D. Delgado (Portugal), A. Figueiredo, J. Leitão Santos, A. Florindo, V. Mendonça, M. Lemos, M. Abdulrehman, M.F. De Pina
   EP-1503

> Role of PET/CT in assessing treatment response of cervical cancer after definitive RadioChemotherapy
   A. Tsikkinis (Switzerland), E. Vlaskou Badra, N. Cihoric, D. Aebersold, K. Lössl
   EP-1504

> Is locally advanced cervix adenocarcinoma less radiosensitive than squamous cell carcinoma?
   EP-1505

> Multi-institutional treatment and management of cervical cancer patients
   A. Tsikkinis (Switzerland), N. Cihoric, E. Vlaskou Badra, D. Aebersold, K. Lössl
   EP-1506
> Radical radiotherapy/brachytherapy for cervix cancer in Alberta: who are treated, how do they fare?  
N. Vawda, S. Ghosh, S. Menon, A. Duimering, J. Cuartero, E. Wiebe, C. Doll, F. Huang (Canada)  
EP-1507

> EQD2 and overall treatment time as prognostic factors in cervical cancer treated with definitive CRT  
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> “Young adult” and “geriatric” locally advanced cervix cancer in Alberta: same but different?  
S. Menon, S. Ghosh, N. Vawda, G. Menon, M. Roumeliotis, C. Doll, E. Wiebe, F. Huang (Canada)  
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> Phase I Trial of Stereotactic MR-guided Online Adaptive Radiotherapy for Ovarian Oligometastases  
L. Henke (USA), O. Green, A. Curcuru, S. Mutic, S. Markovina, J. Schwarz, P. Grigsby, C. Robinson, A. Chundury  
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> Investigation of prognostic factors of cervical squamous cell carcinoma using pre-treatment MRI  
C. Tonoiso (Japan), A. Haga, A. Kubo, T. Kawanaka, S. Furutani, H. Ikushima, M. Harada  
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Clinical track: Prostate

> Evaluation of target volume margins in prostate dose escalated VMAT by fiducial markers’ technique  
R. Fawzy (Egypt), R. Abdel-Malek, M. Metwaly, O. Abdel Aziz, S. Alsirafy, A. Seleem  
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> Patient-reported adverse events following trans-rectal ultrasound-guided prostate marker insertion  
T. Rosewall (Canada), A. Bayley, P. Chung, C. Catton  
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> Binary exponential model for the PSA fall after IMRT, dependency on initial PSA and Prostate volume  
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Substantial impact of 68Ga-PSMA-PET/CT on the radiotherapeutic approach for prostate cancer


Macroscopic local relapse from prostate cancer: which role for salvage RT? An update analysis

Bruni (Italy), G. Ingrosso, F. Trippa, M. Di Staso, L. Rubino, G. Aluisio, S. Parente, L. Frassinelli, E. Maranzano, R. Santoni, E. Mazzeo, F. Lohr

The long-term result of stereotactic body radiotherapy for localized prostate cancer

Y. Lin (Taiwan), S. Wang

A dosimetric comparison of treatment plans by using aaa/mc with VMAT technique for prostate patients

Boydak (Turkey), K. Temizyurek

PSMA-PET/CT for guidance and response assessment of SABR for prostate cancer oligometastases

Dirix (Belgium), C. Mercier, C. Billiet, P. Vermeulen, S. Oeyen, S. Van Laere, P. Huget, D. Verellen

Acute and late toxicity of hypofractionated RT for localized prostate cancer: IMRT vs Tomotherapy

Rese (Italy), F. Pastore, G. Panelli, A. Pepe, D. Toledo, F. Francomacaro, V. Iorio

IMRT for prostate cancer with seminal vesicle involvement: A multicentric retrospective analysis


Radiotherapy with or without antihormonal therapy for PSMA-positive oligorecurrent prostate cancer

Kroeze (Switzerland), C. Henkenberens, N. Schmidt-Hegemann, M. Vogel, S. Kirste, J. Becker, H. Christiansen, C. Belka, S. Combis, A. Grosu, A. Müller, M. Guckenberger

Predictors of severe late urinary toxicity after curative radiotherapy for localised prostate cancer

Differentiation between adenocarcinoma and prostatitis with multi-parametric MRI
S. Ken (France), R. Aziza, D. Portalez, L. Chaitiel, J. Gilhodes, T. Brun
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Postoperative radiation therapy following radical prostatectomy in Stockholm County in 2008-2016
J. Falk (Sweden), M. Aly, T. Nordström, A. Valdman
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PSMA-PET/CT validates Roach formula in 280 treatment-naïve prostate cancer patients
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Proton therapy for prostate ca: Comparison of toxicity between mod-hypo and conventional fraction
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Feasibility and toxicity of focal dose escalation on multimodally defined GTVs in prostate cancer
E. Haehl (Germany), C. Zamboglou, H.C. Rischke, M. Bock, S. Kirste, M. Mix, P.T. Meyer, D. Baltas, A.L. Grosu
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Abstract withdrawn
K. Nishiyama (Japan), T. Toyofuku
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Prostate volume reduction with neo-adjuvant hormones and its relation with bladder and rectal volume
M. Sivanandan (United Kingdom), C. Vivekananthan, Z. Ali, S. Sundar
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SBRT for Prostate Cancer in 3 fractions: Acute Toxicity Rates from a Prospective Multicenter Study
G. Sanguineti (Italy), A. Farneti, M. Trovò, V. Landoni, E. Moretti, M. Ferriero, F. Spasiano, U. De Paula, S. Gomellini, A. Magli
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Metastases directed SBRT using Ga68-PSMA for oligometastatic prostate cancer: TROD 09-002 Study
G. Ozyigit (Turkey), S. Igdem, B. Atalar, H.B. Ozkok, P. Hurmuz, F. Akyol
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Stereotactic Body Radiotherapy in Prostate Cancer: A Single Center Experience
F. Akyol, P. Hurmuz (Turkey), S. Sari, A.E. Dogan, D. Yuce, S. Yazici, B. Akdogan, G. Ozyigit
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> Clinical Outcomes for Patients with Gleason Score 10 Prostate Adenocarcinoma: TROD 09-004 Study
G. Ozyigit (Turkey), H.C. Onal, P. Hurmuz, A. Iribas, I. Cetin, I.B. Gorken, D. Yalman, F. Akyol

> Vessel-sparing prostate V-MAT with simultaneous integrated boost to dominant intraprostatic lesion

> Influence of obesity in treatment outcomes in prostate cancer patients
J.L. Munoz Garcia (Spain), F. Ropero Carmona, M. Gonzalez Ruiz, P. Simon Silva, J. Quiros Rivero, Y. Rios Kavadoy, M.C. Cruz Muñoz, J. Cabrera Rodriguez

> Local Relapse after Radiotherapy for prostate cancer: is a second local treatment worthwhile?
C. Hennequin (France), M. Pierre, D.K. Eric, V. Laetitia, D. François, C. Stephane, Q. Laurent

> Where fail PC patients treated with limited RT to prostate and sv with 76-80 Gy +/- hormonotherapy?

> Early experience and quality of life in SBRT prostate cancer boost of 9 Gy in a phase II trial

> A bowel pathway for patients undergoing radiotherapy for prostate cancer
C. Perna (United Kingdom), C. Williamson, S. Khaksar

> Intention to treat analysis of 68Ga-PSMA/11C-choline PET/CT vs. CT for prostate cancer recurrences
A. Müller (Germany), S. Olthof, C. Pfannenberg, D. Wegener, J. Marzec, J. Bedke, A. Stenzl, C. La Fougère, K. Nikolaou, D. Zips, J. Schwenck

> Long-term results and PSA kinetics after robotic SBRT for prostate cancer
Y. Park (Korea Republic of), H.J. Park, W.I. Jang, B.K. Jeong, H. Kim, A.R. Chang
> Early Results of a Phase 2 Multicentre Study of Linac-based Stereotactic Boost for Prostate Cancer

> Focal Linac-based SBRT Re-treatment for local recurrence of Ca P following previous definitive RT

> Prostate cancer EBRT: adaptive strategy and use of robust optimization for geometrical uncertainties
E. Ferrara (Italy), D. Beldì, J. Yin, G. Loi, M. Krengli  EP-1545

> Stereotactic radiotherapy for prostate bed recurrence after prostatectomy, a multicentric series
G. Francolini (Italy), B.A. Jereczek-Fossa, V. Di Cataldo, G. Simontacchi, G. Marvaso, M.A. Zerella, C.I. Fodor, L. Masi, L. Livi  EP-1546

> Developing an empirical nomogram for clinical visualization of DFS/OS for prostate cancer patients
R.M. Abdul (Singapore), E.P.P. Pang, Y.S. Koh, S.A. Gan, J.K.L. Tuan  EP-1547

> Patterns of progression in metastatic prostate cancer: who might benefit from targeted radiotherapy?
P. Patel (United Kingdom), N. Tunariu, A. Tree  EP-1548

> Clinical outcomes of image-guided radiotherapy in intermediate to high risk prostate cancer
C. Chen (Taiwan), H. Chuang, M. Huang  EP-1549

> Give-me-five trial: toxicity assessment in ultra-hypofractionated prostate cancer radiotherapy

> Interpretation of T3 found after MRI in low-intermediate risk patients with prostate adenocarcinoma
C. García Torres (Spain), L.A. Glaría Enríquez, A. Escribano Uzcudum, R. Morera López  EP-1551

> Impact of MRI on prostate cancer risk classification: game changer for therapeutic decision making?
> High-dose hypofractionated helical IG-IMRT in high-risk prostate cancer patients
N.G. Di Muzio (Italy), C.L. Deantoni, F. Zerbetto, C. Cozzarini, S. Broggi, P. Mangili, A. Chiara, I. Dell’Oca, A.M. Deli, R. Colandarino, C. Fiorino, A. Fodor
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> Twice vs thrice-weekly moderate hypofractionated EBRT for PCa: does overall treatment time matter?
V. Achard (Switzerland), S. Jorcano, M. Rouzaud, L. Escude, R. Miralbell, T. Zilli
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> Precision of deformable image registration for high-field MR-Linac treatment of prostate cancer
R.L. Christiansen (Denmark), L. Dysager, O. Hansen, C. Brink, B. Uffe
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> The effect of an endorectal balloon on GI toxicity after EBRT for localized prostate cancer
V. Groen (The Netherlands), L. Kerkmeijer, E. Monninkhof, M. Van Schie, M. Kunze-Busch, H. De Boer, U. Van der Heide, F. Pos, K. Haustermans, R.J. Smeenk
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> Do metformin and statins play a role in localized high-risk prostate cancer?
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> Updated results of a Phase II study on 5 fractions FFF SBRT for low and intermediate prostate cancer
F. Alongi, L. Nicosia (Italy), R. Mazzola, N. Giag-Levra, F. Ricchetti, V. Figlia, M. Rigo, G. Sicignano, S. Naccarato, R. Ruggieri
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> SBRT for lymph node metastases from prostate cancer: a multi-institutional retrospective analysis
F. Alongi, L. Nicosia (Italy), C. Francesc, G. D’Agostino, L. Di Brina, V. Figlia, R. Mazzola, S. Tomatis, M. Scorsetti
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> Quality of life after focal salvage high-dose-rate brachytherapy for radiorecurrent prostate cancer
M. Van Son (The Netherlands), E. Monninkhof, M. Peters, J. Van der Voort van Zyp
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> Prostate cancer radiotherapy: a systematic review about boost on the dominant intraprostatic lesion
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> CyberKnife or HDR Brachytherapy Alone for the Treatment of Prostate Cancer: A Matched Pair Analysis  
*P. Wojcieszek* (Poland), G. Głowacki, T. Krzysztofiak, P. Lelek, M. Szlag, A. Cholewka, M. Fijałkowski, S. Kellas-Ślęczka, K. Krysiak, L. Miszczyk  

