



CONFERENCES

Klaus Breur Award



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To whom would you like to dedicate your award?

I wish to dedicate the award to the UMCU, the health insurance companies and patient advocates who believed in the MR-linac technology and made this development possible.

What is your next challenge?

The MR-linac system provides unprecedented targeting accuracy that transforms radiotherapy into image-guided interventional treatments. My present focus is on metastatic disease. Although progress is being made in the development of better chemotherapy, targeted agents and immunotherapy, disease progression during therapy is still a major problem. In a majority of cases, systemic treatment fails at the location of the known metastatic lesions. Therefore, localised therapy for the macroscopic disease combined with systemic therapy for the microscopic disease may lead to improved disease control in patients with metastatic disease. To facilitate this, we envision a treatment pipeline of a 1.5T, wide-bore, MRI/positron emission tomography radiotherapy simulator in combination with the MR-linac for treatment of polymetastases.

What do you think are the next challenges for radiation oncologists?

I see the MR-linac as the next-generation radiotherapy standard system. Online and real-time MRI-guided treatment will have a huge impact; the ability of clinicians to see what they treat will result directly in treatment optimisation. It will also require expertise in wide imaging among radiotherapy staff, which will result in bigger departments with highly specialised staff.

What have been the highlights of your career?

After I trained as a nuclear physics engineer at the University of Technology Delft, in The Netherlands, my career started in 1978 in the radiotherapy department of the University Medical Center Utrecht (UMCU). There I undertook a PhD on the development of a hyperthermic treatment for retinoblastoma. I worked in the field of hyperthermia for more than 20 years. I'm proud of our development of hyperthermia treatment planning that is based on 3D MRI, especially the thermal modelling part. In Utrecht we were able to calculate the temperature distribution in tissues. The calculations included the enormous impact of discrete vasculature. This work showed the fundamental problems we have in hyperthermia treatment with the control of the temperature/thermal dose distribution. Our work also formed the basis of safety guidelines regarding mobile telephone usage.

In 1998 I became a full professor and head of the radiation oncology physics group. I moved my research focus towards MRI-guided radiotherapy. The highlight during this time was the invention in 1999 of the MR-linac, which is now commercially available as the Elekta Unity system. During the last 15 years, together we created the Centre of Image Sciences at the UMCU. This is a research institute with more than 160 PhD students, who work in a clinical environment that integrates physics and clinical research.

When do you think you will retire, and what would you like to do then?

In The Netherlands, it is compulsory to retire at 66 years old. Being 68 years old, I am spending an additional two years as a professor and a strategic advisor to the management of the department. In September this year I will take part in a nice farewell symposium with my colleagues Peter Luijten and Chrit Moonen, who will also retire. I don't know yet what I will do next; I hope to stay involved in this exciting new radiotherapy field.

