



**Short-Term Memberships:
A new scientist category in both natural sciences schools**

Starting in the summer term 2011 both the FRIAS Schools for Life Sciences – LifeNet and Soft Matter Research introduce a new scientist category - Internal Senior Memberships. The LifeNet short-term Fellowships in the wider field of biological complex systems are offered to faculty members of the University of Freiburg who wish to benefit from the interdisciplinary and international environment of FRIAS to advance a research project of their own choice. Members are given the opportunity to withdraw to FRIAS, take advantage of the infrastructure of the institute, and pursue a project – if appropriate also in collaboration with another researcher, a FRIAS fellow or a renowned international scientist to be invited to FRIAS.

In the first round a Membership was granted to Professor Marlene Bartos (Institute for Physiology, University of Freiburg) whose research aims at dissecting the dentate gyrus circuitry and thereby investigates the influence of dendritic versus perisomatic inhibition on network oscillations. This project will be carried out in collaboration with Prof. Peer Wulff (University of Aberdeen, UK), who will come to Freiburg in the winter term 2011/2012 and who will add valuable expertise on the development of state-of-the-art genetic tools for the selective disruption of cell type-specific synaptic functions in neuronal circuits.



Marlene Bartos

LifeNet scientists successful in obtaining BMBF grant money

Three FRIAS LifeNet members Melanie Boerries, Hauke Busch, and Jörn Dengjel acquired substantial funding of 0.85 Mio Euros from the German Ministry of Education and Research (BMBF) to investigate the process of human kidney aging.

Over the next three years, they will team up with other young investigators from the University hospital, the faculties of biology and mathematics to combine mathematical modeling and systems theory with experiments to elucidate the mechanisms that cause the decline in kidney function throughout our lives. The questions why and how we age remain obscure even today. Certain parts of the body, like our skin, are continuously replaced, allowing for constant rejuvenation while other organs, like the brain, heart or the kidney fulfill highly specialized tasks and cannot be replaced easily. These organs therefore determine our subjective age. Understanding how these organs become old is inherently difficult, as all parts are affected from the genes and proteins to the individual cells up to the tissue level. Aging is a complex dynamic process occurring on multiple time scales. While it progresses throughout our entire life, its consequences show on the time scale of second to days, e.g. changing how our cells cope with stress, how they grow or how they die. Taken together, aging will only be understood by an holistic and dynamic systems biology approach. Therefore, the team will pursue a multi-organism, multi-timescale, systems biology approach. They will analyze genomic data from kidney patients, search for similar aging effects in model organisms, such as worm, fly and mouse, and will perform experiments with kidney cells in the laboratory, characterizing the gene expression and

Report on the 10th Hermann Staudinger Lecture with Nobel Laureate Robert B. Laughlin

From May 11th to 13th Professor Robert B. Laughlin from Stanford University followed the invitation of the FRIAS School of Soft Matter Research to visit Freiburg University and give a lecture within the Hermann Staudinger Lecture series. His timely talk was entitled “When Coal is Gone...”.

Laughlin’s visit to FRIAS started with his attendance of the monthly FRIAS Dinner Speech. The evening lecture of May 11th was given by LifeNet Junior Fellow Hauke Busch, who revealed to the FRIAS community how one gains systematic insight into the complexity and self-organization of biological systems. The speech was followed by a lively discussion in the FRIAS Lounge to which Laughlin contributed with enthusiasm.

The following day Professor Laughlin held discussions with Junior Fellows of the School of Soft Matter Research, followed by the Hermann Staudinger Lecture in the overcrowded Chemistry Lecture Hall at 4 p.m. Laughlin made clear that he did not want to come up with solutions for the anticipated energy shortage but rather aimed at sensitizing the public to at least think about the future scenario when the era of fossil fuel burning ends in about six generations. If mankind continues to consume the world resources thoughtlessly like today, oil reserves will be exhausted most likely in 50 years, coal will have vanished around the year 2200. Laughlin’s prediction is that people will not abandon their “right” for mobility. Since hydrocarbons are optimal fuels for cars, they will be synthesized from plants by the Fischer-Tropsch process. The soil will, however, be needed to plant foods, so that the biomass for synthetic gasoline has to be grown in sea



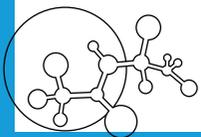
Nobel Laureate Robert B. Laughlin

water plantations. While the whole cycle of biomass growth and gasoline burning is carbon dioxide neutral, the high costs will most likely shift large industrial production beyond 2200. Before coal is gone environmental friendly politics will be hardly enforcible worldwide. Even the use of nuclear energy might increase again temporarily.

Professor Laughlin’s lively and very comprehensive talk was attended by more than 370 people: students, faculty, as well as city officials and the public. The lecture ended with stimulating discussions in the lecture hall and chemistry foyer, where many students took the chance to talk directly with Bob Laughlin.

Royal Society of Chemistry special issue on Soft Matter

A web-based thematic issue entitled “FRIAS - Black Forest Focus on Soft Matter” has been published on the website of the Royal Society of Chemistry (<http://www.rsc.org/>). The issue consists of a series of articles submitted by invited speakers and participants of the Black Forest Focus on Soft Matter (BFF) conference series which is hosted by the FRIAS School of Soft Matter Research. The issue transcends



the usual discipline boundaries and contains articles that have been published in the Journal of Materials Chemistry and Soft Matter, in order to accommodate the diverse backgrounds of the participants. The variety of topics covered at the BFF workshop is diverse enough to justify this approach.