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> PSMA-ligand based radiotherapy for lymph node relapsed prostate cancer after radical prostatectomy  

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> Evaluation of Quality of Life in men with prostate cancer after radiation therapy  

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> Quality of online information about radiotherapy for prostate cancer  
*L. Käsmann* (Germany), S. Janssen, F. Fahlbusch, D. Vordermark, D. Rades  

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> MR-guided online adaptive radiotherapy: First experience in the UK  
*A. Pathmanathan* (United Kingdom), L. Bower, H. Creasey, A. Dunlop, E. Hall, I. Hanson, T. Herbert, R. Lawes, D. McQuaid, H. McNair, A. Mitchell, G. Smith, R. Huddart, U. Oelfke, S. Nill, A. Tree  

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> Prospective longitudinal evaluation of quality of life after prostate cancer IMRT  

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> Long-term results of [18F] Fluorocholine PET/CT guided SBRT in patients with prostate cancer  

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> High-dose-rate brachytherapy boost in high-risk prostate cancer: results of two different schemes  

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> Stereotactic body radiation therapy for oligometastatic prostate cancer. Our experience

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> Pelvis Hypofractionation in IMRT+IGRT: 15 fractions and prostate HDR Brachytherapy. Toxicity analysis

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> How multiparametric magnetic resonance changes the staging and treatment of prostate cancer

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> Is there an optimal OAR-filling protocol reducing G2+-toxicity for prostate IMRT?
J. Marzec (Germany), F. Paulsen, S. Westbomke, Z. Outaggarts, D. Wegener, D. Thorwart, D. Zips, A. Müller

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> Four-year outcomes of hypofractionated proton therapy for localized prostate cancer
A. Grewal (USA), C. Schonewold, S. Both, S. Lam, S. Mazzoni, J. Bekelman, J. Christodouleas, N. Vapiwala

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> Stereotactic Body Radiotherapy in bone oligometastatic prostate cancer patients
F. Trippa, F. Arcidiacono (Italy), A. Di Marzo, L. Draghini, P. Anselmo, S. Terenzi, M. Casale, S. Fabiani, E. Maranzano

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> Middle Half Body Radiotherapy in bone metastases from prostate cancer: a phase I study

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> Prostate SBRT with Gantry-based LINAC without ConeBeam. Toxicity outcomes of 205 patients

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> Hypofractionated postoperative IMRT-IGRT in prostate cancer single-institution preliminary results
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> Prior prostatectomy MRI improves target coverage of adjuvant radiotherapy for pT3bNo prostate cancer
G. Kacso (Romania), T. Popescu, P. Daniël, C. Iacob, R. Zahu, A. Eva, D. Dordai
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> Adjuvant radiotherapy in prostate cancer patients–bRFS and toxicity using adaptive IMRT technique
P. Toncheva (Germany), N. Volegova - Neher, K. Henne, A. Grosu, S. Kirste
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> Good tolerability of hypofractionated radiation therapy for localized prostate cancer
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> Differences between 3D and VMAT in hypofractionated radiation therapy for localized prostate cancer
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> Feasibility of postprostatectomy dose escalated salvage radiotherapy by reduction of bladder dose
G. Sancho Pardo (Spain), E. Acosta, L. Tilea, A. Soto, A. Nuria, G. Gómez de Segura, J. Craven-Bartle
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> Radium-223 treatment in Metastatic Prostate Cancer: Prognostic Factors: Real-world Outcome
R. Pearson (United Kingdom), X. Jiang, S. Atkinson, S. Cumming, A. Burns, J. Frew, R. McMenemin, I. Pedley, A. Azzabi
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Clinical track: Urology-non-prostate

> Modified BEP chemotherapy regimen in testicular germ cell tumors: Outcome and toxicity
  
  *N. Thakur* (India)  
  EP-1585

> FDG PET-CT based risk-adapted radiotherapy for post-chemotherapy residual mass in advanced seminoma
  
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> Conservative strategy with concomitant chemoradiation for bladder cancer: analysis of a 313 patients
  
  *E. Fabiano* (France), *H. Martin, M. Arnaud, G. Philippe, K. Sarah, T. Hélène, B. Jean Emmanuel, S. Antoine, D. Catherine*  
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> The preliminary result of combination of chemoradiotherapy and arterial infusion for bladder cancer
  
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> Establishing international variation in target delineation using MRI for bladder radiotherapy
  
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> Hyperthermia-radiotherapy in frail bladder cancer patients unfit for cystectomy or chemoradiotherapy
  
  *E. Stutz* (Switzerland), *B. Eberle, E. Puric, A. Meister, O. Timm, D. Marder, S. Rogers, S. Wyler, N.R. Datta, S. Bodis*  
  EP-1590

> Dose mapping local failure following radical image guided bladder radiotherapy
  
  *S. Hafeez, H. Abdel-Aty* (United Kingdom), *K. Warren-Oseni, A. Dunlop, K. Chan, D. McQuaid, K. Jones, V. Harris, M. Tan, V. Hansen, R. Huddart, S. Hafeez*  
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> Consolidative radiotherapy after loco regional relapse in muscle invasive bladder cancer
  
  *D. Santamaria Vasquez* (Spain), *X. Maldonado, M. Altabas, D. Moreno, S. Micó, C. Raventós, F. Lozano, R. Morales, J. Giralt*  
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Clinical track: Skin cancer / malignant melanoma

- The impact of Radiotherapy combined with immunotherapy on local control in mucosal melanoma patients
  
  H.J. Kim (Korea Republic of), S.J. Shin, K. Woong Sub  
  
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- Two years’ experience of electronic brachytherapy for basal cell carcinomas in selected patients
  
  H. Westenberg (The Netherlands), R. Keus, M. Van Hezewijk, B. Oosterveld  
  
  EP-1594

- In unoperable SSCC, radiotherapy schedules could be chosen using dermoscopic features?
  
  F. Pastore (Italy), A. Rese, G. Panelli, A. Pepe, D. Toledo, V. Iorio  
  
  EP-1595

- Radiotherapy and Ipilimumab as first-line immunotherapy: A comparative study on 63 patients
  
  
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- Radiotherapy of monstrous squamous cell carcinoma of the head and scalp in elderly: our series
  
  G. Lazzari (Italy), A. Terlizzi, G. Silvano  
  
  EP-1597

- Efficient use of a modified Stanford TSEBT technique in the treatment of MF patients
  
  E. Csiki (Hungary), M. Simon, J. Papp, P. Árkosy, Á. Kovács  
  
  EP-1598

- Electronic brachytherapy for non-melanoma skin cancers: preliminary results of a pilot trial
  
  F. Maurizi (Italy), G. Capezzali, M. Mazza, C. Blasi, G.L. Moroni, M. La Macchia, A. Ciarmatori, F. Palleri, E. Argazzi, S. Giancaterino, M. Bono, F. Bunkheila  
  
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- Implementing TG100: an FMEA for superficial radiotherapy at Wellington Blood and Cancer Centre
  
  A. Williams (New Zealand), B. Steer, D. Paterson, J. Evans, R. Dew  
  
  EP-1600
Clinical track: Sarcoma

- Radiotherapy in resectable Intrathoracic Sarcomas. A Rare Cancer Network Study
  C. Solé (Chile), F. Larsen, M. Terlizzi, P. Sargos, V. Linacre, F. Suarez, Y. Kirova, P. Van Houtte, D. Lerouge, T. Zilli
  EP-1601

- Role of clinical networks in sarcomas: The Scottish Sarcoma Network (SSN) Experience
  J. Nixon (United Kingdom), F. Cowie, J. White, P. Chong, S. Lo, D. Bodie, L. Hayward, M. Ferguson, L. Campbell
  EP-1602

- Survival after adjuvant radiotherapy for aggressive fibromatosis depend upon time and β-catenin
  J.S. Kim (Korea Republic of), H.J. Kim, M. Lee, K.C. Moon, S.G. Song, H. Kim, I. Han, I.H. Kim
  EP-1603

- Feasibility of preoperative radiotherapy in localized sarcoma of the limb: a single center experience
  EP-1604

- Adjuvant RT for soft tissue sarcomas: volumetric modulated arc therapy vs 3D conformal radiotherapy
  L. Di Brina (Italy), P. Navarra, G.R. D’Agostino, F. De Rose, C. Iftode, E. Clerici, F. Lobefalo, A. Bertuzzi, V. Quagliuolo, M. Scorsetti
  EP-1605

- Stereotactic Ablative Radiotherapy for oligometastatic soft tissue sarcoma patients
  EP-1606

- Preoperative Radiation Therapy and IORT in Retroperitoneal Soft Tissue Sarcomas. Long Term Outcome
  F. Navarra (Italy), S. Basso, E. Palazzari, R. Innocente, A. Lauretta, F. Matrone, G. Fanetti, A. Revelant, A. Buonadonna, C. Belluco, V. Canzonieri, J. Polesel, G. Bertola, A. De Paoli
  EP-1607

- Results of an aggressive local strategy after R1 or R2 unplanned surgery for soft tissue sarcomas
  EP-1608
Clinical track: Paediatric tumours

- Volumetric-modulated arc whole-brain radiotherapy prevents permanent alopecia for pediatric patients
  EP-1609

- Cranio Spinal Axis irradiations using Pencil Beam Scanning: the PSI experience
  EP-1610

- Experience of uninterrupted radiotherapy for pediatric hodgkin's disease in a developing country
  EP-1611

- Radiation induced hypothyroidism in pediatric tumours of central nervous system
  C. Satragno (Italy), E. Tornari, S. Barra, F. Giannelli, L. Belgioia, M. Giaccardi, N. Di Iorgi, M.L. Garrè, R. Haupt, R. Corvò  
  EP-1612

