

NEUROSCIENCE NEWSLETTER



Georg-August-Universität Göttingen · International Max Planck Research School

The Neuroscience Program...

...back on track

Welcome to the 10th NeuroNewsletter of the Göttingen International MSc/PhD/MD-PhD Program and the International Max Planck Research School (IMPRS) Neurosciences!

After the exceptional years of the pandemic without Culture Nights, PhD retreats and face-to-face meetings, the IMPRS revived social interaction and networking within the program in summer 2022: The PhD retreat 2022 headed to Durbach in southern Germany, where students and faculty members joined in lively interactions. With a thorough testing strategy before the retreat, many activities outside and mainly staying in the 'Neuro bubble', the long-missed exchange of scientific ideas and discussion about the ongoing PhD projects was a great success (see page 34). In 2023, the PhD retreat to Harnack-Haus (the con-

ference venue of the Max Planck Society) in Berlin took place in May, coming back to the tradition of yearly PhD retreats in our program.

In June 2022, our students organized the NEURIZONS Symposium at the Max Planck Institute, bringing together scientists from all over the world (see page 31). During the symposium, Nikoloz Sirmpilatze and Agnes Steixner-Kumar received the Sartorius-sponsored Otto Creutzfeld PhD Award for their outstanding work during their doctoral studies.

Recently, the video podcast 'Neuroscience and beyond', initiated by IMPRS Neurosciences students already during the pandemic and supported by the program, has been launched, featuring in-depth interviews with Göttingen neuroscientists

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Neuroscience in Göttingen

including faculty members and alumni of the IMPRS (see page 27) discussing their research, methods, and science in general. The podcast is available on YouTube and flanked by short (1 min) videos with highlights on Twitter, Facebook, TikTok and Instagram, communicating current neuroscientific research to the general public.

Last year, the first 'post-Covid student generation' of the IMPRS for Neurosciences and the IMPRS for Molecular Biology has been welcomed in the traditional joint orientation weeks with information events, city tours and the cultural excursion to the Grenzlandmuseum Eichsfeld without any pandemic related restrictions. Teaching could resume to an in-person format for lectures, tutorials and methods courses and also the Culture Nights could be re-established. However, the funding situation for the Culture Nights has changed during the pandemic and it was not clear how the program can financially support the events.

Thanks to our programs' alumni who followed our call for (financial) contribution, this tradition could be re-launched with great success. We are still amazed by the large amount of donations we received within a very short time and would like to use this opportunity to thank everyone for their contributions (see also last page of this Newsletter issue). Be assured that the current students very much appreciate your commitment to our program! The students started with the Cell Culture Night in November 2022, went through a Winter Culture Night and the Spring Festival, before the Indian, Iranian, Latin American and Mediterranean Night offered an insight into their respective cultures and traditions.

Small changes in the curricular structure of the first year have been introduced to alleviate some of the pressure on the students. A short break between the lab rotations has been introduced and the lab rotation seminars have been clustered into blocks

with adequate breaks to allow for more free time. A new workshop on self-management has been introduced in March to further support students in making well-informed decisions. Additionally, the Neuro and MolBio coordinators along with Stefanie Klug, the head of our Career Service, met with the second year MSc students in November to provide guidance on study plans and discuss the next steps in their careers. To support the career planning of the PhD students, the 4th cycle of our Alumni Mentoring Program has been launched, connecting current students to alumni of the IMPRS.

We hope you enjoy reading our newsletter!

*Jonas Barth
Sandra Drube*

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Light promotes oxytocin release

Sound and touch could do the same, and how about other senses? by Jin Bao

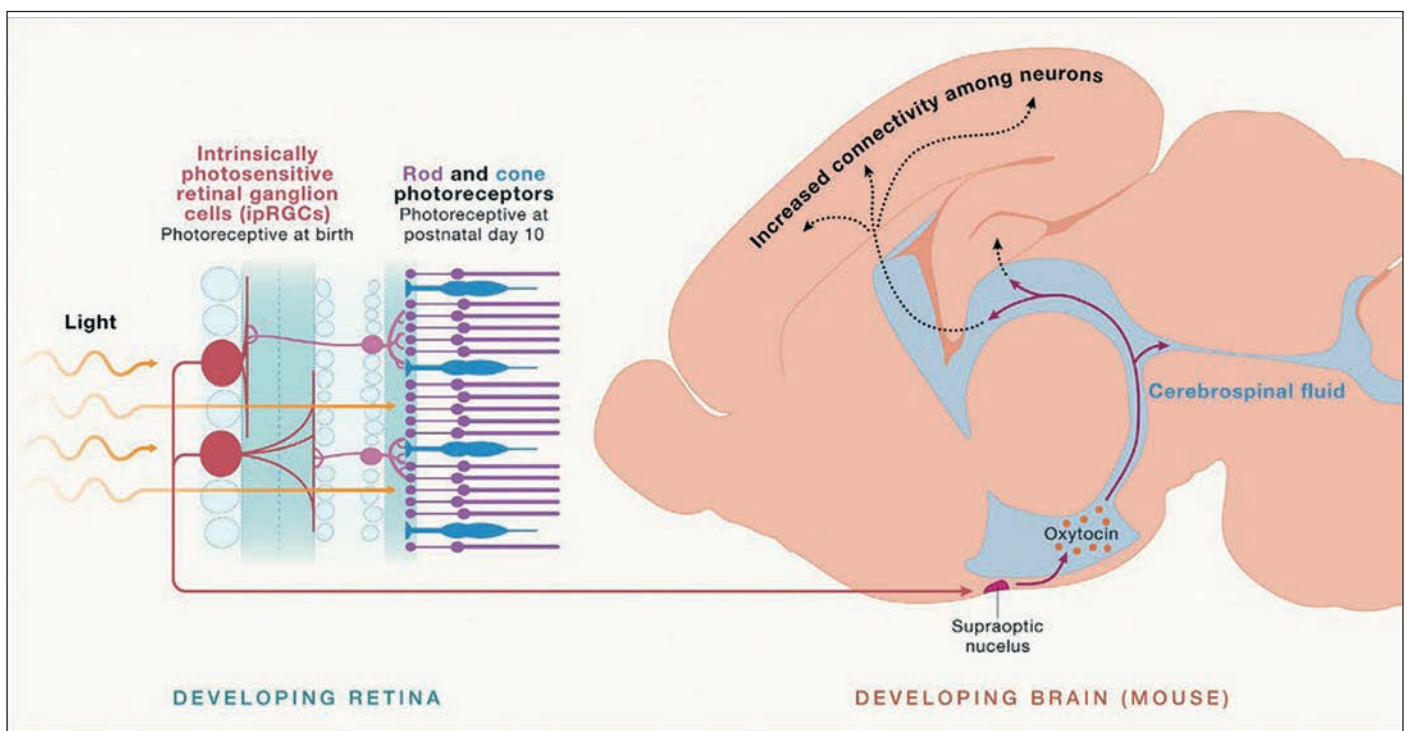
Sensory system is the interface between us and the environment. Multiple senses, vision, audition, tactile, olfaction and gustation, work together to bring information about the world by sensing light, sound, mechanical force and chemistry of the surroundings. The transmission of the information from sensing to perception ends at the level of cortex and then we see, hear and feel. Besides this cortical pathway of projecting rich information of the world, there exist subcortical pathways taking less but vital information for several physiological functions. For example, ambient light intensity for vision is important for light induced pupillary reflex, light stimulated fear response, light entrainment for biological

