New Webpage online!
by Thomas Stockner

Webpages have become an important platform for interactions and every day communication. This applies to large internet companies such as Google, Amazon, Apple, Facebook, but also to the little things you would like to find information for. Memories from the 90ies feel strange, if reminding of the internet-free times. Who remembers searching for articles using the microfiche system, followed by wandering through the big halls of the library to locate the article in the innumerable volumes of books? It has become so easy: Just search online, download, and eventually print! And if hidden behind the paywall of a journal, just ask the corresponding author for the PDF and most likely, you will find it in the inbox in no time.

We are very proud to launch the rebuilt webpage of Biophysics Austria Society (https://www.biophysics-austria.at), appearing in a modern design. It comes not only with a fresh look, but also with a new set of features. Please let me start with the new look: The design aims for pleasant simplicity linked to easy-to-use functionality. The most important features are presented as teasers on the main page: The latest events, news, jobs, and the current newsletter. Just click on the item and the full information pops up. As standard for webpages, a navigation structure, implemented as a pull-down menu, allows for swiftly moving to the topic of interest, but also to explore. Please do so!

The News section is the page intended for displaying additional information, including paper highlights, award openings, initiatives such as the Biophysical Science Week and much more. Are you missing your favorite conference, your recent hot paper, or do you want to advertise a job opening? Please send us an email to jobs@, news@ or events@biophysics-austria.at. The member area is the core of our homepage for Biophysics Austria members: members can have an account and access to the member area. Please make use of it! Beyond being able to check and renew your membership, the webpage allows for showcasing your research techniques and activities, including the possibility for showing a detailed description e.g. of the active research topics of your lab. These possibilities are an opt-in features, fully complied to the DSGVO, which means, you have full control of the information that will be displayed on the Biophysics Austria webpage. This new functionality is intended to increase the visibility of your research, your lab, your institute, thereby increasing the visibility of your lab in the Biophysical community.

In the end of the day the success of Biophysical Austria will depend on your contribution, your input for news, jobs, events and especially your presence at and usage of the webpage of Biophysics Austria. Please be very active! Feedback is appreciated.

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"As a high school student, I had a decisive experience. I learned piano at that time. It happened that I played my favorite piece to a friend of my father. When I finished, he said: ‘That was very nice, but how is the piece continuing?’ I did not understand him at all. He then sat down and continued the piece by improvising."

My current guest in the portrait series is not a pianist or composer, although music has accompanied him throughout his life. It is Martin Hohenegger, Professor at the Medical University of Vienna, and former President of Biophysics Austria. As so often, it is seemingly insignificant events that throw us on the path, to which we stay connected for a long time. "From this experience, I learned: Music is also, what is not written. I was interested from then on, what is not contained in the scores. The notes of music literature are the attunement for what comes after, and for what comes to mind."

What came after school was initially unclear to young Martin. "I'm a Viennese, I went to high school here, and wanted to study after graduation. Music and medicine were the two options." Martin chose medicine. "My reasoning was that medicine is extremely broad: there is science, work on pathophysiology, economic aspects". And Martin got indeed interested in the full scope. During his medical studies at the University of Vienna he already worked in different hospitals. This work has also taken him abroad. "I was interested in infectious diseases and then worked in a hospital in Portugal." The idea was to go further, to Brazil, starting from Recife heading towards the Amazon. "But I first wanted to understand the natural medicine, which is practiced there by the locals. That's how I came to the MLA."

Every heart beat or muscle contraction needs the opening of intracellular calcium channels, the ryanodine receptors. Here, single channel opening events were visualized for the purified skeletal muscle ryanodine receptor in artificial lipid bilayers. The ion channel was pre-activated with 20 µM free Ca²⁺ (upper traces). Bars on the left indicate the closed state of the ion channel. Slow inactivation of the ryanodine receptor by the suramin analogue NF676 leads to a long lasting non-conducting state, which is re-activated by 5 µM ATP (the latter is not shown).

At the end of our interview, I was interested in those things that are not in the notes, was awakened here again. Martin worked in Vienna in the group of Josef Suko on the Ryanodine receptor, and found himself soon set in his role as a guest scientist on a scientific career path. "After 1 ½ years, I realized that I have to move on. Coincidentally, I got the opportunity to go to the Max Planck Institute for Medical Research in Heidelberg." Martin followed his impulse and went to one of the best institutes in Germany. "There I have experienced a completely different scientific climate: scientists treat each other quite differently than medical doctors." He stayed in Heidelberg for more than 2 years, where he characterized the adenine nucleotide binding site of the Ca²⁺ ATPase of the sarcoplasmic reticulum, and he synthesized ATP analogues for this.

"Then I went back to Vienna with an Otto Loewi scholarship, again to pharmacology, and after one year received a University Assistant position."

"Initially, I decided to go on work on the Ryanodine receptor, which he purified from the heart muscle, and which he characterized with single channel recordings on black lipid bilayers. From 1992 Martin worked in parallel on G-protein coupled receptors together with Michael Freissmuth and Christian Nanoff. "At the beginning of my career, I thought, hopefully I'll come up with enough subjects to investigate. But that was never the problem. Meanwhile, I work on pharmacological anti-cancer strategies on the cross road of metabolism and signal transduction."