- A dosimetric comparison of Proton and VMAT for Pediatric Ewing sarcoma of pelvis and spine
  F. Meniai-Merzouki (France), M. Vigan, F. Goudjil, S. Helfre  
  EP-1613

- Incidence of second malignancies among pediatric patients treated with helical Tomotherapy
  E. Coassin (Italy), A. Drigo, L. Barresi, G. Fanetti, C. Elia, G. Sartor, G. Franchin, M. Mascarin  
  EP-1614

Clinical track: Palliation

- Impact of pretreatment imaging modality on the response to palliative radiation for bone metastases
  Y. Wada (Japan), E. Okuyama, S. Kumagai, M. Sasajima, T. Tozawa, N. Takagi, A. Anbai, M. Hashimoto  
  EP-1615
Population-based Phase II Trial of Stereotactic Radiotherapy for up to 5 Oligometastases: SABR-5
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Palliative radiotherapy for lung cancer from patients’ perspective: a quality of life (QoL) study
W. Majewski (Poland), M. Wyduba
EP-1617

Early clinical results & feasibility of amplitude-gated DIBH for SBRT: A multi-centre experience
K. Chufal (India), I. Ahmed, C.P. Bhatt, R. Chowdhary, R. Singh, A. Pahuja
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SBRT and the treatment of adrenal gland metastasis
D. Georgiev (Bulgaria), N. Gesheva-Atanasova, S. Lalova, A. Balabanova, I. Mihaylova, B. Antonov, K. Ormankova
EP-1619

A model for individualized estimation of survival in patients who underwent whole-brain radiotherapy
C. Marchand-Créty (France), J. Riverain, Y. Drouet, J. Thariat, S. Servagi-Vernat
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First results of the first cohort of a phase I dose-escalation trial on SABR for oligometastases
C. Mercier (Belgium), P. Dirix, C. Billiet, P. Meijnders, P. Vermeulen, C. Rypens, P. Huget, D. Verellen
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Stereotactic Body Radiation Therapy for Oligometastatic Disease: A single-institution experience.
L.P. Guzman Gomez (Spain), J. Luna Tirado, D. Gonsalves Pieretti, A. Ilundain Idoate, M. Montero Feijoo, W.A. Vasquez Rivas, E. Lopez Ramirez
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KORTUC for lytic bone metastasis
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First clinical experiences with SBRT on the 1.5 T MR-linac for pelvic lymph node oligometastases
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Patterns of care and outcome analysis of the stereotactic body RT (SBRT) of adrenal gland metastases

T. Voglhuber (Germany), S.E. Combs, K.A. Kessel, M. Oechsner

"TEACHH Model" as a tool for decision-making in palliative patients: Our experience

A. Miranda Burgos (Spain), C. Escuin Troncho, G. Molina Osorio, C. Garcia Aguilera, L. Alled Comin, J.M. Ponce Ortega, R. Ibáñez Carreras

Impact of body morphology on survival in patients with bone metastases: A prospective cohort study

B. Pielkenrood (The Netherlands), P. Van Urk, J. Van der Velden, N. Kasperts, J. Verhoeff, G. Bol, L. Verkooijen, J. Verlaan

Stereotactic ablative radiotherapy for non-spinal bone metastasis. A single institution experience.


Recalcification in lytic bone metastases of the spine after radiotherapy

B. Pielkenrood (The Netherlands) T. Visser, W. Foppen, J. Van der Velden, W. Eppinga, N. Kasperts, G. Bol, L. Verkooijen, J. Verlaan

A Multidisciplinary approach to Palliation - Rapid Access Targeted Personalised Radiotherapy Clinic

A. Sharif (United Kingdom), R. Mamon, K. Gaunt, N. McAndrew

AIRO Palliative Study Group investigation on prognostic score in clinical practice: PROPHET Trial


Response prediction of palliative radiotherapy to painful spinal bone metastases

J. Akhgar (Germany), J.C. Peeken, S.U. Pigorsch, S.E. Combs

Profile of patients who die in the first 30 days after palliative radiotherapy in our center

D.C. Moreno Santiago (Spain), M. Vázquez Varela, M. Altabas Gonzalez, J. Giralt
> Stereotactic Body Radiotherapy (SBRT) for bone metastases: Preliminary experience
  E. González Del Portillo (Spain), O. Alonso-Rodríguez, A. Nieto-Palacios, C. Martín-Rincón, L.A. Pérez-Romasanta
  EP-1634

> Stereotactic ablative radiation therapy for non-spine bone metastases
  K.S. Kim (Korea Republic of), C. Choi
  EP-1635

**ELECTRONIC POSTER**

**Clinical track: Elderly**

> Linac-based radiosurgery in elderly patients: mono-institutional experience on 110 brain metastases
  F. Gregucci (Italy), A. Fiorentino, S. Corradini, V. Figlia, R. Mazzola, F. Ricchetti, R. Ruggeri, F. Alongi
  EP-1636

> Validation of a predictive model for survival in elderly patients treated with radiotherapy
  H. Park (Korea Republic of)
  EP-1637

> Radiotherapy and Immunotherapies in elderly: a systematic literature review
  EP-1638

> Socioeconomic Status and Mortality in Elderly Cancer Patients: A National Elderly Sample Cohort Study
  B. Jang, (Korea Republic of) J.H. Chang
  EP-1639

> Radical radiotherapy in elderly prostate cancer patients: a monoinstitutional experience
  C.L. Deantoni (Italy), A. Fodor, C. Fiorino, C. Cozzarini, F. Zerbetto, P. Mangili, C. Calandrino, N.G. Di Muzio
  EP-1640

> Radiotherapy for prostate cancer patients over 80 years: 95 patients treated in a single institution
  P. Méré, C. Dalban, E. Peynet, A. Guignot, J. Droz, P. Pommier (France)
  EP-1641

> Short-course accelerated palliative EBRT for advanced head and neck cancer in elderly patients
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> Short-course accelerated palliative radiotherapy for advanced lung cancer in elderly patients  

> Elderly patients with non-melanoma skin cancer: results of accelerated hypofractionated treatment  

> Short-course accelerated palliative radiotherapy for advanced skin cancer in elderly patients  

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> Monte Carlo evaluation of organ doses from a proton gantry-mounted CBCT system  

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> Distributed rapid learning made easy: a user-friendly dashboard for model development and execution
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**ELECTRONIC POSTER**

**Physics track: Quantitative functional and biological imaging**

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> Assessment of ADC value when comparing two methods to reduce geometrical distortion in DWMRI

> Predicting midtreatment FDG PET in head and neck cancer
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> Treating prostate cancer with MRI-only radiotherapy
   E. Persson (Sweden), C. Gustafsson, J. Nilsson, S. Ceberg, S. Engelholm, S. Bäck, L.E. Olsson, A. Gunnlaugsson
   EP-2063
> A novel method for GTV generation for large-scale analysis of lung cancer patients planned with 4DCT
A. Davey (United Kingdom), M. Van Herk, C. Faivre-Finn, S. Brown, A. McWilliam
EP-2064

> Simulation PET-CT vs diagnostic PET-CT fusion in H&N RT: volumetric and planning implications
EP-2065

> Evaluation of ANACONDA performances varying the exploited subset of controlling ROIs (AIRC IG-14300)
C. Romanò, S. Trivellato (Italy), P. De Marco, S. Comi, A. Bazani, G. Marvaso, D. Ciardò, B.A. Jereczek-Fossa, R. Orecchia, F. Cattani
EP-2066

> Data driven region of interest respiratory surrogate signal extraction from CBCT data
A. Akintonde (United Kingdom), H. Grimes, S. Moinuddin, R.A. Sharma, J. McClelland, K. Thielemans
EP-2067

> Scatter-corrected CBCTs for online water-equivalent path length calculations in proton therapy
EP-2068

> Improved dose calculation on CBCT using polyenergetic quantitative (Polyquant) reconstruction
J. Mason, W. Nailon (United Kingdom), A. Perelli, S. Andiappa, M. Davies
EP-2069

> Comparison of multi-atlas based synthetic CT generation methods for radiotherapy for prostate cancer
C. Choi (New Zealand), G. Sasso, B. Pontre
EP-2070

- ELECTRONIC POSTER

Physics track: Implementation of new technology, techniques, clinical protocols or trials (including QA & audit)

> Redefining the classical Winston-Lutz test for cranial radiosurgery in terms of dose
J.F. Calvo Ortega (Spain), S. Moragues Femenia, J. Casals
EP-2071

> Automatic analyzation of patient specific QA measurements made with the Octavius verification device
P. Haering (Germany), M. Splinter, C. Lang
EP-2072
> Reconstruction of the electron source distribution using in-air measurements and genetic algorithm
  E. Borzov (Israel), A. Nevelsky, R. Bar-Deroma, I. Orion EP-2073

> Can we use Effective Depth for deformable image registration QA alongside the AAPM recommendations?

> MARC vs IMRT prostate treatments: OAR dose distribution analysis stratified by PTV extent
  R. Bermúdez Luna (Spain) EP-2075

> Is there any advantage in using helium ions over protons for minibeam radiation therapy?
  T. Schneider (France), A. Patriarca, Y. Prezado EP-2076

> De-intensification of radiotherapy dose to the elective neck in oropharyngeal squamous cell cancers
  R. Valentine (United Kingdom), A. Martin, S. Currie, C. Paterson EP-2077

> Comprehensive risk assessment for the clinical introduction of an MR-linac

> HyperArcTM RT for thyroid eye disease: a plan comparison with VMAT and parallel opposed techniques
  R. Valentine (United Kingdom), S. Schipani, P. Cauchi, V. Chadha, J. Connolly, T. Mitchell, D. Ritchie, S. Currie EP-2079

> MC simulations on the dose enhancement effect of antibody conjugated AuNPs in targeted radiotherapy

> Real time CyberKnife dosimetry using Radioluminescence imaging
  A. Spinelli (Italy), E. D'Agostino, C. Fiorino, S. Broggi EP-2081

> An adapted use of the gamma index method for Monte Carlo dose distributions comparison
  M. Cohilis (Belgium), S. Edmond, L. John A., S. Kevin EP-2082

> Evaluation of Deformable Image Registration and Dose Accumulation in Prostate SBRT Patients
  J. Swamidas (India), R. Phurailatpam, S. Panda, V. Murthy, K. Joshi, D. Deshpande EP-2083
> Arms-down versus arms-up positioning for breast cancer patients receiving proton beam radiation
  *E. Batin, N. Depauw (USA), S. MacDonald, R. Jimenez*  
  **EP-2084**

> PET/MR in GTV delineation in patients with carcinoma of the tongue
  *N. Samołyk-Kogaczewska (Poland), E. Sierko, K. Zuzda, P. Gugnacki, P. Szumowski, M. Mojsak, J. Burzyńska-Śliwowska, T. Filipowski, M.Z. Wojtukiewicz, D. Jurgielewicz*  
  **EP-2085**