The School of Soft Matter Research Advisory Board at FRIAS

On April 29th the members of the Advisory Board (AB) visited the School of Soft Matter Research. The AB consists of a panel of highly reputable mostly international senior scientists who collectively have a significant impact on fellow selection and extension, and who give strategic advice to the school directors. Last month, the AB members Prof. Arokia Nathan (UK), Prof. Ueli Suter (Switzerland), Prof. Paul Leiderer (Konstanz) and Prof. Mark Warner (UK) represented the board.

During oral and poster-presentations the AB members met the Fellows and familiarised themselves with their projects. In the first session JFs Florian Mintert and Francesco Rao, the newly appointed JF Karen Lienkamp and the two Italian ESFs Sauro Succi (Rome) and Anita Maria Rampi (Ferrara) presented their projects. During the subsequent poster session with presentations from ISFs Günter Reiter and Ingo Krossing, the JFs Stefan Schiller and Aurelio Mateo-Alonso and postdoc Lena Köhler (group of ESF Katarina Edwards), the AB members took the opportunity for a personal exchange with the fellows, which continued over an informal lunch.

During the closed afternoon session, the AB members communicated their mostly positive impressions and gave valuable advice. The AB members were impressed with the JFs' success in obtaining faculty positions and

their ability to receive external funding. It was noted that the decision to increase the number of JFs and decrease those of ISF positions had proven to be right. ISFs were seen to fulfil their roles as JF mentors and to help them with their integration into the university. The ESFs were seen to add great value and new expertise and techniques to the fellows, especially the JFs, but also to the university as a whole. The AB members voted for an extension of the current Soft Matter ISFs Günter Reiter and Ingo Krossing and the new application of Margit Zacharias (IMTEK) as a new ISF from October 2011 on was approved.

Sigma-Aldrich Young Investigator Prize for Aurelio Mateo-Alonso

Junior Fellow Aurelio Mateo-Alonso has been awarded the RSEQ-Sigma-Aldrich Young Investigator Prize of the Spanish Royal Chemical Society (2011).

EVENTS TO COME

July 26-29, 2011

Black Forest Focus on Soft Matter Research 6 "Magnetic Resonance Microsystems", Saig/Titisee.
Registration required

September 7-10, 2011

International Workshop on Microsystems Technologies for African Health "Micro Med A", Mpumalanga, South Africa.
Registration required

September 18-25, 2011

Capri fall school for PhD students and Postdocs on "Photosensitive Processes in Nature and Technology", Capri Island, Italy.
Registration required

www.frias.uni-freiburg.de/softmatter-events

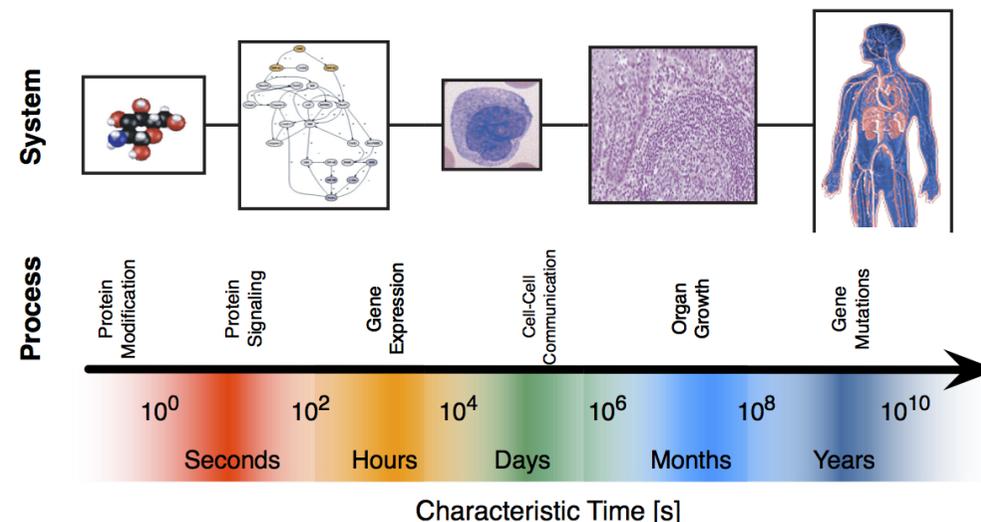


Figure: Time and space ordering of biological processes. Life occurs on all time scales from seconds to years, affecting tiny molecules, cells and organs. To understand the process of aging, one must incorporate all processes in a multi-scale experiment and model approach.

protein levels under various conditions. From this data, models will be developed on how kidney cells age over the years and how this process affects their daily function. The consortium will thus elucidate fundamental biological mechanisms of aging, which may ultimately aid in risk prediction and improved targeted medical interventions to promote healthy aging in general.

Science Publication by Ferenc Nagy and Ralf Baumeister

Internal Senior Fellow Ralf Baumeister and Alumnus External Senior Fellow Ferenc Nagy are co-authors of a study on the role of UV-B photoreceptors in the absorption of light in Arabidopsis. The results of this study have been published in an article in *Science* (1 April 2011).

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September 7-10, 2011

Int. Workshop on Microsystems Technologies for African Health "Micro Med A", Mpumalanga, South Africa.
Registration required

September 11-16, 2011

MOSS 2011 Conference on "Contemporary Research on Bryophytes", Herzogenhorn, Feldberg.
Registration required

October 9-11, 2011

FRIAS-LifeNet Workshop on "Integrative 'Omics' Approaches to Disease Mechanisms - from emerging technologies to new perspectives", Schloß Reinach/Freiburg Munzingen.
Registration required

www.frias.uni-freiburg.de/lifenet-events

