

Dr. Thomas S. Deisboeck, Ph.D.

Assistant Professor in Radiology, Harvard Medical School
Department of Radiology, Massachusetts General Hospital

By Bruck Assefa

Background Information

Unlike many of the scientists who came to our class, Dr. Deisboeck became interested in biomedical research relatively early in his life. He showed deep interest in the area of neurophysiology when he was still in high school. It was then when he started to get interested in both brain research *and* oncology because he thought they posed some of the most ‘intriguing challenges’ in science at the time. During Medical School training, this interest in brain and cancer led him, not very surprisingly, to the area of brain cancer research. However, Dr. Deisboeck was not only interested in cancer research but also in complex biosystems, which led him to his more renowned field of study, ‘integrative cancer research: modeling tumors as complex dynamic biosystems.’

Dr. Thomas Deisboeck received his pre-clinical education at the University of Regensburg, and his clinical education at the Technical University Munich, Germany. He then came to the United States and became a research fellow in the Molecular Neuro-Oncology Laboratory, Massachusetts General Hospital (MGH)-Neurosurgical Service and MGH Brain Tumor Center. As Instructor, he then moved to the Department of Radiology at MGH and Harvard Medical School. While working as an Assistant Professor in Radiology, Dr. Deisboeck also became the Director of the Complex Biosystems Modeling Laboratory at the Harvard-MIT (HST) Martinos Center for Biomedical Imaging. Currently, among other positions he holds, Dr. Deisboeck is the Principal Investigator of CViT, the Center for the Development of a Virtual Tumor at MGH.

CViT

The Center for the Development of a Virtual Tumor, CViT, is part of the National Cancer Institute’s Integrative Cancer Biology Program (ICBP). CViT, Dr. Deisboeck says, brings together a group of investigators with interest in “the biomedical, the computational and the mathematical aspects of cancer research”. Its short-term goal is to build a cancer modeling community. As a mid term objective, CViT endeavors to develop a digital cancer modeling repository while in the long run it aspires to build a ‘toolkit’ for cancer modeling research.

As Dr. Deisboeck explains, work at CViT follows the hypothesis that a tumor behaves as a complex dynamic, adaptive and self-organizing biosystem. The effort to computationally and mathematically model and simulate cancer is driven by the need to better understand its behavior across many scales in space and time. He says such modeling is intended to help researchers study the behavior of cancer with respect to its microenvironment, develop new and experimentally testable hypotheses, and ultimately might help find more effective ways to treat this disease. Dr. Deisboeck also explains that

computational modeling has of course its challenges, from accessing data to algorithm design, and that it still needs to be fully embraced by the more wet-lab than *in silico* oriented cancer research community at large. He also underscores the fact that there is significant work to do amongst the modelers in building a community platform – which is where he sees CViT will also be able to make a contribution. He says CViT is ‘very much aimed at sharing researches and databases’ and in providing the innovative infrastructure to do so. For more information on CViT, please visit <http://www.cvit.org>.

Advice

Dr. Deisboeck has quite extraordinary words to share with young students who are yet undecided about their career path. He says, “The probably best advice is to choose a scientific area that you really like. Since you always have to work hard, regardless of the field, you will endure the inevitable set-backs a bit better if you're passionate about the work you do. Second, always remain curious, stay informed, check out new research directions, don't a priori accept conceptual limits, and risk getting involved in big ideas and bold projects at good places: everybody can follow, few can lead. Lastly, 'interdisciplinary' means more, not less distinct knowledge - so get a grip on the basics, and try always to learn from and to work with the best.”

These are truly wise words for young students, like us, to consider!!!