> Innovative hybrid 18FDG-PET/MR in GTV delineation in locally advanced oral cavity cancer patients
  *N. Samołyk-Kogaczewska (Poland), E. Sierko, D. Dziemiańczyk-Pakieła, B. Nowaszewska, K. Zuzda, J. Burzyńska-Śliwowska, P. Szumowski, D. Jurgielewicz, T. Filipowski, M.Z. Wojtukiewicz, M. Mojsak*  
  **EP-2086**

> Probabilistic Modeling of Patient Setup Time in VMAT Treatments Based on Anatomical Regions
  **EP-2087**

> Upright open-source cone beam CT imaging for radiotherapy
  *J. Korte (Australia), N. Hardcastle, S. Everitt, T. Kron*  
  **EP-2088**

> Technical implementation of total marrow irradiation (TMI) using VMAT
  *J.M. Perez Moreno (Spain), C. Rubio Rodriguez, J. Valero Albarrán, P. Fernández Letón*  
  **EP-2089**

> Helical tomography radiation therapy for multiple brain lesions: in-phantom accuracy assessment
  *M. Zani (Italy), L. Marrazzo, S. Calusi, C. Talamonti, S. Scoccianti, D. Greto, L. Livi, S. Pallotta*  
  **EP-2090**

> How to measure high dose in functional disorder treatment: an innovative silicon diode detector
  *P. Gallo (Italy), E. De Martín, M.L. Fumagalli, F. Ghielmetti, M. Carrara, S. Alhujaili, M. Lerch, A.B. Rosenfeld, M. Marchetti, L. Fariselli, M. Petasecca*  
  **EP-2091**

> Time-driven activity-based costing for competing treatments using different technology solutions
  *Č.K. Torzsok (Chile)*  
  **EP-2092**

> Heart sparing with deep inspiration breath hold (DIBH) in left breast treatment: a prospective study
  *V. Vanoni (Italy), S. Mussari, L. Bossi, F. Coelli, M. Maino, A. Martignano*  
  **EP-2093**
> Machine QA Time Efficiency Savings with IBA Dolphin Detector  
S. Loughlin (United Kingdom), R. Lally, A. Reilly  

> SBRT of prostate with integrated boost of Dominant Lesion. A crowd-knowledge based planning study  
A. Savini (Italy), S. Cilla, M. Esposito, E. Moretti, E. Villaggi, S. Russo, M. Stasi, P. Mancosu  

> Multi-institutional versus site-specific training data for a deep breast segmentation algorithm  
J. Schreier (Finland), H. Laaksonen, F. Attanasi  

> Use of an a-Si EPID for routine QC of the Elekta Unity MR-Linac  
J. Berresford, J. Agnew, T. Harriden, G. Budgell (United Kingdom)  

> Measurement free patient specific verification for PBS proton plans – a quantitative evaluation  
M. Matter (Switzerland), N. Fachouri, L. Nenoff, G. Meier, A. Bolsi, D.C. Weber, A.J. Lomax, F. Albertini  

> The national approach to assign risk factors for failure modes and effects analysis in IMRT process  
I. Koniarova (Czech Republic), V. Dufek, I. Horakova  

> Quality in the implementation of stereotactic radiotherapy services on a national scale  

> Evaluation of the feasibility of performing markerless tracking for lung SBRT patients  
T. Gevaert (Belgium), A. Girardi, C. El Aisati, C. Collen, B. Engels, M. De Ridder  

> Accurate software detection of light markers coincidence using a computed radiography system  
M.A. Benito Bejarano (Spain), A. Del Castillo Belmonte  

> Development of a personalized, interactive patient decision aid for participation in clinical trials  
C. Offermann-Wulms (The Netherlands), C. Roumen, A. Ankolekar, J. Coenen, I. Nijsten, R. Fijten, D. De Ruysscher  

> Audit of the dosimetric impact of weight loss in H&N patients to assess when a re-plan is required  
N. Lalli (United Kingdom), S. Khan, L. Hong, M. Daly, D. Carnell, R. Mendes, A. Thompson
Robustness comparison between 6- and 8-fields SIB proton plans on H&N patients
N. Bizzocchi (Switzerland), C. De Angelis, J. Hrbacek, A.J. Lomax, D.C. Weber, A. Bolsi
EP-2105

Statistical process control analysis of pre-treatment VMAT QA for different anatomical sites
H. Omar Ghafour (Iraq), S. Russo, M. Esposito, S. Pini, A. Ghirelli, G. Zatelli
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DQA gamma Analysis evaluation criteria for prostate SBRT using MLC InCise 2 of a Cyberknife-M6
A. Ruiz (Chile), K. Torzsok, M. Ribeiro, H. Broqué, J. Aponte, F. Marangoni
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Varian and Elekta quality assurance using artificial neural network based on portal imaging
F. Chatrie (France), A. Vasseur, A.R. Barbeiro, F. Younan, J. Mazurier, M.V. Le Lann, X. Franceries
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Can we improve the dosimetric values with the experience? our results with vmat in lung cancer
EP-2109

Developing a QA programme for the Elekta Unity MR-linac
J. Chick (United Kingdom), I. Hanson, S. Nill, U. Oelfke
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Apex micromultileaf SRS Dynamic Conformal Arc treatment comparison with Agility multileaf collimator
C. Ferrer (Spain), C. Huertas, R. Plaza, R. Simón de Blas, F. Sánchez, E. Corredoira
EP-2111

Automation of consistency and integrity checks in external radiotherapy plans
M.A. Benito Bejarano (Spain), F. Saez Beltran
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Congruence of mechanical, radiation, and imaging isocentres of two types of Elekta linacs
C. Mekala (United Kingdom), A. Naga, N. Babu, S. Kumar, N. Khoter, C. Birch
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Predicting inaccuracy of overmodulated RapidArc plans using Machine Learning model
A. Botti (Italy), E. Cagni, M. Orlandi, R. Sghedoni, D. Lambertini, A. Barani, V. Bertolini, M. Iori
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> Semi-automated quality assurance of deformable registration in CT radiotherapy data
T. Mcgrath (United Kingdom), Z. Lawrence, R. Farhad Salih, Y. Peters, J. Rawling, M. Wilson, C. Piazzese, S. Holloway
EP-2115

> End-to-end dosimetry audits of Stereotactic Ablative Radiotherapy
M. Shaw (Australia), A. Alves, C. Davey, M. Geso, F. Kadeer, J. Lehmann, J. Supple, J. Lye
EP-2116

> Novel kV CBCT imager on ring gantry radiotherapy unit permits high inter-rater contour uniformity
EP-2117

> Effects of interfraction uncertainty with Strut Adjusted Volume Implant applicator
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> HDR BRT boost in breast cancer: postoperative vs intraoperative procedure, long-term outcomes
F. Piro (Italy), D. Cosentino, A. Martilotta, A. Massenzo, U. Piro, G. Tocci, L. Marafioti
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> Analysis of our Accelerated Partial Brachytherapy Irradiation (APBI) learning curve
S. Pinto (Portugal), A. Pereira, P. Fernandes, L. Trigo
EP-2120

> Intraoperative radiotherapy in early breast cancer: Short term outcomes
EP-2121

> Outcome of exclusive RT for BC in older women according to age and comorbidity: A retrospective study
W. Lorraine (France), K. Cao, M. Carton, A. Fourquet, Y. Kirova
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APBI with interstitial brachytherapy versus whole-breast irradiation for early-stage breast cancer
A. Figueiredo (Portugal), D. Delgado, J. Santos, A. Florindo, V. Mendonça, M. Jorge, M. Filomena de Pina  

**Brachytherapy track: Gynaecology**

- **Brachytherapy in the treatment of locally advanced cervical cancer: A single center study**  
  J. Khalil (Morocco)  
  [EP-2124]

- **High Dose Rate Brachytherapy in Brazil: Demand Estimation and Coverage in Public Healthcare System**  
  G.H. Yoshinari (Brazil), M.P. Alvarenga, H.H. Fernandes, F. Nadur, J. Domingues, H.F. De Oliveira  
  [EP-2125]

- **Cervix cancer treatments with electronic brachytherapy according to the EMBRACE protocol**  
  S. Lozares (Spain), A. Gandía, J.A. Font-Gómez, D. Villa, A. Mendez, A. Miranda-Burgos, V. Alba-Escorihuela, S. Jiménez-Puertas  
  [EP-2126]

- **Hydrogel bladder and rectal spacer (TraceIT) for brachytherapy in locally advanced Cervical cancer**  
  D. Najjari Jamal (Spain), C. Gutiérrez, L. Martí, S. Marin, A. Slocker, G. Rodríguez, S. Moreno, M. Garcia, F. Guedea  
  [EP-2127]

- **Rectal toxicity with MUPIT Interstitial Brachytherapy – Predictors, clinical and dosimetric outcomes**  
  V. Pareek (India), R. Bhalavat, M. Chandra, C. Bakshi, N. Bhambhani  
  [EP-2128]

- **A decision tool for interstitial needles implants in uterovaginal pulsed dose rate brachytherapy**  
  M. Sandt (France), F. Gassa, P. Pommier  
  [EP-2129]

- **Dose integration of intensity-modulated arc therapy and interstitial brachytherapy of cervix cancer**  
  G. Fröhlich Polgár (Hungary), J. Vízkeleti, N. Anhnhong Nguyen, T. Major, C.  
  [EP-2130]

- **Venezia: New Advanced Brachytherapy Gynecological Applicator in cervical cancer. Our preliminary data**  
  G. Riva (Italy), V. Andrea, R. Spoto, S. Durante, D. Ciardo, S. Comi, F. Cattani, R. Lazzari, B.A. Jereczek-Fossa  
  [EP-2131]

- **Verification of vaginal cylinder position using bony landmarks**  
  M. Zahra (United Kingdom), P. Drewell, W. Keough  
  [EP-2132]
> Interstitial brachytherapy for vaginal recurrence of pelvic gynecological cancers

> Developing a IC+IS applicator for treatment of advanced cancer cervix by image based brachytherapy.

