

**Patrik Aouad (EPFL)**

[VIB conference on tumor heterogeneity, plasticity, and therapy, May 5-6th 2021, online](#)

As the pandemic was not resolved by 2020, most conferences in 2021 took a virtual direction. The VIB conference on tumor heterogeneity, plasticity, and therapy was no exception! Thanks to the generous travel grant by the Life Sciences Switzerland (LS2), I was able to attend this conference and present my PhD work on estrogen receptor-positive breast cancer dormancy, conducted in the laboratory of Cathrin Brisken at EPFL. Advances in research have paved the way for a better understanding of cancer as a heterogeneous disease that can evolve with time to become refractory to therapy. Tumor heterogeneity represents a major hurdle in advancing targeted therapies and more research is warranted on this topic. During this conference, I had the chance to attend talks from world leaders and get updated on the latest developments in basic and translational research. The first session kicked off with talks on the role of plasticity in tumor initiation, progression, and metastasis. During this session, several mechanisms leading to tumor plasticity were tackled; these include: metabolism, vasculogenic mimicry, microenvironment cross-talk, and others. This session in particular was very relevant to my project because I study the role of Epithelial-Mesenchymal Transition/Plasticity in the progression of breast cancer, and its relationship with dormancy. The first session was followed by a poster session where I presented my PhD work. I had to upload a pdf file with 4 slides describing the results, and record my voice explaining them. Each poster had its own booth, and people could come visit the booth to discuss science. I must say, this was a very interactive and engaging format that surprised me the most. In just a click, one could initiate a video call and discuss science live! How cool is this? The second session focused more on the microenvironment/niche, specifically the contribution of immune cells to the reprogramming of the microenvironment. Renowned scientists like Prof. Johanna Joyce and Michelle Monje gave fantastic talks. A very interesting and interactive aspect of this conference was the “meet the speaker” booth after each session, where one could visit the speaker, open video cam, and start discussing science. The next day kicked off with talks on immunotherapies with a focus on heterogeneity-induced resistance. The roles of epigenetics, mutations, immune cells, and molecular evolution in driving the resistance to common immune checkpoints blockade were discussed. Although I do not have a strong background in immune biology, I found this session a delight to follow, and I did not have problems in catching up with the speakers. Networking is fundamental in academia and despite the conference’s virtual format, I had the chance to build some connection with scholars and discuss about post-doctoral position openings in their labs. Overall, I enjoyed this conference, thanks to LS2, and would recommend it to my colleagues in the future.

Patrik Aouad, Lausanne, 01/06/2021.

The image is a screenshot of a virtual conference poster presentation. The main content is a slide with a dark background and blue/green microscopic images of cells. The slide title is "Intraductal xenografts of estrogen receptor-positive (ER+) breast cancer model dormancy". Below the title, the presenter's name "Patrick Aouad" is listed, along with his affiliation "PhD student at EPFL" and "Cathrin Brisken Group". The slide also features logos for VIB, EPFL, scnat (Swiss Academy of Sciences), and LS<sup>2</sup> (Life Sciences Switzerland). A small video inset in the bottom right corner shows the presenter, Patrick Aouad, speaking. The video player interface at the bottom shows a progress bar at 0:00 / 6:01 and various control icons.

## Tomaz Martini (UNIFR)

45th FEBS Congress, 3-8 July 2021, online

The Federation of European Biochemical Societies or FEBS annually organizes Europe's biggest biochemistry conference. The topic of the 45th FEBS congress was Molecules of Life: Towards New Horizons. This year the congress hosted some eminent names from the world of science, including two Nobel laureates.

The topics ranged from plant biology to bioengineering, and included even some more provocative topics, such as introduction of genetically modified plants at a larger scale into our food supply, which of course resulted in a more heated discussion. Such an array of diverse topics is a unique opportunity to learn about molecular tools and approaches that are used in other fields, but not in your own field of research (yet).

