



CONFERENCES

Honorary Member Award



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What does this award mean to you?

It means a lot to me to be recognised by the European Society for Radiotherapy and Oncology (ESTRO), which has remained my professional and academic home society even though I moved to the USA over 20 years ago.

To whom would you like to dedicate your award?

To Wolfgang Schlegel, my mentor for many years. I could not have pursued my career path without him. My advice to the next generation is: make sure to choose a good mentor! It makes an enormous difference.

What have been the highlights of your career?

1988-2001: Physics PhD student, postdoc, and later a faculty member at the University of Heidelberg and German Cancer Research Center. During this period I developed the planning and delivery of optimisation-based intensity-modulated radiation therapy (IMRT) through the use of standard linear accelerators that employed multi-leaf collimators (MLC) and compensators.

1993: first use of an MLC for IMRT treatment of a phantom at MD Anderson Cancer Center in Houston.

1996: inverse planning for first patient to be treated with MLC-based IMRT at Sloan Kettering Cancer Center in New York.

1997: interactive IMRT planning with dose-volume points. These techniques have become the state-of-the-art in clinics today.

Since 2001: development and deployment of multi-criteria optimisation and robust optimisation at Massachusetts General Hospital (MGH) and Harvard Medical School (HMS). I was also involved in tackling the range uncertainty problem in proton therapy.

Since 2008: professor and division chief of radiation biophysics at MGH and HMS.

What are you proudest of in your career?

That I have been involved in the development of technologies that have led to better treatments for millions of patients worldwide.

What is your next challenge?

There are three next challenges:

1. To develop a computer-assisted method to define the clinical target volume;
2. To democratise proton therapy through the use of a compact gantry-less design; and
3. To optimise personalised treatment delivery by translating "optimal stopping" principles to radiation oncology.

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

The challenges for physicists in radiation oncology are well summarised in this article: <https://doi.org/10.1016/j.radonc.2020.10.001>.

What started your interest in science?

I can't think of anything that triggered it. For as long as I can remember, I have been interested in understanding things, solving problems, and constructing/creating new things. By the way, I don't think of myself primarily as a scientist.

If you hadn't been a scientist, what would you like to have been?

Maybe a neurologist or a psychiatrist. The human psyche is fascinating and at times scary. It may not be understandable though. I like the books of Oliver Sacks. Being in a leading position, one has to become a psychiatrist of sorts.

Did your parents encourage you in your career, or would they rather you had done something else?

I got a lot of encouragement from both my mother and my father. At one point, my father, who was a geophysicist, would have liked to see me become a geophysicist too. He encouraged me to look into ultrasound imaging, where I could have applied geophysical principles through the use of sound waves. That's how I learned about the field of medical physics.

What has been your involvement within ESTRO?

My first involvement was as a teacher in the ESTRO IMRT courses, which Ben Mijnheer (clinical physicist, The Netherlands Cancer Institute, Amsterdam) organised for many years in Amsterdam, The Netherlands. Since then I have enjoyed many ESTRO teaching courses, both as a teacher and as a student. They are a big strength of ESTRO. I have participated in most annual meetings over the past 25 years and was on the annual programme committee for several years. I co-organised ESTRO physics meetings and, more recently, ESTRO physics workshops. I also actively participated in many joint sessions of ESTRO and the American Association of Physicists in Medicine and helped to initiate the ESTRO Physics Future task group and grand challenges workshop.

What do you do in your spare time?

I spend a lot of time outdoors, biking, hiking, and taking long walks on the beach.

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

I hope to have one more decade in which I can be professionally productive. Then my wife and I have a large bucket list. More time for tinkering, especially with old cars, would be nice; I miss working with my hands.