At the end of our interview, I was interested in how Martin's contact with the Biophysical Society actually came about. "My father was a physician, but then worked as a scientist at the Institute of Pathology. Already as a high school student, he took me to interesting lectures of the Biophysical Society. I remember a lecture on the identification of the genetic code, held by Manfred Eigen; that was a memorable experience. That's how I got to know people in the presidium." Martin became secretary-general (1998–2004) and finally president of the Austrian Biophysical Society (2004–2010). In his presidency, Martin is known for opening up the Society to the federation states, an effort that was continued from then on.
This is for sure a very exciting, important but also stressful time for Ass. Prof. Dr. Andreas Horner: to start his own laboratory, guide new PhD students and see their first success but also to develop new lines of research. Andreas is a profound expert in water transport through biomembranes and is currently expanding his laboratory at the Biophysics institute at JKU Linz, Austria. Since his FWF project on permeation through the urea transporter UreI from Helicobacter pylori was granted one and a half years ago, he expands his excellent work on the molecular mechanism of water permeation through narrow channels to studying neutral solutes, protons as well as weak acids and bases.

More than half of the world’s population is infected with Helicobacter pylori, a pathogenic bacterium responsible for numerous gastroduodenal disorders such as chronic gastritis, peptic ulcer disease and gastric cancer. Remarkably, H. pylori’s life insurance is a small proton-gated inner membrane channel, HpUreI. It ensures survival in the acidic gastric juice, by means of urea transport from the periplasm to the cytoplasm, where urea is hydrolyzed by urease. The hydrolysis products, ammonia and carbon dioxide, in turn presumably buffer the cytoplasm to a neutral pH and the periplasm to pH 6.1. However, it is unclear how HpUreI allows the selective passage of urea, water and potentially ammonia while blocking the passage of protons or hydronium ions. HpUreI’s architecture is defined by a short hourglass-shaped channel with a central constriction site that in contrast to purely water-conducting channels is exclusively lined by uncharged and hydrophobic residues. In addition to its unique selectivity filter, it is equipped with highly charged cytoplasmic and periplasmic loops at pore entrance and exit. Due to its undisputed importance, HpUreI is seen as a potential drug target for fighting Helicobacter pylori infections. Therefore its characterization and molecular understanding is of vital importance for future drug development and clinical treatment. Comprehension of its unique proton filter will contribute to a more general understanding of proton rejection mechanisms in proteins.

Remarkably, Andreas not only performs in vitro experimental research but also develops theoretical models to quantify solute and solvent permeability values. To reach his research goals of finding determinants of single-file water transport and study water flux through different types of transmembrane proteins, Andreas achieved methodological advancements that enable him and his team to quantify water permeability through transmembrane proteins with an unprecedented accuracy. In addition to the mathematical treatment of the experimental data this includes the knowledge of the amount of reconstituted proteins in the system. In addition to his fundamental science, Andreas foresees a huge potential to use his knowledge on the molecular determinants of water transport among others in material sciences. Aquaporins are truly remarkable water channels that manage to reabsorb up to 200 liters of water from the urine every day. As every single water molecule needs to pass the narrow pore, aquaporins are remarkable selective and inhibit even the permeation of protons. Therefore, aquaporins are potential building blocks of future high end filter membranes and they serve as templates for the design of artificial water channels. In this respect, aquaporins are treated as the “Holy Grail”, due to their superior performance in respect to their high permeability and optimal selectivity.

Currently, he is working on a proposal for an ERC starting grant that includes smart engineering of aquaporins. With all his fascinating ideas and projects, Andreas will unravel new mechanism of water and solute transport mechanism and accelerate technical developments in this field. Andreas full time calendar not only covers science and guiding his young lab, but he gives lectures in Microscopy of Biomolecules and Bioanalytics and holds several practical courses and exercises for biophysical, biochemical and molecular biology students. In his free time, he loves to spend time with his two lovely kids and his family. “Previously, I was training volleyball almost every day, but now I do enjoy much more to spend time with my kids”, Andreas added. It seems that it was easy to shorten his sport activities and be rewarded with the smile of his kids, instead. However, what didn’t change since his youth is his passion for bees: “Watching my bees and working with them is one of the most effective distractions of everyday life.”
Biophysical Society meetings were part of the ÖGMBT annual meetings for almost ten years. The upside was the possibility to interact with biologists – an opportunity that was hardly used. Most society members only attended the “Biophysics’ day”. Limitation of the meetings to a one-day long event hampered active participation of many biophysical groups. Another downside of the joint venture with the ÖGMBT was that we had no influence on meeting dates, which in consequence often coincided with other important biophysical events.

We thus decided to give the Biophysical Society Meetings a new – more attractive – shape. The meeting in its new form will be held biannually in alternation with EBSA meetings and takes place for the first time in 2020. It will be scheduled for the first weekend (Friday till Sunday) after the summer semester at Austrian universities ends. The Federal Institute for Adult Education (Bundesinstitut für Erwachsenenbildung) in Strobl at the border of the Wolfgangsee (Salzkammergut) appealed as an extremely attractive location. This beautiful place provides a creative and motivating atmosphere and the unique possibility to combine scientific activities with social gatherings that hopefully will promote interactions among all participants. Low cost lodging and travel grants from the Austrian Biophysical Society are going to allow many PhD students and early carrier Postdocs to attend. The meeting will provide a platform for the presentation and discussion of frontier research from Austrian biophysically-oriented groups. Aim is to motivate the active participation of as many scientists as possible.

Accordingly, the meeting is going to feature 6–7 thematic topics so that every participant can share her/his research. The first meeting will start in the afternoon of Friday, 3 July 2020 and end in the afternoon of Sunday, 5 July 2020. Participants will have the possibility to attend two plenary talks from external speakers and talks given by each participating group. Time on Saturday afternoon is reserved for hiking, which offers an excellent possibility for the exchange of ideas and fruitful scientific discussions. Open-end poster presentations by wine and cheese represent highlights of the evenings on Friday and Saturday. Prizes will be awarded to the best student posters.

The first meeting is limited to 60 participants.

Our meeting homepage will soon be up for early registration.

See you in Strobl!