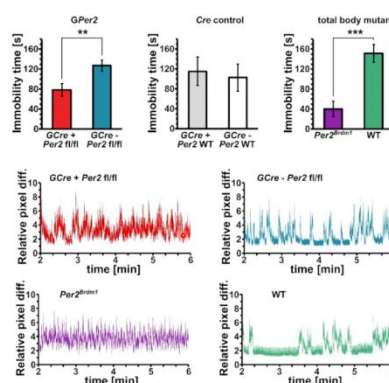
It was the first time that the FEBS Congress had a dedicated session on circadian biology, which fits the research of our laboratory perfectly. Especially since our laboratory is looking at how circadian rhythms affect mammalian physiology and pathophysiology, strongly linking our work in chronobiology with the aforementioned topic of the congress. What is more, the dedicated chronobiology session was named 'The Circadian Clock and Disease', and our most recent work looks directly at how the understanding of the molecular clock may be exploited to better understand and perhaps even treat mood-related disorders, such as the major depressive disorder.

The major depressive disorder is a common debilitating condition that has major effects both on the individual as well as on their family, and which carries with it a large economic burden due to medical costs, absence from work and lower productivity. According to the WHO, around 800,000 people commit suicide each year as a consequence of depression. Our laboratory has previously shown that a whole-body mutation in the molecular clock gene period 2 (*Per2*) results in depressive-resistant-like mice. This opened opportunities to study signalling that underlies mood-related behaviour via *Per2* manipulation. Our results, presented at the congress, show that the depressive-resistant-like phenotype can be reproduced by glial *Per2* knockout (KO) alone. Such mice have both reduced despair as well as reduced anxiety, two components of depression, but they have no other defects that are associated with total-body *Per2* deletion or mutation. The reduced despair and anxiety are paralleled by an upregulation of the GABA transporter 2 (*Gat2*) and dopamine receptor D3 (*Drd3*), as well as a reduction of glutamate in the nucleus accumbens (NAc). We achieved glial-specific *Per2* KO with both cross-breeding of animals, as well as by means of intravenous injections of a novel engineered adeno-associated virus with blood-brain barrier permeability, which allowed genetic manipulation in adult mice, circumventing potential developmental effects. Stereotactic injections of a virus expressing *Cre* recombinase under a glial driver directly into the nucleus accumbens revealed that the phenotype of the despair-resistant mice could be reproduced by knocking out *Per2* only from glia of this brain region. Our results characterised a valuable new mouse model for studying manic-depressive-like behaviour in mice, as well as revealed candidates for studying the signalling pathways of mood regulation. This work gained recognition at the FEBS through a 15 min talk at the dedicated session for chronobiology.



Tomaz Martini

### GLIAL *PER2* KNOCKOUT MICE HAVE REDUCED DESPAIR PERCEPTION



THE 45TH FEBS CONGRESS  
**FEBS 2021**  
3-8 JULY 2021

**Teng Wei, KOAY (University of Fribourg)**

[100th Meeting of the German Physiological Society \(30.09.2021-02.10.2021\), Frankfurt Am Main, Germany](#)

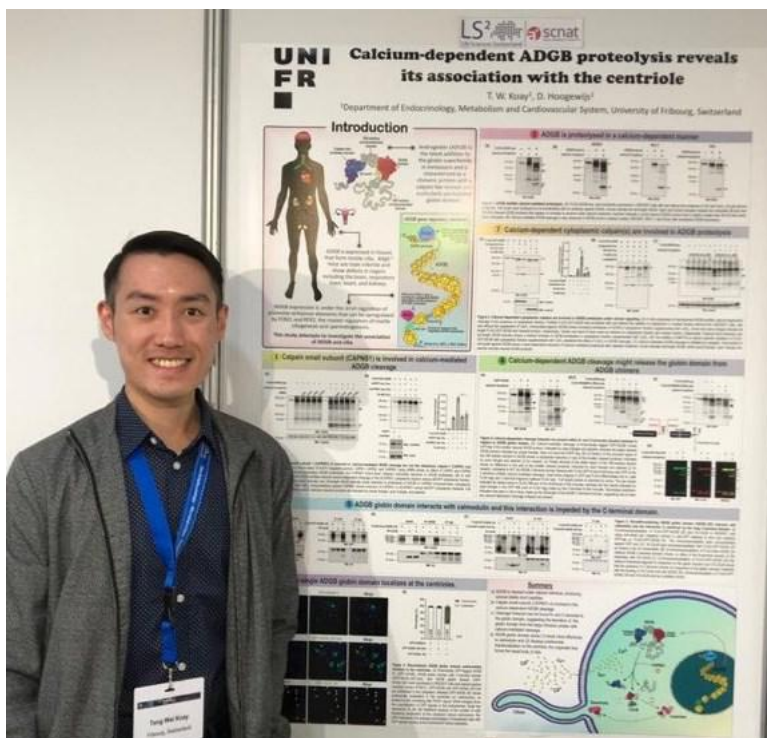
A big thank to LS2 Travel Grant for funding my participation in The 100th Meeting of the German Physiological Society, which took place in the beautiful metropolitan city of Frankfurt. It was very refreshing to be able to attend and present in a physical meeting after more than a year of virtual meetings due to the pandemic. Despite the on-going pandemic, the effort of the organizer to hold a physical meeting while watching over the measures to take care of the safety of the participants is highly appreciated.