> Exclusive brachytherapy in endometrial cancer: experience of an university hospital

> Brachytherapy study between patients treated with HDR Ir-192 and Xoft 50kVp source for uterus cancer
K. Asiev (Canada), S. Devic, B. Bahoric EP-2136

> Locally advanced cervical carcinoma treated with electronic brachytherapy: Our experience

> Rectal and urinary toxicity in patients with cervical carcinoma treated with brachytherapy

> Adjuvant brachytherapy for T1b1N0 cervical cancer: an alternative to postoperative EBRT

ELECTRONIC POSTER
Brachytherapy track: Head and Neck

> HDR brachytherapy in reirradiation of local nasopharyngeal recurrence
M. Ait Erraissi (Morocco), W. Hassani, T. Bouhafa, K. Hassouni EP-2140
**ELECTRONIC POSTER**

**Brachytherapy track: Physics**

- Recommendations for reporting the rectal dose during image guided HDR brachytherapy of prostate  
  *M. Szlag (Poland), A. Cholewka, P. Wojcieszek, S. Kellas-Ślęczka, M. Stąpór-Fudzińska, T. Krzysztofiak, K. Ślosarek*
  
  **EP-2141**

- Analysis of dose distribution between TG-43 and TG-186 in lung cancer  
  *M. Sawicki (Poland), Ł. Jarosław*
  
  **EP-2142**

- TRAK per unit reference dose as a QA tool is insensitive to finding cervix brachy planning errors  
  *P. Gonzalez (The Netherlands), F. Koetsveld, A. Mans*
  
  **EP-2143**

- Feasibility of using Micro Silica Bead TLDs for 3D dosimetry in brachytherapy  
  *S. Babaloui (Iran Islamic Republic of), S. Jafari, A. L.Palmer, W. Polak, M. W.J.Hubbard, T. Skopidou, A. Lohstroh, R. Jaberi*
  
  **EP-2144**

- Biological comparison of 60Co & 192Ir brachytherapy sources: a possible need for correction factor  
  *S. Abdollahi (Iran Islamic Republic of), M. Dayyani, H. Miri Hakimabad, L. Rafat Motavalli, E. Hoseinian Aghdadi*
  
  **EP-2145**

- Comparison of planning US HDR prostate on transversal or longitudinal ultrasound acquisitions  
  *D. Aramburu, V. Brennan, G. Cohen, A. Damato (USA)*
  
  **EP-2146**

- Commissioning of a novel brachytherapy device for diffusive alpha-particle radiation therapy  
  *A. Damato (USA), B. Beattie, G. Cohen, B. Serencsits, L. Dauer, J. Humm*
  
  **EP-2147**

**ELECTRONIC POSTER**

**Brachytherapy track: Anorectal**

- Brachytherapy on anal canal tumors  
  *C. Sousa (Portugal), M. Cruz, K. Pereira, A. Neto, S. Gonçalves, J. Brandão, L. Khouri, C. Alves, P. Alves*
  
  **EP-2148**
ELECTRONIC POSTER

**Brachytherapy track: Prostate**

> HDR brachytherapy as monotherapy for low and intermediate risk prostate cancer
  
  **M. Gaudet** (Canada), **M. Pharand-Charbonneau**, **D. Wright**, **M. Desrosiers**, **A. Haddad**  

**EP-2149**

> Re-salvage treatment for locally recurrent prostate cancer by HDR brachytherapy guided by MRI and US
  

**EP-2150**

> Intermediate-risk prostate cancer with EBRT plus permanent 125-I seeds. Long term results
  
  **M. Peña**, **J. Guinot** (Spain), **R. Roncero**, **B. Quiles**, **P. Santamaria**, **M.A. Santos**, **C. Boso**, **J.C. Sanchez-Relucio**, **M.I. Tortajada**, **L. Arribas**

**EP-2151**

> Pre rectal spacing w/.Blood Patch in HDR Prostate Brachytherapy, Feasibility and Dosimetric Analysis
  

**EP-2152**

> Late toxicity after single dose HDR-BT and EBRT for prostate cancer: clinical-dosimetric predictors
  

**EP-2153**

> Efficacy of LHRH agonist-free cytoreduction prior to prostate seed brachytherapy
  
  **N. Wallace** (Ireland), **A.M. Peoples**, **S.J. O’Brien**, **P.J. Kelly**

**EP-2154**

> Optimising HDR Prostate Implant, Planning and delivery. A new centre experience
  

**EP-2155**
**ELECTRONIC POSTER**

**Brachytherapy track: Miscellaneous**

> Assessment of role of ILRT as palliative treatment in advanced esophageal cancer  
*V. Pareek (India), R. Bhalavat, M. Chandra*  
**EP-2156**

> Needle-based stepping source electronic brachytherapy – a feasibility study  
*A.M. Ruder (Germany), L. Inghelram, F. Schneider, Y. Abo-Madyan, M. Ehmann, J. Hesser, F. Wenz, F. Giordano*  
**EP-2157**

**ELECTRONIC POSTER**

**Radiobiology track: Radiobiology of particles and heavy ions**

> The apoptosis mechanism and injury of heavy ion beam and X-ray radiation on malignant melanoma cell  
*S. Li, (China) Q. Jin, Z. Chao, G. Dong-Wei, L. Qiang, Z. Hong, J. Xiao-Dong, L. Yang*  
**EP-2158**

> Influence of L-Dopa pretreatment on cellular features in T98G cells  
*A. Facoetti (Italy), C. Aprile, M. Cavagnini, M. Ciocca, A. Iannalfi, L. Lodola, M. Marenco, R. Nano, F. Pasi, M.G. Persico, F. Valvo, R. Orecchia*  
**EP-2159**

**ELECTRONIC POSTER**

**Radiobiology track: Radiation-induced signalling pathways**

> Downregulation of Nrf2 promotes radiation-induced apoptosis in non-small cell lung cancer cells  
*H. Zhang (China)*  
**EP-2160**

> miR-454-3p regulates cellular radio-sensitivity by targeting to BTG1 in renal carcinoma cells  
*J. Wang (China)*  
**EP-2161**
ELECTRONIC POSTER
Radiobiology track: Radiobiology track: Tumour microenvironment

> Applying the Linear Quadratic Model to PC-3 cells irradiated under different O2 conditions

EP-2162

ELECTRONIC POSTER
Radiobiology track: Immuno-radiobiology

> Combination therapy of microglia and radiotherapy in a rat model of spontaneous glioma

ELECTRONIC POSTER
Radiobiology track: Immuno-radiobiology

> Pilot Study: Systemic response after lung SBRT analyzing immune Cells phenotyping
  A. Navarro-Martín (Spain), I. Linares, M.A. Berenguer, R. Cañas, F. Guedea

EP-2163

EP-2164

ELECTRONIC POSTER
Radiobiology track: Radiation and tumour metabolism

> M6A RNA modification by METTL3 regulates chemo- and radioresistance in pancreatic cancer cells
  S. Tatekawa (Japan), M. Konno, A. Asai, J. Koseki, K. Taketo, H. Ishii, K. Ogawa

EP-2165

ELECTRONIC POSTER
Radiobiology track: DNA damage response

> Ro90-7501 is a novel radiosensitizer which inhibits ATM phosphorylation and DNA repair
  K. Tamari (Japan), Z. Li, K. Otani, Y. Takahashi, K. Minami, Y. Seo, O. Suzuki, F. Isohashi, K. Ogawa

EP-2166
Radiosensitizing effect of eribulin mesylate in human cervical carcinoma cells \textit{in vitro}


Analysis of Chromosomal Aberrations by FISH in FaDu tumor cells after \textit{in vivo} X-ray MRT irradiation

\textit{A. Porth} (Germany), A. Hunger, T. Setzkorn, N. Mehrabi, K. Burger, S.E. Combs, T.E. Schmid

**ELECTRONIC POSTER**

\textbf{RTT track: Patient preparation, positioning and immobilisation}

Are treatment times with breast DIBH comparable to free breathing?

\textit{D. Ledsom} (United Kingdom), V. Acton, R. Biggar

Scheduling optimization to reduce patient waiting beam times in four-room proton therapy center

\textit{C.Y. Lin} (Taiwan)

Optimizing individual customized neck rests for proton therapy of brain tumors

\textit{A. Schouboe} (Denmark), M. Gioertz, P. Randers, A. Harboell, C.R. Hansen, A. Vestergaard

Evaluation of the pitch functionality and setup accuracy of the Solstice SRS Immobilization System

\textit{C.L. Ong} (The Netherlands), K. Hunnego, F. Gescher, J. Franssen, E. Franken

Bladder filling in patients undergoing prostate radiotherapy on the MR-linac


Patients’ experiences with whole body irradiation using Tomotherapy

\textit{P. Schon} (Sweden), \textit{P. Lannerheim-Saure}, C. Hagstrom, A. L öfgren

No more Lines – Omitting skin marks, safe to align with tattoo only for lung cancer patients?

\textit{L. Wiersema} (The Netherlands), J. Stam, T. Wiersma, J. Belderbos, A. Licup, F. Koetsveld, P. Remeijer
> Analysis of inter-fraction tumor position variability in lung SBRT
A. Coral (Spain), N. Espinosa, A. Latorre, S. Bermejo, X. Nolla,
G. De Segura, C. Diaz, M. Mancera
EP-2176

> 4D CBCT based determination of tumor amplitude variation in
lung cancer SBRT
J. Papp (Hungary), M. Simon, E. Csiki, E. Csobán, A. Molnár,
P. Árkosy, Á. Kovács
EP-2177

**ELECTRONIC POSTER**

**RTT track: Imaging acquisition and registration, OAR and target definition**

> Evaluation of a user-guided deformable registration workflow
for multi-modal prostate imaging
A. Lastrucci (Italy), A. Barucci, S. Pini, S. Russo, R. Barca, M. Coppola,
S. Fondelli, L. Paoletti, F. Rossi, P. Bastiani, M. Esposito
EP-2178

> Estimation of intrafractional motion of intra-orbital optic nerve
by MRI
S. Tsuruoka (Japan), Y. Hamamoto, Y. Kuribayashi, H. Inata,
T. Matsuno, T. Mochizuki
EP-2179

> The effect of Rectal size and shape on Bladder deformation in
Urinary Bladder Radiotherapy
N. Hutton, J. Callender, D. Hutton (United Kingdom), L. Williams,
S. Wong, H. Wong, I. Syndikus
EP-2180

**ELECTRONIC POSTER**

**RTT track: Treatment planning and dose calculation / QC and QA**

> Use of treatment log-files for QA of cranial radiosurgery
adaptive plans
S. Moragues Femenia (Spain), J.F. Calvo-Ortega, M. Hermida-López,
J. Casals
EP-2181

> Skin dose calculation in breast cancer when the air surrounding
the patient contour is considered
I. Lorenzo (Spain), J.F. Calvo-Ortega, S. Moragues Femenia,
C. Laosa-Bello, J. Casals
EP-2182

> Dosimetric impact of CBCT calibration curve on dose calculated
by a radiotherapy TPS
C. Laosa (Spain), J.F. Calvo-Ortega, S. Moragues Femenia, J. Casals
EP-2183
> a study on dose of the junction in radiotherapy of breast cancer including SCL
*W. Jung* (Korea Republic of)  
EP-2184

> Study of the seroma volume changes in the patients who underwent Accelerated Partial Breast Irradiation
*D.H. Kim* (Korea Republic of), *S.J. Son, J.G. Mun, S.J. Seo, J.H. Lee*  
EP-2185

> Feasibility planning study for hypofractionated salvage prostate bed radiotherapy.
EP-2186