cal rhythms et al. and more functions yet to be discovered.

Recently, we have reported light-promoted oxytocin release during development, a phenomenon mediated by direct retina-hypothalamus projection¹. The retinal ganglion cells that project to oxytocin neurons in the hypothalamus are a special type of ganglion cells called intrinsically photosensitive retinal ganglion cells (ipRGCs)². This phenomenon was discovered by comparing the miniature excitatory postsynaptic currents (mEPSCs) recorded from cortical pyramidal cells between control animals and animals with light-insensitive ipRGCs. The frequency of mEPSCs are much lower

in the latter ones indicating synapses were less developed which was confirmed by reduction in the number of spines and the level of synaptic proteins. This is a sign of delayed development since we measured around postnatal day 9 when the number of synapses should be going up with time until puberty.

Oxytocin is a nine amino acid cyclic neuropeptide with definite functions in parturition, lactation and maternal behaviors. Oxytocin receptors show highly variable temporal expression pattern in an animal's life span indicating a dependence on both development and experience³. It is still not fully known that how important oxytocin



Light sensed by ipRGCs promotes cortical synaptogenesis through direct activation of oxytocin neurons during early development. Illustration from Do, M. T. H. Light links neonatal neurons for learning. *Cell* 185, 3081–3083 (2022).

signaling is for the development and what the neural circuit based mechanisms are. We measured the level of oxytocin in the cerebral spinal fluid (CSF). Not surprisingly, oxytocin levels were lowered in animals with light-insensitive ipRGCs. The delayed synaptic development could be rescued by either bring back the light sensing ability to ipRGCs during early development or by prolonged activation of oxytocin neurons in the same period. The reduced synaptogenesis appeared quite broad across many cortices including visual, auditory, motor, medial prefrontal cortices and hippocampus. The reason lies in the location of oxytocin neurons which situated in two nuclei: paraventricular nucleus (PVN) and supraoptical nucleus (SON), both

of which are very close to the ventricles. Therefore, we postulated the scenario as: when light activated oxytocin neurons, oxytocin could enter into ventricular space through diffusion followed by axonal as well as somatodendritic release and spread throughout the brain.

What are the consequences of such a general reduction in cortical synaptogenesis associated with reduced light input and oxytocin level during early development? Changes in oxytocin signaling during development is known to impact the social behaviors in the adulthood⁴ and we showed this is not the only deficit. Learning ability is compromised in the adult mice that lack ipRGCs light sensation, which is

only rescued by giving back the light sensing ability during the early developmental period but not later in the adult. It clearly demonstrates that the light sensation in the early developmental period promotes the development of cortical functions through light-oxytocin axis. Other sensory inputs may have similar function since the circuit connections between auditory and somatosensory inputs to oxytocin neurons have been discovered recently^{5,6}.



Jin BAO completed her Master's study in the Neuroscience Program in 2007 and did her doctoral thesis in the lab of Prof. Erwin Neher guided by Dr. Takeshi Sakaba. She defended her doctoral thesis titled 'The role of short-term synaptic plasticity in neuronal microcircuit' in 2010. She now works as principal investigator in Shenzhen Institutes of Advanced Technology, Chinese Academy of Science. Currently her lab focuses on the synaptic mechanisms of mood disorders. Open positions for graduate student and postdoc researcher are available.

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IMPRS Neuroscience students gathered...

...at FENS conference in Paris by *Paloma Huguet*

Following the PhD retreat in the beautiful black forest, some IMPRS students joined the FENS conference in Paris. First off, trains were all on time and no random incident happened while traveling to Paris. If Deutsche Bahn made it on time, there was nothing that could go wrong.

Due to the pandemic, the previous FENS conference had to be switched to online, which probably led to the largest FENS-participant numbers ever. I may say it was also a bit scary to be gathered in a venue with around 7,000 people and new covid variants emerging constantly. However, with some precautions, we could still enjoy the spontaneity and the interaction only an in-person conference provides.

As a student that just started her PhD, it was my first opportunity to attend an international neuroscience forum that brings together all domains of brain research. It was exciting to see that so many people worldwide share the same enthusiasm for neuroscience as me. I was thrilled to see the breadth of neuroscience research, the variety of approaches to tackle open questions, the animal models that I would have never thought of, or the unexpected research areas that labs pursue. Hence, the conference was an excellent experience to expand my horizons and explore how far neuroscience can go. Moreover, I could talk to neuroscientists that saw my research from a completely different perspective, as well as neuroscientists directly related to my research topic. In fact, I was delighted that I could finally put a face and a voice to the authors behind my favorite papers.

The forum was also a great occasion to meet former lab mates or IMPRS alumni now scattered all over the world. Alumni that I had never met would drop by my poster to say hi as a senior/alumni and ask all about Göttingen. It was very nice to hear how people who were where I am right now found their way in life and science. Yet, all of them somehow mentioned that the feeling of being part of the IMPRS family never vanished despite the years or the distance. As a souvenir, current students and some recent alumni present at the conference gathered to take a picture.



Current students and alumni from the IMPRS Neuroscience at the FENS conference in Paris.

