

Institution's name:

Clinic for Radiation Oncology, University Hospital Zurich

Website:

<http://www.radio-onkologie.usz.ch>

Institution's picture and logo



Description of the institution

The University Hospital Zurich (UZH) is open to all patients every day and provides fundamental medical care and cutting-edge medicine in a central location in Zurich. We use our superior academic knowledge to treat a wide range of health issues, taking a personal touch and utilizing highly specialized and up-to-date research.

Broad and specialized range of services

Each year, we treat around 38,000 inpatients and 134,000 outpatients at our 43 departments and institutes. Our employees guarantee comprehensive and individualized medical support even beyond their specific disciplines. With 900 hospital beds and close to 300,000 inpatient days, UZH is one of the largest hospitals in Switzerland.

At the forefront of research

We research the latest treatment methods and apply them according to strict scientific criteria. We are the sole provider of many therapies in Switzerland. Patients with complex and multiple health problems travel from all over the country and abroad to be treated here. The percentage of patients with complex diseases is particularly high at the UHZ.

Exceptional network

With regard to research and education, the UHZ is closely affiliated with the University of Zurich's medical school and laboratories. We have numerous collaborative projects with ETH Zurich. This puts the University Hospital Zurich at the forefront of medical research in Switzerland and enjoys an excellent international reputation. Our professors travel worldwide to congresses in order to exchange experience and expertise.

Team diversity

More than 8,500 employees from 86 countries work at the University Hospital Zurich. They include 1,250 doctors, 2,500 highly trained nursing professionals and 800 medico-therapeutic and medico-technical employees. Approximately 2,000 employees' conduct research and another 2,000 individuals provide non-medical support in areas such as finance, IT, facility management and catering. At the UHZ, a total of 120 occupations are represented by more than 500 roles.

Description of the RO department

The clinic for radiation-oncology at the University Hospital of Zurich belongs what concerns equipment and patient's frequency, to the biggest radiation- oncological medical centers of Switzerland. With the academically active cadre, with the research possibilities and the new technological developments, the best therapies can be offered here for all oncological illnesses.

Within the scope of the international comparability and our aspiration for constant improvement the clinic company attained on the 07th of April, 2014 the ISO certification (after the standard 9001:2008).

Areas of specialization



Ongoing projects/studies/clinical trials

Applied radiobiology

The major focus of the preclinical research program of the Laboratory for Applied Radiobiology, Department of Radiation Oncology, University Hospital Zurich, is "Combined Treatment Modality". This program includes different aspects of translational research in the field of radiobiology investigating the cellular and tumoral response on the molecular, cellular and in vivo level to ionizing radiation alone and in combination with classical chemotherapeutical and novel pharmacological agents.

Founded in 1995 our laboratory is headed by Prof. Dr. Martin Pruschy, PhD and is completely integrated in both the preclinical research divisions of the headquarters of the University Hospital Zurich and in the clinical premises of the Department of Radiation Oncology.

It is this special environment that contributes to the translational spirit of our laboratory. Several PhD-candidates, MD- and PhD-Post-Doctoral fellows, and a highly motivated lab technician complete our team.

Research Program

The research activities consist of 3 major topics that investigate the cellular response to ionizing radiation alone and in combination with classical chemotherapeutical or novel pharmacological agents. A major goal is to understand treatment resistance on the molecular and cellular level and to translate novel combined treatment modalities into a clinical environment.

- Ionizing Radiation-Induced Intracellular Signaling: Relevance for Radiation Resistance
- Identification and Targeting of Ionizing Radiation-Activated Treatment Resistances
- Differential Response to Proton Versus Photon Radiotherapy: Biological Implications for new

Medical physics

The research of medical physics in the radio-oncology of the university hospital divides on in basic research and applied research. During the last 5 years more than 10 own works were published in international examined journals. In addition still there come contributions to other publications. During the last two years three scientific doctoral theses and several master works could be concluded, three other doctoral theses run topically.

In the applied research we develop new attempts or existing technologies to be able to carry out therapeutic radiotherapy even more exactly, surer and faster. In 2010 the worldwide first True Beam accelerator of the company Varian Medical of system (USA) was used in the university hospital clinically with which the exactness can be raised in the picture-controlled high precision radiation. Short time ago the first radiotherapy with raised dose achievement was also carried out by which the radiotherapy time could be shortened for the patients around up to a factor 4. To allow this at first numerous studies had to be carried out to the characterization of the ray modality without balance body.

In addition, we have carried out during the last years several studies for the improved radiotherapy planning and quality assurance of the radiotherapy.

Tumors in the body trunk area, for example, in the lung or liver move during the radiotherapy on account of the respiration around up to 3 cm, prostate gland tumors on account of the movement of the bowel and the rectum around up to 2 cm. This leads to a spatial insecurity with the radiotherapy which is considered classically by a considerable enlargement of the security hemlines in the area of the healthy fabric. In a project of the basic research the medicine physics team deals with the question as one can visualize this movement on a real-time basis and consider in the radiotherapy. In addition in addition the prototype of a robotic table was developed in cooperation with the ETH, the movement of the lung, the liver or the prostate gland can equalize. This work is supported by the Swiss national fund.