> Metal artifact correction improves dose calculation of intensity modulated radiation therapy
*H. Moriwaki* (Japan), *T. Ikeda, T. Kiyomiya, H. Tajima, K. Shiraishi, A. Sakumi*  
EP-2187

> The risk of CIEDs damage by photon beams, define by neutron activation products of CIED materials
*W. Szyszka* (Poland), *E. Konstanty, K. Brudecki*  
EP-2188

> Compare OARs dose in postoperative high risk prostate cancer patients using IMRT and VMAC technique
*Y. Chen* (Taiwan), *L. Chou, T. Wang, Y. Liu*  
EP-2189

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**ELECTRONIC POSTER**

**RTT track: Image guided radiotherapy and verification protocols**

> MVCT in pediatric craniospinal radiotherapy
*F. Ferraro, A. Lastrucci* (Italy), *Y. Wandael, C. Galeotti, M. Vernaleone, D. Greto, G. Simontacchi, P. Bonomo, L. Livi*  
EP-2190

> Daily Image Guided Radiotherapy - the relevance for patients with metastatic spinal cord compression
*L. Johansen* (Denmark), *D. Gasic, V. Gram*  
EP-2191

> A systematic approach aimed at reducing IGRT dose in paediatric patients.
*S. Stead* (United Kingdom)  
EP-2192

> Influence of rotational setup errors on dose in target and organs at risk in cranial radiotherapy
*A.S. Gerhardt* (Germany), *M.N. Duma, M. Düsberg, J.J. Wilkens, S.E. Combs, M. Oechsner*  
EP-2193
> Do lower dose kvcbct protocols produce adequate quality images for head and neck cancer patients?

*M. Forshaw* (United Kingdom), *A. Taylor*, *S. Temple*, *H. Wong*, *A. Willet*, *C. Rowbottom*  

> Optimisation of SABR lung CBCT verification

*L. Turtle* (United Kingdom), *A. Willett*, *C. Lee*, *C. Fitzpatrick*, *R. Biggar*  

**ELECTRONIC POSTER**  
**RTT track: Motion management and adaptive strategies**

> Dosimetric impact of anatomical changes during IMRT for prostate cancer

*L. Farhat*, *W. Mnejja*, *H. Daoud* (Tunisia), *F. Dhouib*, *T. Sahnoun*, *W. Siala*, *J. Daoud*  

> EEBH as a method of managing respiratory movement in treating abdominal structures with SABR

*L. Barber* (United Kingdom), *B. Taylor*, *A. Gaya*, *A. Qureshi*, *C. Thomas*, *C. Hartill*, *V. Staykova*, *C. Sisodia*  

**ELECTRONIC POSTER**  
**RTT track: Patient care, side effects and communication**

> Addressing treatment-related sexual side effects: Sub-optimal practice in radiation therapy

*O. Lynch*, *P. Murphy* (Ireland), *A. O’Donovan*  

> Attitudes of parents of female secondary school students towards the hpv vaccine

*K. Lawless* (Ireland), *C. Poole*, *P. Murphy*  

> Understanding the impact of health literacy on self-efficacy in cancer patients undergoing treatment

*R. Scanlon* (Ireland), *C. Gillham*, *A. Craig*  

> Auditing patient’s radiotherapy medical file for improvement

*S. Cucchiaro* (Belgium), *M. Delgaudine*, *P. Coucke*  

> Iatrogenic sexual dysfunction following BRT supportive therapy for better perception life quality

*F. Piro* (Italy), *D. Cosentino*, *A. Martilotta*, *A. Massenzo*, *U. Piro*, *G. Tocci*, *L. Marafioti*
> DVH as predictor of acute skin toxicity, its clinical application in breast cancer radiotherapy  
  *F. Piro* (Italy), *D. Cosentino, A. Martilotta, A. Massenzo, U. Piro, G. Tocci, L. Marafioti*  
EP-2203

> The impact of breast irradiation using thermoplastic mask on quality of life  
  *A. Dinu* (Romania), *T. Flonta, L. Marcu*  
EP-2204

> Patient involvement in developing research-based patient information on proton therapy  
  *A. Kristensen* (Denmark), *H. Hansen*  
EP-2205

> How long should men abstain from receiving anal sex following treatments for prostate cancer?  
  *S. Ralph* (United Kingdom), *C. Richardson*  
EP-2206

> PROMs: Transperineal insertion of prostate markers – results from a prospective clinical trial  
EP-2207

> Evaluating the efficacy of the Cancer Nurse Consultant Role for Radiotherapy Oncology inpatients  
  *M. Rolfo* (United Kingdom), *T. Pearce, J. Armstrong, M. Guiney, S. Ryan*  
EP-2208

**ELECTRONIC POSTER**

**RTT track: Education and training/role development**

> Non-medical prescribing for Therapeutic Radiographers – extending roles and advancing practice  
  *H. Nisbet* (United Kingdom)  
EP-2209

> Building a respiratory synchronization model in the CK System during the RT session of liver mets  
  Abstract withdrawn  
EP-2210

> Impact of virtual learning environment on students’ satisfaction, engagement, recall and retention  
  *E. Ryan* (Ireland), *C. Poole*  
EP-2211

> Piloting an educational framework for the enhanced role of RTTs in MRI-guided adaptive radiotherapy  
  *C. Eccles* (United Kingdom), *J. Webb, A. Flynn, A. McWilliamm, A. Sanneh, M. Van Herk, A. Choudhury, M. Aznar*  
EP-2212
> An evaluation of radiotherapy students’ perceptions of research and evidence-based practice
  
  S. Ketterer (United Kingdom)

**ELECTRONIC POSTER**

**RTT track: Risk management/quality management**

> Abstract withdrawn
  
  T. Chan (Singapore), P.W. Tan, J.I. Tang
Communities Pavilion 364
Communities Pavilions’ exhibitors 365
ESTRO invites all attendees to visit the Communities Pavilion located next to the exhibition area.

The pavilion is a free-access networking forum that gathers stakeholders from all areas in radiation oncology. Come and check it out and connect with the community.

Exchange your scientific ideas, projects and potential cooperation with:
- National societies
- Institutes
- International radiotherapy societies
- Other oncology associations.

OPENING HOURS
Saturday 27 April to Monday 29 April, from 09:30 - 17:00.
### Communities Pavilions’ exhibitors

<table>
<thead>
<tr>
<th>European Federation of Organisations for Medical Physicists (EFOMP)</th>
<th>European Society of Radiology (ESR)</th>
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<tbody>
<tr>
<td>230 Tadcaster Road, York YO24 1ES (UK)</td>
<td>Am Gestade 1, 1010 Vienna (AT)</td>
</tr>
<tr>
<td>Efi Koutsouveli, 0030 6977 873124, <a href="mailto:pubcommittee@efomp.org">pubcommittee@efomp.org</a></td>
<td>Robert Grünkranz, +43 699 103 66 103, <a href="mailto:robert.gruenkranz@myesr.org">robert.gruenkranz@myesr.org</a></td>
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<td><a href="http://www.myesr.org">www.myesr.org</a></td>
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<th>European Federation of Radiographer Societies (EFRS)</th>
<th>Insitut Curie</th>
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<tr>
<td>Zuidsingel 65, 4331RR Middelburg (NL)</td>
<td>25 rue d’Ulm, 75005 Paris (FR)</td>
</tr>
<tr>
<td>Dorien Pronk-Larive, +31 6 4414 6336, <a href="mailto:info@efrs.eu">info@efrs.eu</a></td>
<td>Pierre Anhoury, +33 01 56 24 62 33, <a href="mailto:pierre.anhoury@curie.fr">pierre.anhoury@curie.fr</a></td>
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<tr>
<th>European Organisation for Research and Treatment of Cancer (EORTC)</th>
<th>Istituto del Radio “O. Alberti”</th>
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<tr>
<td>Avenue E. Mounier 83, 1200 Brussels (BE)</td>
<td>Asst Spedali Civili di Brescia, Piazzale Spedali Civili, 1, 25123 Brescia (IT)</td>
</tr>
<tr>
<td>Davi Kaur, +32 2 774 15 13, <a href="mailto:davi.kaur@eortc.org">davi.kaur@eortc.org</a></td>
<td>Stefano Maria Magrini, +39 03 03995271, <a href="mailto:radioterapia@asst-spedalicivili.it">radioterapia@asst-spedalicivili.it</a></td>
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| Leiden University Medical Center | |
|-------------------------------| |
| Albinusdreef, 2, Leiden (NL) | |
| Coen Rasch, +31 71 5262947, c.r.m.rasch@lumc.nl | |
| www.lumc.nl/org/radiotherapie | |
Manchester Cancer Research Centre (MCRC)
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NorthWestCancerCentre

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Florence (IT)

Sara Lucidi
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sara270991@live.it

www.trod.org.tr
3rd ESTRO Physics Workshop
Science in Development
25-26 October 2019
Budapest, Hungary

RTT Workshop 2019
8 November 2019
Budapest, Hungary

7th GEC-ESTRO workshop
21-22 November 2019
Budapest, Hungary
COMPANY AWARDS

Company awards overview 370
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Company awards overview

**ESTRO-Elekta Brachytherapy Award**
Bi-objective optimization of dosimetric indices for HDR prostate brachytherapy within 30 seconds
*Anton Bouter (The Netherlands)*
Sunday 28 April | from 16:25-16:35 | Brown 2

**ESTRO-Variian Award**
Distributed learning on 20 000+ lung cancer patients
*Timo Deist and Frank Dankers (The Netherlands)*
Monday 29 April | from 12:40 to 12:50 | Gold Plenary

**GEC-ESTRO Best junior presentation – sponsored by Elekta Brachytherapy**
Clinical outcomes of focal salvage high-dose-rate brachytherapy for radiorecurrent prostate cancer
*Max Peters (The Netherlands)*
Sunday 28 April | from 11:00-11:10 | Brown 2
Anton Bouter received his B.Sc. and M.Sc. degrees in computer science from the Delft University of Technology, The Netherlands, in 2014 and 2016, respectively. He is currently active as a Ph.D. candidate at the Dutch national research institute for mathematics and computer science (Centrum Wiskunde & Informatica (CWI)). His main research interests include the development of evolutionary optimisation methods and high-performance computing using Graphics Processing Units (GPUs), generally applied to treatment plan optimisation for HDR prostate brachytherapy.
Timo was born in Essen, Germany, in 1989. In 2008, he embarked on his bachelor’s studies in econometrics and operations research at Tilburg University, The Netherlands. After attaining his bachelor’s degree in 2012, he completed his master’s degree (cum laude) in operations research and management science at Tilburg University in 2013. For both his master’s and bachelor’s theses, he investigated heuristic algorithms for high-dose rate prostate brachytherapy treatment planning optimisation. He was awarded an Erasmus Mundus scholarship and completed a second master’s degree in BioHealth computing at the University of Barcelona, Spain, and Université Joseph Fourier in Grenoble, France, in 2014. For his master’s thesis, he studied the estimation ancestry coefficients using non-negative matrix factorisation and spatial information.

