

IMCB & SBIC Invited Speaker



Speaker : **Prof. Ueli Aebi**

*Professor. M.E. Mueller Institute for Structural Biology,
Biozentrum, University of Basel, Switzerland*

Date : 7 August 2012, Tuesday

Time : 11am - 12pm

Venue : SBIC Seminar Room, Level 2, Helios Building, Biopolis
(please use Level 1 entrance)

Host : Prof. Wanjin Hong (IMCB) and Dr. Weiping Han (SBIC)

Seminar :

Moving from the Bench to the Application - Intellectual Value Versus Commercial Potential

We have computer modeled a novel type of biocompatible and biodegradable nanoparticle with an outer diameter of 16 nm and a central cavity of 6.5 nm. The virus-like particle is formed from 60 copies of a de novo designed 80-residue polypeptide, whose two termini are displayed on its surface and hence can readily be functionalized. These highly versatile self-assembling nanoparticles (SAPNs) offer an ideal platform for repetitive antigen display in the context of high-titer antibody production and synthetic vaccine design. Moreover, they can be functionalized for drug targeting and delivery, customized for bio-imaging applications, or modified to yield monodisperse liposomes. These SAPNs will be used as an example to critically analyze and illustrate how to move of what started as a basic research enterprise from the bench to commercial applications. The discussion will include proof-of-concept, patenting issues, start-up considerations, feasibility studies with research institutes, pharma and biotech companies, and how to evaluate intellectual value versus commercial potential.

About the Speaker :

Ueli Aebi holds master's degrees in physics and molecular biology. He earned his Ph.D. in biophysics in 1977 from the University of Basel. In 1977/78, he worked as a senior research associate in protein crystallography at the University of California in Los Angeles. In 1979 he joined the faculty at the Johns Hopkins University School of Medicine in Baltimore, holding appointments in the Departments of Cell Biology and Anatomy, and in Dermatology. In 1986 he moved to the Biozentrum, University of Basel, Switzerland, where he built a world-class structural biology division that integrates X-ray crystallography, NMR spectroscopy, and light, electron and scanning probe microscopies. Until the end of 2011, UA has been the Director of the M.E. Müller Institute for Structural Biology at the Biozentrum. From 2001 to 2009, he has also been a member of the Swiss Nanoscience Institute (SNI) and the National Center of Competence in Research (NCCR) "Nanoscale Science" where he co-directed the project module "Nanobiology/Nanomedicine".

Ueli Aebi's lab has a long-standing interest in a structure-based understanding of molecular machines and supramolecular assemblies by a hybrid methods experimental approach that includes light, electron and scanning probe microscopies, X-ray crystallography, molecular cell biology and protein design. Being problem-driven, he focuses on (1) cytoskeletal filament structure, assembly and turnover; (2) the nuclear pore complex and its involvement in nucleocytoplasmic transport; and (3) fibrillogenesis of amyloid forming peptides and how this relates to disease progression. Also, his group works on novel optical and mechanical nano-sensors/actuators for minimally invasive local interventions. UA has co-authored over 300 original research articles, reviews and book chapters, and he has received numerous honors and prestigious awards. In addition, UA has over 30 years of business experience. In 1981 he co-founded Protek, Inc. to develop, manufacture, and sell endoprostheses in the USA. Since 1996 he has been chairing the Board of Directors of Gehring Cut that develops and manufactures surgical instruments and other precision mechanical components. In 2003 he co-founded Therapeomic, Inc. that focuses on protein drug formulation and growth factor enhanced tissue repair. In 2005 he joined the Board of Directors of Alpha-O Peptides, a biotech start-up company that designs and customizes self-assembling polypeptide nanoparticles for synthetic vaccine design, bio-imaging and drug targeting/ delivery.



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