In another basis work we help ourselves to functional or molecular imaging (Perfusions ct. to separate BOLD MR, O₂-PET) around different areas of a tumor with regard to metabolism activity and blood circulation of each other. In particular the question interests us how the differences can be shown in the oxygen metabolism and considered with our therapy draughts. This project is a component of the clinical research main focus (KFSP) Tumor oxygenation of the university and the university hospital of Zurich.

Clinical Studies

Undergoing treatment at USZ often allows the participation in clinical studies. These serve the comparison of new therapies, therapy combinations or therapy regimes with the present standard. Clinical studies allow treatments with newest therapies and have a major impact on the progress in medicine. The close cooperation with other medical institutions and clinics at USZ allows to offer as many patients as possible participating in clinical studies

Topically open studies of the respective areas: Brain /medulla spinal cord

- ARTE study (Avastin plus Radiotherapy in elderly patients): This study in cooperation with the clinic for neurology for older Glioblastoma patients examines the question of the benefit of a combined radio-chemotherapy with Avastin. (Interventional phase II Randomized)
- CATNON study (EORTC-26053 / 22054): assessment of the role of simultaneous versus adjuvant application of Temozolomid in patients with anaplastic glioma with a certain genetic profile (no Loss of Heterozygosity 1p / 19q (PI: Dr R Stupp)
- DOSIS study (Fractionated Radiosurgery for Painful Spinal Metastases): This study examines whether intensified stereotactic body radiation of spinal metastases translates in a longer and better pain relief as compared to historic conventional radiation (Interventional phase II, **Non-randomized Multi-center**. Royal Marsden hospital, UK; University of Wurzburg, DE; PI: Dr. M. Guckenberger)

Head Neck Tumors

- AOC study (Add-on-Cetuximab): This study in cooperation with the ORL clinic, deals with the question after the use of the additional application of Cetuximab with head neck tumors (single Centre prosp. phase II, user driven, accrual completed Q1 2015, PI Dr. O. Riesterer)
- EORTC 1219: examines the value of additional Nimoral to the standard radio- chemotherapy (open for accrual since summer 2014: USZ: Q1 2015; PI: G. Studer)
- Cervical vessel study: analysis of cervical vessel changes after radiation (first results in evaluation (Vasa. 2015 Jan;44(1):23-30), PI: Dr G. Studer)

Bronchial Carcinoma

- Lung-ART-Study (EORTC-22055-08053-LCG-ROG - 08053): Radiation therapy of patients with completely removed non-small cell lung cancer (Interventional Phase III, Non-randomized, Multi-center, EORTC, Dr. O. Riesterer)
- SAKK 16/08: Cetuximab/cisplatin/docetaxel/radiation therapy and surgery for patients with removable stage IIIB non-small cell lung (Interventional Phase II, Non-randomized, Multi-center, Swiss Group for Clinical Cancer Research, Dr. O. Riesterer)
- Serum study: The study examines the course of different biomarkers in the blood under radiotherapy of patients with lung tumors (PI: Riesterer)

Studies on functional imaging / radiation- biology

- BOLD-MRI-Studies: Investigating functional magnetic resonance imaging in patients with head and neck cancer undergoing radiation therapy (Observational Pilot, USZ, PI: Dr. A. Boss)
- Nasopharynx PET+MRI-Study: Investigating the role of [15O]H₂O/O₂ positron emission tomography and functional magnetic resonance imaging in assessment of tumor hypoxia in head and neck cancer and brain tumors undergoing radiation therapy (Observational Pilot, USZ, PI: Dr. A. Boss)(PI: Dr. O. Riesterer)
- Serum biomarkers in response to radiation therapy for non-small cell lung cancer and lung metastases (Observational, Pilot, USZ, PI: Dr. O. Riesterer)

In-house news (conferences, workshops, training opportunities, etc.)

Uncommon Genitourinary Cancers

At the 7th interdisciplinary uro-oncologicals symposium well known national and international referents will present the present state of knowledge from urology, oncology and radiation oncology.

Datum: 30.01.2015
Zeit: 09.30 bis 16.00 Uhr
Ort: Universitäts Spital Zürich
8091 Zürich
Grosser Hörsaal NORD 1

Equipment used in the department

2 linear accelerators (TrueBeam, Edge, Varian Medical Systems) dedicated for stereotaxy and radiosurgery (high dose irradiation with sub-millimeter precision)

2 linear accelerators (Trilogy, 6EX, Varian Medical Systems) for all types of standard radiotherapy

1 linear accelerator (600c) dedicated for low dose rate total body irradiation prior to bone marrow transplantation

All linear accelerators are equipped with imaging tools allowing a maximum of dosimetric and geometric precision

All linear accelerators are equipped with a gating system (control of body motion during irradiation)

1 afterloader (for brachytherapy of gynecological tumors)

2 therapy planning systems (Eclipse and Pinnacle)

1 planning CT (Siemens Definition AS) with 4D option