This meeting has brought together hundreds of scientists and students, majority of which are working in Germany, Switzerland, and Austria as the event is jointly participated by the Austrian Physiological Society and Life Science Switzerland (LS2) Physiology. Being international in nature, this event has gathered participants from all over the globe, making it a very interesting place to get to know the work and life of international students like myself.

The conference has put together a great collection of invited speakers, which are very established and esteemed in their respective field of research. It goes without saying that their talks were very inspiring and motivated me to reach for greater heights in both my current work and also in my future career. One very memorable talk has to be of Prof. Dr. Nikolaus Rajewsky, which not only presented his very interesting breakthrough in RNA biology, but more importantly conveyed the message to young biologist to always be up-to-date with the ever-computerizing way of conducting biological research. Notably, trending high-throughput technologies such as next generation sequencing (NGS), etc, should be embrace and not resist.

During the meeting, I had the opportunity to present my research project in a poster presentation. I showed in detail how a cilia-related protein, androglobin, is proteolysed under calcium stimulus and that the globin domain-containing proteolysed product translocates to the centriole, an indispensable organelle for ciliogenesis. Besides that, I enjoyed discussing with other presenters on their projects, such as those involving the HIF-signaling pathway in the context of physiology and pathology.

As a foreign student in Europe, I enjoyed the opportunity to visit Frankfurt city. Build along the spectacular Main river, the city offers not only a breathtaking view of the river, but also charming streets with shops, bars and restaurants. In short, I truly enjoyed and benefited from this opportunity to participate in this meeting.



## Alejandro Osorio-Forero (University of Lausanne)

50th Annual Meeting of the Society for Neuroscience, November 8-11 (and Nov. 3-7 preview), online

Thanks to the support of the Life Sciences Switzerland (LS2) and the Swiss Academy of Sciences (SCNAT), I could attend the Neuroscience 2021, the 50th Annual Meeting of the Society for Neuroscience (SFN). The meeting took place in a virtual form from the 8 to 11 of November.

In this prestigious conference, I had the opportunity to introduce my PhD project in a poster format with the title “Locus coeruleus noradrenergic control of non-REM sleep substates” (P638.01) together with an explanatory video that was available together with the poster PDF. The conference allowed us to access the information from the 3rd of November and the post conference period until the 30th of November.

Initially, the conference was taking place in a dual format with a virtual event before the in-person meeting in Chicago, IL, taking place the 13th to 16th of November. However, due to the special circumstance of the current pandemic which still affect many countries in the world, the organizing committee took the decision of cancelling the in-person format of the meeting and to focus the entire energy in the virtual experience of this year's event.

As a result of a tour-de-force, the organizing team managed to gather thousands of scientists in a clear and friendly virtual environment. Here, the participants were able to set up a detailed profile that facilitated the interaction between peers during the event. Furthermore, we were allowed to create our personal itinerary of the event with our preferred seminars and posters at our best convenience. The later feature provided major flexibility for the attendants. Among the additional advantages of the virtual Neuroscience 2021, the chance to access the posters and live-recorded seminars even weeks after the event allowed further access to information in a way that is normally limited during an in-person experience.