PALOMA HUGUET joined the Neuroscience program in 2019 and is currently doing her PhD in the lab of Oliver Schlüter at the University Medical Center Göttingen.

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Students

Current

Master's class 2022/23



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Kazakhstan, BSc from
Nazarbayev University,
Nur-Sultan, Kazakhstan



Natalia Evdokimova
Russian Federation, BSc
from Lomonosov Moscow
State University, Russia



Liisi Promet
Estonia, BSc from
University of Tartu,
Estonia



Dyutika Banerjee
India, MSc from National
Brain Research Centre,
Manesar, India



Yasmin Fiedler
Germany, BSc from
Georg-August-Universität
Göttingen, Germany



Micah Provost
Canada, BSc from
University of Toronto
– University College,
Canada



Evgeniia Bukina
Russian Federation,
Specialist Degree from
I.M. Sechenov First
Moscow State Medical



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Sukanya Chakraborty
India, integrated BSc/MSc
from Indian Institute of
Science Education and
Research, Berhampur



Ahsen Konaç Sayıcı
Turkey, BSc from
Abdullah Gül University,
Kayseri, Turkey



Lejla Šošë
Bosnia and Herzegovina,
BSc/BA from University of
Rochester, USA



Yixuan Chen
P.R. China, BA from
University of Cambridge,
UK



Amir Mohammad Naderi
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University of Technology,
Tehran, Iran



Tarannomsadat Taghavi
Iran, BSc from University
of Tehran, Iran



Maren Cremer
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Maastricht University, the
Netherlands



Vismitha Nadig
India, MSc from
University of Hyderabad,
India



Abigail Trebilcock
Canada, BSc from Univer-
sity of Calgary, Canada



Klara Friederike Esch
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Freie Universität Berlin,
Germany



Erinne Cherisse Ong
Philippines, BSc from
De La Salle University,
Manila, Philippines



Ana Trpchevska
North Macedonia, BSc
from Rhodes College,
Memphis, USA

PhD projects started in 2022/23



Cesar Mateo Bastidas Betancourt

A comparative approach to the identification and functional analysis of evolutionarily-divergent genes across primate brain development
Michael Heide, Gregor Bucher, Maria Patapia Zafeiriou



Uğur Coşkun

Non-coding RNAs as Novel Therapeutics and Biomarkers in Brain Diseases
André Fischer, Tiago Outeiro, Bernd Wollnik



Eren Diniz

The role of RNA in synapse physiology and neurodegeneration
André Fischer, Tiago Outeiro, Rubén Fernández-Busnadiego



Thanh Thao Do

Proteostasis in synaptic plasticity
Rubén Fernández-Busnadiego, Thomas Dresbach, Carolin Wichmann



Svilen Veselinov Georgiev

Super Resolution Imaging of Extracellular Matrix Dynamics in the mammalian
Silvio Rizzoli, Oliver Schlüter, Nils Brose



Veronika Hantakova

The role of pH and lactate in microglia phagocytic properties in the context of Alzheimer's disease
Klaus-Armin Nave, Tiago Outeiro, Christine Stadelmann-Nessler



Robert Mihai Haret

From Artificial to Natural Stimuli: Contrast Adaptation in Stimulus Encoding by Retinal Ganglion Cells
Tim Gollisch, Stefan Treue, Fabian Sinz



Vladyslav Ivanov

Decoding neural activity in freely moving monkeys
Alexander Gail, Fabian Sinz, Michael Wibrall



Donatus Krah

Molecular imaging of alpha-synuclein as a path towards Parkinson's Disease diagnostics
Silvio Rizzoli, Tiago Outeiro, Rubén Fernández-Busnadiego



Ege Kingir

Influence of cardiac signals on cortical dynamics
Melanie Wilke, Caspar Schwiedrzik, Andrea Antal



Elisa Panzeri

Exploring the role and establishment of Idle Synapses
Oliver Schlüter, JeongSeop Rhee, Brett Carter



Marina Saade

Exocytosis in Microglia
Sonja Wojcik, Tiago Outeiro, Klaus-Armin Nave



Anna Siegert

Structural and functional studies of dopaminergic release sites in health and disease
Rubén Fernández-Busnadiego, Silvio Rizzoli, Tiago Outeiro

The Masters of 2022

Yuliya Badayeva

(A. Fischer / T. Outeiro)

Expression Profiling and Functional Characterization of Candidate MicroRNAs Associated with Depression

Maximilian Ferle

(S. Boretius / J. Clemens)

Development of a culture system and a custom pipeline for the acquisition and analysis of magnetic resonance spectroscopy data from primary skin fibroblasts

Svilen Veselinov Georgiev

(S. Rizzoli / O. Schlüter)

The dynamics of neurocan and related proteins during neuronal activity

Ali Ghadami

(R. Goya-Maldonado / A. Antal)

Effects of anti-depressant medications and intermittent theta burst stimulation on the neural correlates of patients with major depressive disorder

Sophie Gobeil

(M.-P. Zafeiriou / T. Dresbach)

Role of Retinoic Acid in GABAergic Neuron Development in Bioengineered Neuronal Organoids

Vladyslav Ivanov

(I. Kagan / V. Priesemann)

Diversity and predictability of dynamic social value-based decision-making

Henrike Maria Jungeblut

(R. Goya-Maldonado / C. Schwiedrzik)

Investigating predictors of intermittent theta burst stimulation treatment response in major depressive disorder – An evaluation of different target selection approaches and electrocardiogram parameters

Sinem Koçak

(A. Fischer / O. Schlüter)

Investigation of microRNA biomarkers of cognitive impairment in depression and hypercholesterolemia

Dafna Ljubotina

(J. Jaramillo / I. Kagan)

A Bi-Hemispheric Pulvino-Cortical Circuit Model for Macaque Visuomotor Decisions

Taisiia Nazarenko

(K.-A. Nave / T. Bayer)

Investigating the cell-type specific contribution of brain amyloid burden in a mouse model of amyloidosis

Petr Nejedly

(T. Moser / F. Wolf)

A computational model of optogenetic stimulation of the cochlea

Jackeline Neves Pereira

(T. Outeiro / S. Rizzoli)

Investigating Selected Effects of Alpha-Synuclein in Cultured Neurons: A Live-Cell Study

Neha Prasanna

(O. Schlüter / J. Rhee)

