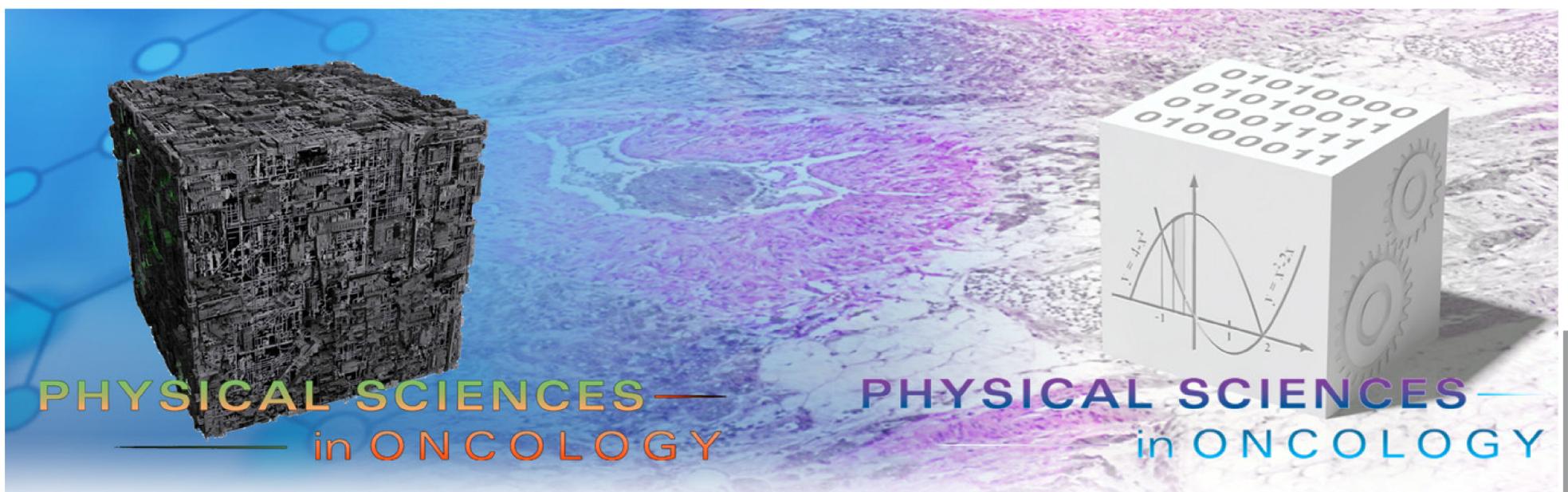


TUM Bioengineering Lecture Series // IEEE EMBS Student Chapter Munich

Biomedical Applications for Cancer Treatment

April 23, 2015 | 04.00-06.00pm

Klinikum rechts der Isar | Pavillon Lecture Hall



PROGRAM

04:00 - 05:00pm **Best of Both Worlds: Converging Engineering/Physical Sciences with Life Sciences for Biomedical Applications**

Larry A. Nagahara, Ph.D.

Associate Director, Cancer Biology, National Cancer Institute, USA

More than 40 years ago, the U.S. government declared a “war on cancer” and committed to investing in laboratory and clinical research in order to understand the causes of cancer and thereby aid its diagnosis, treatment, and cure. Despite enormous advances and important improvements in the diagnosis and treatment of many cancers, the “war” has in significant ways progressed less than originally hoped. The complexity of the disease is clearly evident by the dynamic and evolving course the disease takes during its progression and response treatment. Building on progress in the molecular sciences and advanced technologies, the exploration of physical laws and engineering principles that shape and govern the emergence and behavior of cancer at all scales may provide a complementary perspective. In an attempt to bring in different perspectives into cancer, the National Cancer Institute (NCI) launched two large initiatives, namely Physical Sciences-Oncology Centers (PS-OC) Program and Alliance for Nanotechnology in Cancer (ANC), with goal of exploring opportunities to advance cancer research by integrating physical scientists/engineers and their approaches with the more traditional research effort in cancer biology and clinical oncology. In this talk, examples of blending physical sciences/engineering perspectives with oncology will be presented to illustrate that fostering the development of innovating and promising approaches could lead to a paradigm shift in the way we understand and ultimately and treat this disease.

05:00 - 05:30pm **Temperature Monitoring in MR-Guided Thermotherapy**

Dr. Silke Lechner-Greite

GE Global Research Europe

Many non- or minimal-invasive therapies have become promising technologies to induce necrosis for example with high intensity focused ultrasound (HIFU) or to create mild heating to sensitize targeted tumors for radiotherapy and chemotherapy which is achieved with radio frequency (RF) hyperthermia. The therapies are monitored by the help of magnetic resonance imaging (MRI). A safe treatment is currently possible, however, treatment planning and monitoring is hampered by the lack of reliable predictability and embedded automation and is time consuming. In this presentation, the state-of-the-art workflow of clinically applied transcranial MR-guided HIFU is shown and enabling technologies in the field of MR thermometry are highlighted.

05:30 - 06:00pm **Panel Discussion: Future of Cancer Treatment**

Joined by Dr. Tobias Maurer | *Urologische Klinik und Poliklinik, Klinikum rechts der Isar, TUM*

Followed by coffee and light refreshments.

Registration and Further Information

Please register for this event at bioengineering@tum.de

For further information please visit the GSISH website at <http://gsish.tum.edu/event-jobs/>

The event is organized by TUM Bioengineering together with IEEE EMBS Student Chapter Munich.