During the event I profit from the inspiring talks but also from the poster presentations to wish I had freedom of access multiple times to focus on specific experiments or ideas. Also, I was able to ask questions in the platform that were later answered during video sessions with the authors. The discussion panel planed for the posters in my sleep and systems section allowed me to interact with my peers and principal investigators in the field, to answer questions about my current work and share ideas about similar results. Specifically, the observations in behavioral and electrophysiological markers during REM sleep by the group of Prof. Brendon Watson further expand the understanding of infraslow fluctuations during sleep periods. Moreover, we were able to exchange about the drawbacks and advantages of specific techniques during our research processes such as Fiber Photometry or NeuroPixels.

For recently published work like the one I presented in the conference, this event was an ideal opportunity to increase the visibility of our results and put them into context with state-of-the-art findings in our field. Finally, as part of my last months as a PhD student, the 50th Annual SFN meeting was the perfect opportunity to meeting potential employers or collaborators in my field of interest with novel insights and compatible interest in sleep neuroscience.

**Locus coeruleus noradrenergic control of non-REM sleep substates**

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**Noradrenergic circuit control of non-REM sleep substates**

<https://doi.org/10.1016/j.cub.2021.09.041>

**Thank you!!!**

Unil | Université de Lausanne  
Département des neurosciences fondamentales

NEUROSCIENCE 2021  
50TH ANNUAL MEETING

SOCIETY OF NEUROSCIENCE

dnf

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**Rita Sarkis (EPFL)**

8th digital pathology and AI congress, 1-2 December 2021, London, UK

I had the chance to attend the 8th Digital Pathology and AI congress, in London. This congress is a yearly event joining from across Europe data scientists, bioengineers, and pathologists in one meeting to discuss this vibrant and moving field of digital pathology. First, I want to highlight that this was my first meeting outside Switzerland and in physical attendance after covid-19 pandemic. It felt so good to be back to physical meetings, interact in a live manner with the community and experts in the field. The physical component was much needed, to be able to share my work, build connections in the field, get to know who the leading experts are and where is the field moving and in which direction. I was presenting a poster in this meeting, and the poster session interaction was extremely lively, I received many constructive feedback, inputs, questions and saw how other people perceive my work and appreciated all the research that was done behind it.

Most of the talks in the congress highlighted the recent updates in artificial intelligence applied to the field of digital pathology and either presented their own developed tools or showed how they moved to digital and are currently implementing the AI component within the clinics. We clearly see a big support for the field from the pathologists community and their willingness to integrate digital pathology and AI within the clinic in a safe manner. I want to highlight Prof. Catherine Guettier, Lee Cooper, and Pierre Moulin's talks which were fitting within this scope. Having this meeting in the UK, did not come by chance, but within Europe, UK we can clearly see how this country adapted digital pathology and is supporting AI. This lead me appreciate how much the field is growing and moving and how much we still need to put efforts in Switzerland to catch up. This motivated me to adopt this field and wanting to remain in it as I see many opening doors for future career development and field advancement.

Another interesting interaction was the one with the companies and startups and how they are keen on interacting with researchers to be able to develop product tailored upon our needs and facilitating this digital transition and integration. I feel very fortunate that I was able to attend physically this congress and participate actively in many talks and round table. I learnt tremendously about the different digital pathology and AI research areas and tool development process from research to clinical implementation. I even learnt about the business model of this field. I believe this congress had a great asset on my scientific and professional career. It reminded me why I love doing science, and research and reminded of the passion behind this that sometimes I tend to forget when I am in the middle of tunnel focusing very much on my work. I am leaving the congress with a lot of motivation, energy, and enthusiasm to go continue making an impact in this field. I feel extremely lucky and honored to have been awarded the LS2 and SCNAT travel grant to attend this congress and I want to take the opportunity to warmly thank you for your significant help and support for my scientific career.



**Kristina Makasheva, EPFL**

66th BPS Annual Meeting, San Francisco, 19-23 February, 2022

I would like to thank LS2 for providing me with a travel grant to attend the 66th annual Biophysical Society Meeting, which was held in San Francisco, California on February 19-23th, 2022. It was hard to believe until the very last moment that the conference was organized in-person, without any remote talks, but with strict anti-covid protective measures and rules.