Timo then returned to The Netherlands to pursue a PhD research on distributed learning and prediction modelling at Maastricht University/MAASTRO clinic under the supervision of Prof. Philippe Lambin and Prof. Andre Dekker. Next to his research for his PhD thesis, he worked part-time at the spin-off company ptTheragnostic B.V. with the goal to develop biomarkers for radiation sensitivity in human mitochondrial DNA. Between October and December 2017, he visited Dr. David Craft and the department of radiotherapy at the Massachusetts General Hospital/Harvard Medical School (United States) co-funded by an ESTRO travel grant.

In March 2019, he started his postdoctoral research on multi-objective optimisation algorithms for medical image registration at the Centrum Wiskunde & Informatica in Amsterdam, The Netherlands, under the supervision of Prof. Peter Bosman.
*Transformative radiotherapy that’s not only making advancements, but making a difference.*

The Halcyon™ radiotherapy system was built to transform the way the world thinks about fighting cancer. With an intuitive workflow, image-guided precision, and reduced treatment time, Halcyon provides more opportunities to deliver more care to more patients—because new victories in the cancer fight matter now more than ever.

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Safety information: Radiation may cause side effects and may not be appropriate for all cancers.

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Frank Dankers was born in Tilburg, The Netherlands in October 1985. He followed Gymnasium at Valuascollege in Venlo before enrolling in Applied Physics at the Technical University of Eindhoven. With a minor in chemistry he completed his bachelor’s program graduating on the topic ‘surface tension gradient driven droplet propulsion’ supervised by Prof. Anton Darhuber in 2010. During his master’s program he focused on fluid dynamics and medical physics. He completed an internship at the radiation oncology department of the Massachusetts General Hospital in Boston (co-funded by the Dutch Cancer Society), which sparked his interest in radiation oncology. He graduated on the topic ‘effects of anticonvulsants on the electroencephalogram of neonates with stroke’ at Maxima Medical Center in Eindhoven under the supervision of Prof. Pieter Wijn in 2012.

He went on to train as a medical physicist at the radiotherapy department at Radboudumc, Nijmegen, The Netherlands, receiving his professional registration in 2016. He continued working as a medical physicist at Radboudumc while also embarking on a joint PhD research project with MAASTRO clinic, Maastricht, The Netherlands, under the supervision of Prof. Andre Dekker and Prof. Johan Bussink.

Frank Dankers has an academic background in prediction modeling and machine learning for treatment outcome prediction in lung cancer patients receiving (chemo-)radiotherapy. His current research focuses on deployment and adoption of a distributed learning infrastructure enabling multi-institutional privacy-preserving data analysis. His doctorate research is set to conclude in the first semester of 2019, to be followed by a fulltime position as a medical physicist at Leiden University Medical Center in The Netherlands, from June 2019 onwards.
Max Peters studied medicine at the University Medical Centre in Utrecht from 2007 to 2013, after which he obtained his PhD and a master’s in epidemiology by completing a period of research in brachytherapy for prostate cancer, at the Radiation Oncology department. From 2017 to date, he is a resident in Radiation Oncology at the University Medical Centre Utrecht, where he continues to pursue research in focal treatments for prostate cancer.

His clinical focus is in MRI-guided HDR-brachytherapy for patients with recurrent cancer after primary radiotherapy. He works closely with urologists from Imperial College London and University College London, on various focal treatment modalities for primary and recurrent disease. This research primarily involves developing the clinical evidence base for cryotherapy and high intensity focused ultrasound (HIFU). By collaboration and sharing of data and knowledge, he hopes to improve the counselling, optimal technique and treatment selection for patients with prostate cancer.

Alongside his passion for prostate research he works with many different research groups covering various tumour sites to create statistical prediction models in order to enhance adequate patient selection for treatment or to optimise follow-up for high risk groups.
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<th>Date</th>
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Elekta
Saturday 27 April 2019 | 13:15-14:15 | Ambra 1-2

Precision Radiation Medicine; Solutions to Address Oligometastatic Disease
Chair: Dr Joel Goldwein Sr.VP Medical Affairs, Elekta

13:15  >  Current trends in treating Oligometastases: Update from Consortium for Oligometastases REsearch (CORE)
Faculty: Serena Badellino, MD, University of Turin, Italy

13:45  >  Clinical experience with the Elekta Unity for the treatment of oligometastatic disease
Faculty: Dr Martijn Intven, University Medical Center (UMCU) Utrecht, The Netherlands

Visit Elekta, booth 3800 for more information
Dynamic Tracking and Motion Synchronization: Over 15 Years of Accuray Leadership  
Chair: Dr. Vincent Khoo, The Royal Marsden NHS Foundation Trust, London, UK  

13:15  >  Introduction  
Faculty: Dr. Vincent Khoo, The Royal Marsden NHS Foundation Trust, London, UK  

13:20  >  Clinical Value of Motion Synchronization for Prostate SBRT  
Faculty: Dr. Sean Philip Collins, MedStar Health, Washington DC, USA  

13:35  >  Clinical Value of Motion Synchronization for Lung SBRT  
Faculty: Dr. Pierre-Yves Bondiau, Centre Antoine Lacassagne, Nice, France  

13:50  >  Real-time Motion Synchronization on the Radixact® System  
Faculty: Prof. Jennifer Smilowitz, UW Madison, USA  

14:05  >  Conclusion  
Faculty: Dr. Vincent Khoo, The Royal Marsden NHS Foundation Trust, London, UK  

Visit Accuray, booth 800 for more information
Hyperthermia in the age of personalised oncology

**Chairs:**
Daniel Zips, MD, UMC Tübingen, Germany
Stephan Bodis, MD, Canton Hospital Aarau, Switzerland

13:15-13:18 > **Introduction**
*Faculty: Daniel Zips, UMC Tübingen, Germany*

13:18-13:28 > **Hyperthermia as immune modulator in multimodal tumor therapies – immune biological rationale**
*Faculty: Michael Hader, PhD, UMC Erlangen*

13:28-13:38 > **Integration of Pencil Beam Scanning Proton Therapy and Hyperthermia: The University of Maryland Clinical Experience**
*Faculty: Zeljko Vujaskovic, MD, PhD, University of Maryland, Baltimore, USA*

13:38-13:48 > **Management of locally recurrent Breast Cancers with local hyperthermia and radiotherapy: A systematic review and meta-analysis**
*Faculty: Niloy Datta, MD, Canton Hospital Aarau, Switzerland*

13:48-13:58 > **Neoadjuvant chemotherapy combined with regional deep hyperthermia as the new standard for the treatment of patients with high-risk soft tissue sarcomas**
*Faculty: Lars Lindner, MD, UMC Munich Grosshadern, Germany*

13:58-14:08 > **Hyperthermia and preoperative chemoradiation for organ-preservation in rectal cancer patients**
*Faculty: Cihan Gani, MD, UMC Tübingen, Germany*

14:08-15:15 > **Discussion and Summary**
*Faculty: Stephan Bodis, MD, Canton Hospital Aarau, Switzerland*

Visit Dr. Sennewald Medizintechnik GmbH, booth 1670 for more information
Raysearch Laboratories
Saturday 27 April 2019 | 13:15-14:15 | Brown 3

Advancing cancer care through software innovation
Chair: Piet Dirix, MD, Radiation Oncologist, Iridium Kankernetwerk, Antwerp, Belgium

13:15-13:30 > Machine learning planning in RayStation: the current status for head and neck cancer VMAT
Faculty: Roel Kierkels, PhD, Medical Physicist, University Medical Center Groningen, Netherlands

13:30-13:45 > A fully integrated proton therapy workflow with RayCare OIS and RayStation TPS
Faculty: Ben Frank, Vice President of Operations, Provision Care Proton Therapy, Nashville, USA

13:45-14:10 > Comprehensive cancer care: bringing it all together
Faculty: Johan Löf, Founder & CEO RaySearch Laboratories, Stockholm, Sweden

14:10-14:15 > Question and Answer session
Faculty: Piet Dirix, MD, Radiation Oncologist, Iridium Kankernetwerk, Antwerp, Belgium

Visit Raysearch Laboratories, booth 1100 for more information
Varian
Sunday 28 April 2019 | 13:15-14:15 | Space 3-4

Flash Therapy, A Potential Paradigm Shift in Cancer Treatment

13:15 – 13:20 > Introduction
Bill Hansen, Speaker, Varian

13:20 – 13.40 > What We Know Today about Flash Therapy
Dr. Patrick Kupelian, VP Medical Affairs at Varian Medical Systems

13:40 – 13.55 > Results From the First Proton Flash Pre-Clinical Studies
Dr. Dee Khuntia, Senior VP and Chief Medical Officer at Varian Medical Systems, Palo Alto

13:55 – 14.00 > ProBeam 360, The Fastest Path to Flash
Dr. Dee Khuntia, Senior VP and Chief Medical Officer at Varian Medical Systems

14:00 – 14.15 > Panel discussion with Q&A
Dr. Patrick Kupelian, Dr. Dee Khuntia & Prof. Ricky Sharma

Visit Varian booth 2300 for more information
Viewray
Sunday 28 April 2019 | 13:15-14:15 | Ambra 8

The practice of MRI-guided radiotherapy with the MRIdian System
Chair: Martin Fuss, MD, USA, ViewRay Inc

13:15 > MRIdian Updates
Faculty: Martin Fuss, MD

13:20 > Rapid introduction of on-table adaptive at a new MRIdian site
Faculty: Enis Ozyar, MD, Professor and Chair, Acibadem Maslak Hospital, Department of Radiation Oncology, Istanbul, Turkey

13:40 > Three years of clinical experience on MR-guided adaptive radiotherapy with the MRIdian
Faculty: Miguel A. Palacios, PhD, Medical Physicist Radiotherapy, Amsterdam UMC, Amsterdam, The Netherlands

14:00 > Question and Answer session

Visit Viewray, booth 350 for more information
Brainlab
Sunday 28 April 2019 | 13:15-14:15 | Ambra 1-2

Improving Radiosurgery for Treatment of Intracranial Metastasis: Why Every Millimeter Counts

Chair: Giuseppe Minniti, MD, UPMC San Pietro Fatebenefratelli, Italy

13:15-13:30 > Evaluating Intra-fraction Motion for Cranial Radiosurgery Patients
Manuel Todorovic, MSc; University Medical Center Hamburg-Eppendorf (UKE), Germany

13:30-13:45 > Clinical Outcomes for Single Isocenter Treatments in Patients with up to 10 Metastases
Giuseppe Minniti, MD; UPMC San Pietro Fatebenefratelli, Italy