Effect of drug associated experiences on synaptic parameters

Carolina Quintanilla Sánchez

(T. Bayer / T. Outeiro)

Integral characterization of the 5xFAD mouse model for Alzheimer disease: spatial reference memory, biomarkers and histopathology: Towards the translational approach

Mahalakshmi Ramadas

(J. Jaramillo / J. Clemens)

In silico investigation of thalamic spindles during memory consolidation

Anna Siegert

(R. Fernández-Busnadiego / S. Rizzoli)

Towards structural characterization of synapses and synaptic plasticity by cryo-correlative light and electron microscopy

Dawn J Tan

(J. Clemens / M. Göpfert)

State-dependent processing of sensory stimuli of the *Drosophila* during courtship

Ilona Vieten

(C. Schwiedrzik / M. Wilke)

How our past shapes current perception: Exploring attractive and repulsive biases in serial dependence

Margaret Young

(T. Gollisch / J. Clemens)

Analysis of the Receptive Field Substructure of Retinal Ganglion Cells with Artificial Neural Networks

The Doctors of 2022/23



Theocharis Alvanos

Quantitative Molecular
Physiology of Active
Zones at Calyceal
Synapses of the Auditory
*Tobias Moser,
Silvio Rizzoli,
Erwin Neher*



Jenifer Rachel

Functional connectivity
of the L2/3 VIP-to-L4
SST circuit motif in the
primary somatosensory
and visual cortices of
mouse
*Jochen Staiger,
Camin Dean,
Oliver Schlüter*



Elsa Steinfath

Context, circuit
and modulation
of courtship signal
selection in *Drosophila*
*Jan Clemens,
Martin Göpfert,
Viola Priesemann*



Burak Gür

Molecular and circuit
analysis of stable contrast
processing in the visual
system
*Marion Silies,
Silvio Rizzoli,
Jan Clemens*



Alejandro Restrepo Arango

Neurovascular coupling in
a central nervous system
white matter tract
*Klaus-Armin Nave,
Susann Boretius,
Nuno Viegas das Neves
Raimundo*



Chrystalleni Vassiliou

The role of the Transient
Receptor Potential
Vanilloid 1 (TRPV1)
channel on Sharp Wave
Ripples, place cells and
spatial memory
*Camin Dean,
Hansjörg Scherberger,
Tobias Moser*

Application, Selection, and Admission 2023

In the year 2023, the coordination office received 506 applications from 80 countries.

Continent	Applications	Admissions
Europe (total)	66	10
Germany	23	3
Other West / Middle Europe	22	4
East Europe	21	3
America (total)	41	4
North America	13	1
Central/South America	28	3
Africa (total)	63	2
North Africa	25	2
Central/South Africa	38	0
Asia (total)	336	6
Near East	125	0
Central Asia / Far East	211	6
Australia	0	0

incl. 2 NEURASMUS students (from Egypt and Sudan)

Neurasmus is an Erasmus Mundus Joint Master Degree program (EMJMD) which is based on the cooperation of 6 partner universities, comprising Université de Bordeaux/France, Vrije Universiteit Amsterdam/Netherlands, Charité - Universitätsmedizin Berlin/Germany, Université Laval/Canada University of Göttingen/Germany, Universidad de Coimbra/Portugal. For details please refer to the Neurasmus website <http://www.neurasmus.u-bordeaux2.fr/>

The other side of the fence

Inside of the Chinese biotech industry by *Ye Chen*

When I was in Goettingen, I had been wondering how drugs are made, alongside with the business rationales. Nevertheless, I lingered as a postdoc

other hand normally reveals to how the capital makes business decisions. 'Type two' is for the company's future. I find this part gives me more freedom.

provides basic genetic services (gene sequencing, synthesis and editing). You can image it as a manufacturing company. My major responsibility was to increase profit through increase productivity of current workflow. It can be done via several means, such as by streamlining (simplification, standardization or automation) and optimization (or replacing expensive reagents) protocols. This is 'Type one' work. I also learned how the periodic finance data translates into operational activities and if a technic can help the production is not always related to how 'advanced' it is.

The 'Type two work' at GENEWIZ for me is to develop new methods to meet customers' ever-changing request. We are more likely to invest RD resources for requests from customers in a leading pharmaceutical company (why not academics? Because Academics are often so much ahead of the time that the services we developed for them cannot be sold to a second customer for quite a few years). For example, we developed NGS&TGS assay to QC the



Ice-bucket challenges when I (left in the picture) was in GENEWIZ

Source: private

as my interested was in imaging which is not quite a skill that industry highly demand. After quite a few years, when I finally made up my mind to go to the industry (and back to China), the only and major concern for me was, do I still have the freedom to explore driven by my curiosities? After more than 5 years, the answer turn out to be Yes, conditioned on how you synergize your personal curiosities with the capitals.

There are two types of work to me in the industry. 'Type one' is to keep the company running (and me being paid). This routine job often has less to do with curiosities or freedom but on the

I led the China branch of R&D group in GENEWIZ for 3.5 years. GENEWIZ



integrity and purity of AAV's genome for our gene therapy customers. It is of course more fun.

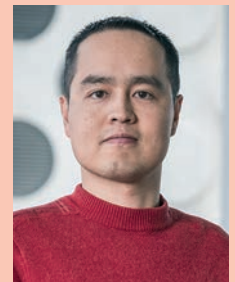
My current job is in an *in-vivo* gene editing company, ACCUREDIT Suzhou. I am still in the RD & pre-clinical department. Here, 'Type one' work is for drug development, which is also streamlined and gives me most of the pressure (and over-time work). The skillsets here were mostly multiple-tasking, prioritizing, engineering and everyday trouble shooting. The most distinct part from academics is, we rarely do mechanistic research (but we do read such papers). The practical outcome is usually the only thing we care. It imprints how we design a project and every single experiment.

My 'Type two' work at Accuredit are mostly platform projects, aiming to improve the technics that can be used for more future drugs. More resources can be invested into the projects, such that I can quickly know if my idea is right. It is very appealing to me, as we normally have more ideas than we can validate when we worked as a student or postdoc.

As you can tell, technically I have drifted far away from my PhD training. The only tie is the nanopore sequencing I occasionally used which is related to single channel recording. However, Göttingen and the programme endorsed me the methodology and courage to explore the unknown, by either the human race or just my institutions.