The Biophysical Society meeting is one of the biggest conferences that reunites the international researchers from all different fields of biophysics. This year about 4000 scientists attended the meeting. The conference has several symposia and platform sessions running in parallel from 8 AM to 6 PM. The poster sessions were organized in the afternoon. It was hard to choose the sessions because of the big choice and excellent quality of the works presented, but for me of the greatest interest were Macromolecular Machines and Assemblies Symposium, Multiscale Organization Symposium, Protein-Nucleic Acid interactions, Nuclear Condensates, DNA structure and Dynamics.

I was honored to present my research as a 15 minutes talk entitled “Multiplexed single-molecule experiments reveal Cas9 nucleosome invasion dynamics” at the “Chromatin and Nucleoid” platform on Monday, 21 February. It was the first time I gave a talk in such a big room to such a big audience, though it went well, I had a couple of interesting questions and also received the diverse positive feedback from other scientists in my field. As I am on my last year of PhD, it was very useful to meet new people, network with other scientists and discover new labs which might be potentially interesting for my future postdoc position. Also, it was nice to meet in real people, whom I have already met during Zoom conferences. On Monday evening Frances Arnold gave a BPS Lecture. It was just amazing and so inspiring! She talked about her research on directed evolution and how this led her to make new enzymes that can help save the world. She also mentioned her Nobel Prize and an episode of Big Bang Theory, where she played herself. Besides the platforms and symposia, I have attended interesting poster presentations and exhibitors’ presentations. All in all, I enjoyed the conference a lot and came back to the lab with new ideas and inspiration to get more exciting results in my project.

Once again, I am grateful to Swiss Academy of Sciences and the SCNAT who sponsored the LS2 travel grant funding that allowed me to attend this outstanding event.



## Alexandra Teslenko, EPFL

66th BPS Annual Meeting, San Francisco, 19-23 February, 2022

The Life Sciences Switzerland (LS2) and the Swiss Academy of Sciences (SCNAT) Tavel Grant gave me the financial opportunity to attend my first overseas conference for which I am very grateful and would highly recommend for anyone interested in the specific conference to apply.

The Biophysical Society Conference (BPS) annual meeting 2022 took place in person from the 19th to the 23rd of February in San Francisco (SF), California in the United States of America (USA). The Moscone center South served as a conference venue place, which impressed by its gigantic capabilities to host thousands of participants. The flight to SF itself was mainly attended by participants of the BPS2022 that created an exciting atmosphere. We stayed in the hotel Intercontinental in 10min walking distance to the conference venue. Each day was structured in parallel symposia of 4h consisting of 30min talks and platforms of 2h consisting of 15min talks, the question rounds were included in the given time. The presence of parallel sessions always allowed to select the most relevant and interesting topic for each participant. The big symposia sessions were shaped by the coherent presentations on a particular subject (e.g. `Multiscale Genome Organization`), which gave a bigger context and introduced the topic. Platform discussions such as `Protein-Nucleic Acid Interactions` were more specific presentations from younger scientists often on a more specific background or methodology. Specifically, I enjoyed the biophysical society lecture `Innovation by evolution: bringing chemistry to life` given by the Nobel Laureate Professor Francis Arnold. She introduced the world of protein engineering and protein evolution with a note of humor and an impressive strength of purpose encouraging each of the participating scientists to develop a novel idea within their field.

On the second day of the BPS2022, I participated in the Student Research Achievement Award (SRAA) competition, where prior to the actual poster session I presented my work to the jury members specifically selected for each topic by the SRAA organizers. The jury allowed me to collect new thoughts on my project by posing questions leading to fruitful discussions. The next day I was delighted to see my name among many others to receive the SRAA award. Poster presentations themselves took place on four days to allow a high number of presenters. During my poster session of 90min, I discussed and presented my research to interested scientists from a mathematical, physical, and (bio-)chemical background. For all interested parties, I focused and re-structured my presentation to allow them the easiest understanding of my project giving them the necessary background or by simplifying some of the aspects.

In total, during my first overseas conference I could listen to exciting lectures and discuss with scientists all over the world, learning from each sentence about their work. The session and poster discussions allowed me to build new international, intercultural connections across fields and obtain new ideas and input for future development.