13:45-14:00 > Clinical Experience Utilizing Elements Multiple Brain Mets SRS 2.0
Mariangela Zamburlini, PhD; UniversitätsSpital Zürich, Switzerland

14:00-14:15 > Early Validation of ExacTrac Dynamic: New Features & Accuracy of the System
Fatma Rahma, MSc; Rigshospitalet, Denmark

Visit Brainlab, booth 2800 for more information
Sun Nuclear Corporation
Sunday 28 April 2019 | 13:15-14:15 | Ambra 5-6

Advancing QA: Insights on Independence, Integration & Efficiency
Chair: Roberto Casado, Sun Nuclear Corporation, Melbourne, FL

Faculty: Greg Robinson, M.S., Sun Nuclear Corporation, Melbourne, USA

Faculty: Carl Rowbottom, Ph.D., Clatterbridge Cancer Centre, Bebington, UK

13:45-14:00 > Automated Transit Dosimetry Using an EPID QA Solution
Faculty: Andrew Reilly, Ph.D., North West Cancer Center, Londonberry, Northern Ireland, UK

14:00-14:15 > A Unique Diode Array for SRS/SBRT End-to-End
Faculty: Arnd Roser, Ph.D., HELIOS University Clinic, Wuppertal, Germany

Visit Sun Nuclear Corporation, booth 60-200 for more information. Lunch boxes provided.
Astrazeneca
Sunday 28 April 2019 | 13:15-14:15 | Brown 3

Chemoradiation Followed by Immunotherapy: Transforming the Approach for Treating Unresectable Stage III NSCLC

*Speakers:*
Roy Decker, MD, PhD, Radiation Oncologist, Yale Cancer Center, USA

Francesco Grossi, MD, Medical Oncologist, Fondazione IRCCS Ca’ Granda Policlinico di Milano, Italy

Shankar Siva, MD, PhD, Radiation Oncologist, Peter MacCallum Cancer Centre, Australia

13:15-13:25 > Immunotherapy Overview and Importance of Multidisciplinary Care in Stage III NSCLC
Faculty: Shankar Siva, MD, PhD, Peter MacCallum Cancer Centre, Australia

13:25-13:40 > Treatment for Unresectable Stage III NSCLC: Approaches and Management of CRT
Faculty: Roy Decker, MD, PhD, Yale Cancer Center, United States

13:40-14:00 > Treatment for Unresectable Stage III NSCLC: Immunotherapy After CRT
Faculty: Francesco Grossi, MD, Fondazione IRCCS, Ca’ Granda Policlinico, di Milano, Italy

14:00-14:10 > Question and Answer session
Panel

14:10-14:15 > Summary and Closing Remarks
Faculty: Shankar Siva, MD, PhD, Peter MacCallum Cancer Centre, Australia

Visit Astrazeneca, booth 5800 for more information
Philips Radiation Oncology Solutions
Monday 29 April 2019 | 13:15-14:15 | Brown 3

Philips’ Innovations in Radiation Oncology: What does the future bring?
*Chair*: Ardie Ermers, General Manager Radiation Oncology, Philips Healthcare

The Philips Oncology Solutions Vision
Ardie Ermers, General Manager Radiation Oncology, Philips Healthcare

Right time, Right Space – improving processes and patient care in our cancer centre
*Dr. Russel Banner*, Radiotherapy Lead Clinical Oncologist, Sout West Wales Cancer Centre, Swansea, United Kingdom

Will MR change the future of Radiotherapy forever? - Q&A Session
*Guest*: Prof. B. Raaymakers, Experimental Clinical Physics, Department of Radiotherapy, University Medical Center Utrecht, Utrecht, The Netherlands

VisitPhilips, booth 4000 for more information.
Siemens Healthineers
Monday 29 April 2019 | 13:15-14:15 | Ambra 5-6

Two energies – one goal: Dual Energy CT helps expand precision medicine in Radiation Oncology
Chair: Christoph Bauer, Siemens Healthineers, Germany

13:15 - 13:25 > Welcome to Siemens Healthineers - what’s new at ESTRO 2019
Cécile Mohr, PhD, Siemens Healthineers, Germany

Prof. Enric Fernández-Velilla, Hospital del Mar Barcelona, Spain

13:50 – 14:15 > Dual Energy – Stopping Power Ratio: Panel discussion about DirectSPR – facilitating clinical implementation of Dual Energy CT-based stopping power prediction - What’s the benefit?
Presentation and moderation: Christian Möhler, PhD, Siemens Healthineers
Panelist: Christian Richter, PhD, Physicist, research group leader, OncoRay – National Center for Radiation Research in Oncology, Dresden, Germany

Visit Siemens Healthineers, booth 1900 for more information
Boston Scientific/Augmenix
Monday 29 April 2019 | 13:15-14:15 | Ambra 1-2

Prostate Radiation Therapy Dose Escalation with Hydrogel Spacing

Speakers:
Michael R. Folkert, MD, PhD
Director, University of Texas Southwestern Medical Center Department of Radiation Oncology
Rectal spacers in dose-escalated and neurovascular sparing prostate SBRT/SABR

Professor Giuseppe Sanguineti, MD
Department of Radiation Oncology IRCCS Regina Elena National Cancer Institute
The role of hydrogel spacing in ultrahypofractionated radiotherapy for prostate cancer

Marcio Fagundes, MD
Medical Director Radiation Oncology Department Miami Cancer Institute
Achieving consistent prostate-rectum spacing in small and large glands with hydrogel spacer

Moderator:
Vincent Khoo, MD(Res)
Consultant in Clinical Oncology, Royal Marsden NHS Foundation Trust

Visit Augmenix, booth 3550 for more information
## Acknowledgments

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## Floorplan

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## Start-up corner exhibitors’ details

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ESTRO wishes to thank for their support to this congress:

- **University of Wisconsin**, sponsor of the ESTRO – Jack Fowler Award
- **Elekta**, sponsor of the ESTRO – Elekta Brachytherapy award, the GEC – ESTRO best junior presentation and the Elekta Brachytherapy Travel grants
- **RaySearch Laboratories**, sponsor of the congress lanyards
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and all companies having supported the participation of delegates in the congress and/or participating to the technical exhibition.
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Medical Precision b.v.
Patient Marking System
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ProForm™ Extension for Universal Couchtop™
Unique head & neck solution for Proton therapy
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Adaptiiv’s patient-specific 3D printing software seamlessly integrates with existing treatment workflows, saving valuable time and money
Adaptiiv is the first company in the world to receive US FDA 510(k) clearance to market its 3D printing software for use in radiation oncology, is ISO 13485 certified and has received a CE Mark.

Adaptiiv is the first company in the world to receive US FDA 510(k) clearance to market its 3D printing software for use in radiation oncology, is ISO 13485 certified and has received a CE Mark.

JOIN US FOR AN E-POSTER PRESENTATION AT ESTRO 38!
Adaptiiv’s Medical Physicist, Borko Basaric, presents “A novel hotspot correction algorithm in Modulated Electron Radiation Therapy (MERT) utilizing 3D printed bolii”.

Visit CIVCO’s ESTRO Booth #2900 for live demonstrations of our new innovations!

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<td><a href="http://www.a2jlaser.com">www.a2jlaser.com</a></td>
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<td>Pascal Biner</td>
<td>+41 79 304 77 54</td>
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<td>Adani</td>
<td>3300</td>
<td>7 Selitsky Str., 220075 Minsk, Belarus</td>
<td>Natallia Gordeeva</td>
<td>+375 17 3490000</td>
<td><a href="mailto:gordeeva@adani.by">gordeeva@adani.by</a></td>
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<td>4220</td>
<td>Van Hennaertweg 9, 2952 CA, Alblasserdam, The Netherlands</td>
<td>Joep van de Leur</td>
<td>+31 78 692 2100, +31 60 94 2294</td>
<td><a href="mailto:sales@aeplinac.com">sales@aeplinac.com</a></td>
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<td>American Society Of Clinical Oncology (ASCO)</td>
<td>3030</td>
<td>2318 Mill Rd Ste 800, Alexandria, VA 22314, USA</td>
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<td>+1 571 483 1300</td>
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<td>Yukiko Abe</td>
<td>+81 3 3779 1611, +81 3 3779 6606</td>
<td><a href="mailto:y.abe@anzai-med.co.jp">y.abe@anzai-med.co.jp</a></td>
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<td>2400</td>
<td>250 rue Salvador Allende 59120 Loos France</td>
<td>David Gibon</td>
<td>+33 3 69 61 51 51 +33 3 69 61 51 50</td>
<td><a href="mailto:david.gibon@aquilab.com">david.gibon@aquilab.com</a></td>
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<td>Ariane Medical System ltd</td>
<td>5000</td>
<td>151 Mansfield Road Alfreton DE 55 7JQ</td>
<td>Mark Davies</td>
<td>+44 1332 2422 58</td>
<td><a href="mailto:info@arianemedicalsystems.com">info@arianemedicalsystems.com</a></td>
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<tr>
<td>Ashland</td>
<td>4300</td>
<td>1005 US Highway 202/206 Bridgewater NJ USA</td>
<td>Michaela Neilson</td>
<td>+1 908 952 56 69</td>
<td><a href="mailto:mneilson@ashland.com">mneilson@ashland.com</a></td>
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<td>Astrazeneca</td>
<td>5800</td>
<td>One Medimmune Way Gaithersburg MD 20878 USA</td>
<td>Jane Timperley-Hunt</td>
<td>+1 302 256 1407</td>
<td><a href="mailto:jane.timperley-hunt@astrazeneca.com">jane.timperley-hunt@astrazeneca.com</a></td>
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<td>Boston Scientific /Augmenix</td>
<td>3550</td>
<td>201 Burlington Road Bedford, MA 01730 USA</td>
<td>Eileen Gardner</td>
<td>+1 781 895 3235</td>
<td><a href="mailto:egardner@augmenix.com">egardner@augmenix.com</a></td>
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<td>Beekley Medical</td>
<td>3660</td>
<td>1 Prestige Lane Bristol CT 06010 USA</td>
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<td>Hamid Farrokhpour</td>
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<td>7643 Fullerton Road Springfield, VA 22153 USA</td>
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In order to achieve this, the Society promotes education, science dissemination and access to radiotherapy through its teaching courses, conferences, publications and public affairs activities.

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Founded in 1980, the European Society for Radiotherapy and Oncology, ESTRO, is a non-profit and scientific organisation that advances all aspects of radiation oncology in order to improve patients’ care in the multimodality treatment of cancer.

With over 6,700 members in and outside Europe, ESTRO supports all the radiation oncology professionals in their daily practice: radiation oncologists, medical physicists, radiobiologists, RTT (radiation therapists) and the wider oncology community.
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<td>+1 214 683 0942</td>
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<td>David Hart</td>
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<td>Rick Smith</td>
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