YE CHEN did his PhD in the lab of Luis Pardo and Walter Stühmer at the Max Planck Institute of Experimental Medicine. He is now a senior director in the pre-clinic and RD group of Accuredit which is a start-up focusing on *in vivo* gene editing in Suzhou, China. Before that, he worked as a director in R&D GENEWIZ China (now part of Azenta) for more than 3 years.



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From the Bench to Publishing

by Sebastian Jähne

I would like to tell you about my recent switch from academia to academic publishing. After many years as PhD and PostDoc in Silvio Rizzoli's lab it was time for me to decide on my next career step. I had enjoyed working in the lab, especially combining different methods and techniques to uncover biological functions, such as correlating imaging mass spectrometry with light microscopy to study protein turnover in cells and synapses. But while science was still highly interesting to me, I realized that the life of a researcher was maybe not compatible with the way I want to live. Thus, I asked myself: Should I stay or should I go? And if go, where would I like to go? All my previous career steps had been tailored to being a researcher and I was struggling with the decision to leave this path and even more with

answering the question: What else do I want to do?

Luckily, the IMPRS and GAUSS have an excellent career service, which I started to use excessively on my quest for a suitable new career path. I went to Industry Excursions and many Career Talks of alumni. This turned out to be a good move, as I ended up listening to the talk of a Publisher, which sparked my interest above all the other options I had seen. I liked that the role was close to science, while offering very versatile daily tasks. I was also fortunate to be able to participate in the mentoring program of the IMPRS and be matched with a publisher. This mentorship helped me to really understand the different roles within scientific publishing houses, assess my own strength and weaknesses for these po-

sitions and it eventually prepared me well for applying to jobs in this field. For me this mentorship was invaluable and I can only recommend to you to join this program if you can.

Last summer, I started working as an Associate Publisher for Springer Nature in Heidelberg. Heidelberg, which is set at the foot of green hills and crossed by the Neckar River, is a lovely city and a nice place to live.

But what about the job you may wonder:

As a Publisher I manage a portfolio of open access journals with external editors. This means that unlike a scientific editor, my job is not to assess manuscripts, but to work on developing journals. Each journal requires different strategies and a different form of



The current Springer Nature office in Heidelberg and a view of the city from the Neckar.

Source: private

attention and it is part of my task to develop an approach to help each journal to flourish. While this is interestingly challenging, it also guarantees for a highly versatile day-to-day job. The main aspects of the daily business consist of problem solving, data analysis and interpretation, strategic planning, and least but very importantly communication. As Springer Nature is a big company with many structures, it took me some time to learn the ins and outs of the job. A good onboarding, a very dedicated supervision, and helpful colleagues aided me to overcome these hurdles. Springer Nature is a very nice company to work for not least because of the people working here. We have a friendly, helpful, and interna-

tional culture that makes integrating and working easy and fun! I am happy about my switch from academia to

publishing and excited to grow within this job and help to disseminate science around the world.

Sebastian JÄHNE carried out his PhD and postdoctoral work in the lab of Silvio O. Rizzoli at the Institute for Neuro- and Sensory Physiology of the University Medical Center in Göttingen studying protein turnover in synapses and describing the architecture of neurons. He is now working as an Associate Publisher for Springer Nature in Heidelberg, Germany



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<https://www.springernature.com/gp>

Innovation? SPRIND!

Shaping the future at the Federal Agency for Disruptive Innovation (SPRIND) by *Erik Schöffner*

You are probably familiar with the question: “How can you apply your new findings in the real world?” For a broad range of researchers, this is a really tough one. During my PhD, I worked with mice that developed a multiple sclerosis-like disease and even looked at (fascinating) human samples but still, the translation into something applicable in the real world is often not that obvious. One evening, a friend of mine challenged me with an even more confusing concept: “Do you think we will use DNA to store data on the phone soon?” At first, I was fully perplexed, but after

discussing for a long time we came up with several ideas and it felt like a knot around my brain was broken. I knew that I could not stick to one topic forever and needed to see what else is out there. Mix this feeling with a recently discovered passion for science fiction books and there is only one possible solution: Do something innovative!

Of course, this is easier said than done. The best option probably is to create your own company – an advice that I still fully support – but in my case this public job offer appeared (destiny?): “Research & Business Ana-

lyst at SPRIND, the Federal Agency for Disruptive Innovation”. A job offer by a newly formed agency that is run by the state but is completely different from everything you would expect from the state: disruptive innovation as a dogma, start-up-like looking people, an actually cool website, a love for crazy projects and the headquarters in Leipzig (the objectively coolest city in Germany). After applying, failing and re-applying, I got the job. Yes, the first time I did not manage but, luckily, I went back. It is something that really does not work well with the German mentality: being okay and

Alumni

Outside Academia

honest about failure. This is one of the reasons why US Americans are much more entrepreneurial than we are, and this is something we have to change. But back to the story: I got the job after a great (second) interview. Forget

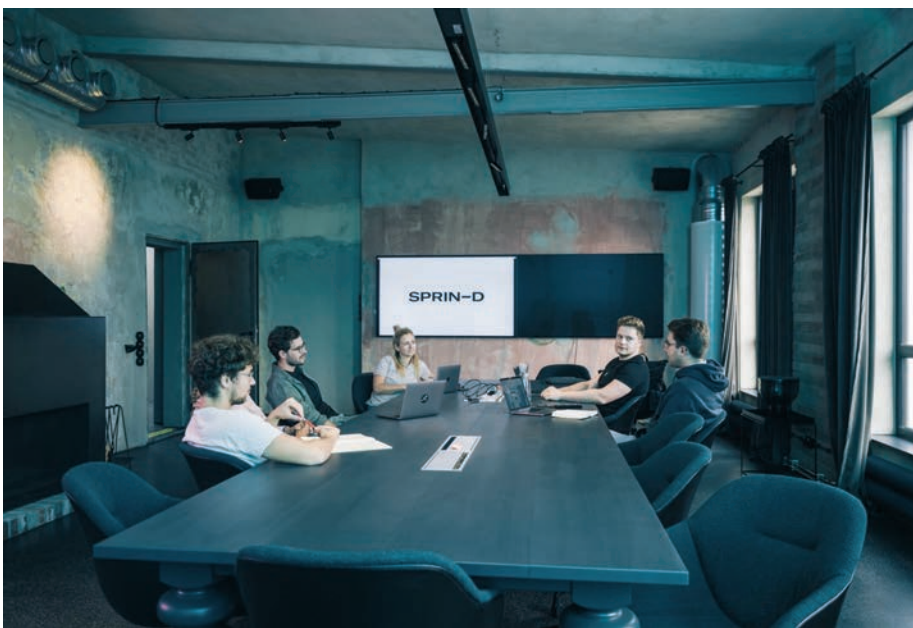
about “Where do you see yourself in 5 years?”, here the question is: “What is your dream innovation in 20 years?”

In theory, my job is to analyze project proposals, mostly focused on life

science. This is something I had done before during some consulting project work (I highly recommend internships!) but with SPRIND things got more exciting: Here, life science can mean about anything: heart pumps, diagnostic robots, synthetic cells, you name it. If we identify something interesting, we talk to the innovators. This basically means that I get the chance to ask all my questions to people with a brain full of ideas. They can be a visionary teenager from high school or a highly renowned director of a Max Planck Institute. Especially the interaction with the latter is quite interesting as, in this case, I am the one in the driver’s seat. This was intimidating the first couple of times but it quickly becomes nothing but exciting.

By now, after working with SPRIND for about a year, my job is different every day and I love it. I spoke at pitch events, organized a conference, helped innovators build their companies, met Bill Gates in Brussels and got to know so many exciting people in the German science landscape. I actually rediscovered my passion for science. And when I talk to my friends, I say that I basically live 20 years in the future in my head.

So what is my advice? Keep your eyes and ears open, do internships and embrace the world outside of academia because cool stuff exists! And if you ever work on a highly innovative project with breakthrough potential and positive societal impact, contact us! ... and yes, we also have interesting job offers every now and then. ☺



A typical day at the SPRIND headquarters in Leipzig. Discussions are fueled by the interdisciplinary of team members and the joint mission to promote change. SPRIND was set up during the pandemic, therefore many people also still work from home. Source: private



Erik SCHÄFFNER did his PhD in a shared project with Klaus-Armin Nave at the Max Planck Institute for Multidisciplinary Sciences (former MPI for Experimental Medicine) in Göttingen and Ruth Stassart at the Paul-Flechsig-Institute of Brain Research in Leipzig. He is now a Research & Business Analyst at SPRIND, the Federal Agency for Disruptive Innovation in Leipzig.

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Activities of Stresspunsch

and Science Communication in the age of AI revolution by *Monika Chongtham*

Let me tell you a story, a story about you, about something that you have experienced and occasionally may even have wondered why.





Why do we feel happy when interacting with a cheerful person?
 Why do we feel anxious or angry when someone greets us that way?
 Why is there an emotional contagion, as if we are mirroring the other person?

Hi! This is Stresspunsch and the above few lines are the opening statements to one of the educational reels in IG|@echelons.stresspunsch_101. Some of you may already know the answer to the questions. May be some of you are still wondering why. Why not find out more about it in the following link <https://www.instagram.com/p/CqveQHUIrLr/?hl=en> ? Why not observe the difference between reading the statements and viewing it as a reel with captivating visualisations and striking audios? All you need to do is 'Click' the link.


If Stresspunsch has managed to capture your attention so far, continue reading and see if the rest of the column is as intriguing as it started. Take a break from that normal mayhem in the lab and spend a few minutes to practise **lateral thinking** on how we can use our scientific expertise for the greater good. As the world of technol-

ogy changes fast, the times we live in have become more exciting than ever, yet unpredictable, where disruptive strategies are preferred over traditional ones. It just might be the case that the **Jack of all trades and a Master of None, becomes the population, who can thrive in this era.**

Who is this Stresspunsch , making such predicaments?

Last year, you have had the privilege to be introduced to Stresspunsch (:P). For those who missed it (for reasons that I do not understand @_@), Stresspunsch is an Instagram ideation to help spread awareness on mental illness, stress-resilience, and interesting brain facts. The delivery is made in the form of fun facts/insta reels/insta quiz etc., through a friendly but decisive and wise brain, as a mascot . Its main aim is to spread the knowledge of scientific findings to the youth to help them become more resilient by imbibing interesting neuro-tactics from an early age. In short, it is a hybrid of motivation pages with scientific reasoning with followers from different countries.

Don't you agree that as the world grows more virtual, it is apt to transfer education to social media, to catch the attention of the youth, where they spend most of their time? If your answer is 'Yes, I agree', please continue reading the next few lines, and if your answer is 'No, I do not agree', you still should continue to read the next few lines (^ ^), for who knows you might stumble on some interesting information, to accept or to deny.


Outreach activities of Stresspunsch 

Apart from the informative, yet less interactive Instagram information delivery strategies, Stresspunsch also organises live interactions with the youth online as well as offline. Soon after its inception and initiation in February 2022, Stresspunsch organised multiple Mental Health Talks in the Mental Health Month of May. The talks revolved around strategies to develop stress resilience and to change the perception in which we view stress. Stress is not always bad. It is a physiological response that originated to help us adapt (positive stress) to an environmental demand. However, when the chemicals that are released to help us adapt have not been used properly, they can turn against us (negative stress). For example, in the lab, when we experience a stressful situation that invokes a fight or flight response, chemicals are released. Some of us might exercise it off (an example of active stress coping), while majority of us would turn to binge watching or overeating (an example of passive stress coping). Passive stress coping strategies usually lead to the development of depression and anxiety, while active stress coping (social bonding, exercise etc.) is associated with stress resilience. Apart from this, participants were also taught about the impact that perception plays in the development of negative stress or positive stress response. In fact, a simple change in the way we perceive stress can trigger creativity as different brain regions are activated depending on how we perceive stress (Vartanian et al., 2020). To add to

it, low to moderate stress exposure is considered good to bring about stress resilience (Oshri et al., 2022). In simple words, one can view stress as equivalent to water. Water can cause damaging floods when its path is not charted out, while at the same time it can become a source of electricity that powers up our lives, when we know how to use it (Figure 1). In a similar way, stress can be used as a source of creativity with a small change in perception of what stress is. Wish you had known this before?



Figure 1

Recognition of Stresspunsch  as a Sci comm channel with a huge future scope

In recognition of Stresspunsch's previous activities as well as its scope in influencing the young minds in different regions of the world, the International Brain Research Organisation also awarded the Global Engagement Seed Grant, 2023, to Stresspunsch (in September, last year).


Through this grant, Stresspunsch organised events in India during the Brain Awareness Week (13th to 19th March). In keeping with the current trend of all the global neuroscience societies, Stresspunsch managed to bring together policy makers, psychia-

trists, neuroscientists and psychologists to conduct an excitable and informative session, complete with quiz sessions, for the enthusiastic participants. Stresspunsch hopes that creating such merging platforms would facilitate the incorporation of research findings from Neuroscience in the education system as well as state/national or international level policies. Some of the deliveries were gamified to facilitate information absorption. To give you a simplified taste of the events let us play the following game.

3. Count the no. of words that belong to the list below.

Anger, Loneliness, Despair, Jealousy, Grief, Melancholy, Pessimism, Hostility, Disgust, Guilt, Resentment, Misery, Powerlessness, Sorrow, Regret.

4. Is the no. of words belonging to list 3 more in the words you wrote down?

I bet that you remembered the words in the 3rd list more. Why would that be? Can Stresspunsch predict the future or is it simple knowledge about how the brain works? For those few, for whom this was not the case, feel free to drop me a message at IG|echelons.stresspunsch_101 .

Plot twist: Rise of AI as a necessary component for Sci Comm success

To clarify, the game word contents as well as quiz contents for the outreach program were developed using command prompts in ChatGPT (Open AI). The delegation of the task to the AI resulted in decreasing the time required in content development by at least 20 times. Additionally, using AI generated scripts and graphics (Midjourney AI), a small children's book series has also been initiated (see a page from the book in Figure 2).

In short, the rise of AI has transformed information delivery by increasing outputs and will revolutionise the field of science communication. Stresspunsch will continue using new AI technologies to increase the spread of information delivery within a short time.

Warning: Do not go to the next section without completing each former step.

1. Start your timer for 3 mins. Memorise the following words (30 in total).

Anger, Trust, Loneliness, Satisfaction, Serenity, Despair, Jealousy, Grief, Forgiveness, Excitement, Melancholy, Optimist, Pessimism, Powerlessness, Gratitude, Hostility, Hope, Fulfilment, Sorrow, Disgust, Generosity, Guilt, Bliss, Resentment, Appreciation, Regret, Inspiration, Affection, Misery, Admiration.

2. At the end of the timer, write down as many words as you can remember.



Figure 2

Want to contribute towards propagating Stresspunsch💖?

Stresspunsch is always looking forward to collaborations to help spread the word of stress resilience to every corner of the world. Use your neuroscience knowledge to help the society and the world. We can make an impact only by communicating our research back to the public. Stresspunsch also welcomes

any video snippets of 1 min from any of the young researchers on any interesting topic explained in a non-complicated manner, for the general public (See example reel, https://www.instagram.com/reel/CjBg5pgl6od/?utm_source=ig_web_copy_link). What is the use of knowledge, if you do not know how to communicate it to uplift the society! Only the ideas, which spread, stands the test of time.

Stresspunsch Sci Comm

Know more, stigmatise less.

If you have liked Stresspunsch so far, why not support it with a small follow? ^^

If you are an animator or know an animator, please contact me.

https://www.instagram.com/echelons.stresspunsch_101/?hl=en.

<https://www.facebook.com/stresspunsch>

https://www.instagram.com/echelons.stresspunsch_101/?hl=en.

<https://www.facebook.com/stresspunsch>

Monika Chanu CHONGTHAM joined the IMPRS society for the Neuroscience course in 2013. During her PhD thesis time in the Leibniz Institute of Resilience Research, she founded Stresspunsch Sci Comm in 2022. Soon after the initiation, Stresspunsch has organised multiple outreach programs for grooming mental health for the youth, thereby, attracting the attention of the International Brain Research Organisation in the form of the Global Engagement Seed Grant, 2023. Currently, she is aiming to propagate Stresspunsch, to a larger audience, while at the same time preparing to join a post-doctoral research position in a renowned lab for stress research.



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PhD-Postdoc-Pregnancy

& the Ultimate Time Management Lesson by *Nidhi Subhashini*

I am writing this to announce that just like you, I also never had time; I still have no time. It all started...wait, I forgot and I have no time to rethink about it. Therefore, I will start with my PhD days, which happened to be in Göttingen. Back in 2012, when someone asked to go out drinking on a Friday night, my typical answer would be "I have to finish this experiment and I am not sure how long it takes." or "this weekend, I must finalize the presentation for my thesis committee meeting." Or "I am required to practice for culture night events." I had no time to do what I wanted (or my friends wanted) because there were constant obligations to do other things which had priorities over "me-time". This no-time phase soon (well not so soon but soon enough in 2016) transitioned to a PhD thesis writing phase when I had again 'no time', for doing any more final experiments, or to participate in those culture nights or to even get up, and walk to the kitchen to drink (just water). I used to be so knackered with lack of time that sometimes, I skipped meals because I calculated in my head the 30 minutes of cooking and another 30 minutes of cleaning for just 5 minutes of eating will be enormous waste of time.

Well this writing phase also ended, with beginning of new era and 'lack of time' for searching new positions, contemplating new roles, writing applications and preparing for interviews while optimizing for eating healthy and doing just enough physical movements to stay fit. Only 14 hours after my PhD contract ended, my new post-doctoral contract had spooked. On the first day, I was there sharp 8 am to work

full time, hence acknowledging for the very first time that until the day before, I had 4 full extra non-working hours for myself (which I obviously mismanaged). Postdoc was not easy, more papers to read, increased experiments to reproduce and added fresh ideas to try. Being worn out and exhausted, I wondered if I had no time during PhD, how will I cope with working this much? Should I work part-time? How do so many other post-docs manage? Am I doing something wrong with time-management? These questions also had 'no time' to rest in my head. However, till date, I had not seen the busier days. In double quick time, I was pregnant and I decided to stop working for money. I wanted to be relaxed and give all my time, energy, and thoughts to the new member for a while. Only the first time in life, my wish and thoughts were so perfectly fulfilled. I had the most beautiful, impeccable baby in my hand, which literally took all of my time, energy and thoughts for next many years to come. Yes, all my time, even the shower time and those 5 minutes of mealtime. Thereupon came the revelation that I actually had enough time back in 2012, also back in 2017 because I used to have a sound sleep of 7 hours, a shower of 1 hour and a meal for 30 minutes.

In 2021, I was still struggling with time but with some courage and due to active presence of my ever-helping life partner, I joined a Project Management course where I learned to adjudge everything like a project. Cooking is a project; grocery shopping is a project, pregnancy, raising a child, PhD, career, vacations, everything can be regarded as a project. Some of which are straightforward, some agile, some are difficult and some are painless but every project has an end after a beginning. Every project needs a special and specific time-management skill. Not that it was my first time-management lesson during this course. But for the



A typical Eisenhower-Matrix: To classify a task into four categories based on how important the task is and how urgently the task needs to be executed.

first time I figured out the management skills that fit into my busy life or the first time I understood it correctly. I want to share here one of my favourites: The Eisenhower-Matrix! Following this scheme, we categorize our to-do list in four main classes and act accordingly. This helped me understand that most of my to-do list belonged to the recycle-bin.

It took me only few weeks of practice to stop holding on to tasks, which I will never do but keep contemplating about. Once I freed up enough junk space in my brain-SSD, things started to get faster, I found time to organise and the positive feedback loop followed. President Dwight Eisenhower thus gave me the time to think about myself and make plans to create my own path.

Today, I have a 100% full time professional position, a lovely daughter who appreciates my presence and discusses life with me, a life partner who I work together with, in the garden, in the kitchen and make home. I can again take longer showers and have time for vacations, without regrets. I have gained the confidence to complete tasks without stressing out and to say no to tasks, which will stress me out. It would not be wrong to say that time-management helped me manage my life.

Are you also someone like me who never had time or the "me-time"? Do you also have a long list of tasks, which you could not work upon for last many years? Are you sure they do not belong to the recycle bin? Will you decide it later? No, please decide it now, or at least schedule the decision soon because decisions are always important! *"If you want to appreciate the present today and not in the hindsight, the best way would be to handle time with care."*



Source: private

Nidhi SUBHASHINI is an alumna of IMPRS Neuroscience 2011 batch and defended her thesis in year 2016. She still lives in Göttingen and can be located in GGNB and IMPRS networks on Facebook and LinkedIn. Sharing is one of the most explicit signs of caring and hence here she is. Please feel free to write feedbacks or queries to her anytime.



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Crash Course en Español:

working with Complexly to bring science to Spanish speaking communities *by Melanie Nuesch*

Availability of educational content in Latin Spanish has historically been highly neglected. During the pandemic I started a scientific YouTube channel with the aim to spark enthusiasm for learning and science, broaden the availability of content and give visibility and representation to scientists at different stages of their careers. Many were IMPRS colleagues from all over the world (YouTube channel name: Mel Nuesch).

By telling these scientists' stories, viewers can relate and visualize what kind of path they want for themselves. However, there was another type of content I wanted to produce but did not have the capacity due to my workload (and being only one person): lectures about basic scientific subjects that help early stage students.

Afterwards, I find out that Complexly, a company from the United States very well-known for their highly successful YouTube channels (SciShow, Crash Course and more) was working to expand into the Spanish speaking world. I happen to have followed Complexly's channels for years (both for leisure and studying - including the IMPRS Neuro

entry exam preparation!), so I knew how fantastic they were. I was lucky to join their team as a freelance Spanish communications consultant and strate-

For this project they did something a little different – with funding provided by the National Science Foundation, they worked with Education Develop-

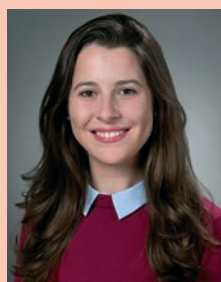


Panel with some cool moments from the videos. YouTube Channel "Crash Course en Español". Different moments from the Química series.

gist, allowing me to contribute to this wonderful project that fits like a glove to bridge the aforementioned gap!

Complexly recently launched its first Spanish-language channel, Crash Course en Español! The channel kicked-off in March 2023 with the first series, Química (Chemistry) and has already been very well received.

ment Center (EDC, USA) on a research project to test and learn about the best practices for adapting an existing Crash Course series from English into Spanish. This study was conducted in several phases from 2021-2022, and the findings were illuminating! We learned so much from this study and the learnings have been applied to the Crash Course Biología (Biology) series that's rolling out now.



Melanie NUESCH is an IMPRS Master's alumna who worked in neuroepigenetics and genetics, combining bioinformatics and neuroscience. She is a molecular biomedicine PhD student at the University of Bonn, working in Prof. Dr. Eicke Latz's group in systems medicine. She also does science communication via her YouTube channel "Mel Nuesch" and other social media platforms, and became a freelancer for Crash Course en Español (Complexly, USA).

We're thrilled that these videos are rolling out publicly! We're so grateful to our research partners, research participants, and excited to bring Crash Course to even more people around the world! Check out our videos on the Crash Course en Español YouTube channel and join our nice community! It doesn't matter if you are a student, teacher or life-long learner, this channel is for you!

Neuroscience and Education:

Insights into Brain Based Teaching by *Zaved Ahmed Khan*

Brain-based teaching is an approach to education that focuses on understanding how the brain works and using that knowledge to improve teaching and learning outcomes. This approach recognizes that the brain is a complex and dynamic organ that can be influenced by various factors, including environment, emotions, and experiences. The basic premise of brain-based teaching is that when educators understand how the brain works, they can create learning environments and experiences that are more engaging, effective, and

and promoting social and emotional learning.

Using active and experiential learning strategies: The brain is wired to learn through experience and exploration. Brain-based teaching emphasizes the use of hands-on activities, group work, and other experiential learning strategies that engage multiple senses and encourage active participation.

Making connections between new and existing knowledge: The brain is better able to remember new information when it is connected to prior knowledge and experiences.

Brain-based teaching encourages educators to help students make connections between new information

and growth. Brain-based teaching encourages educators to provide opportunities for students to explore new topics and ideas, take risks, and challenge themselves.

Overall, brain-based teaching is an approach that recognizes the importance of understanding how the brain works in order to improve teaching and learning outcomes. By creating a positive and safe learning environment, using active and experiential learning strategies, making connections between new and existing knowledge, providing opportunities for reflection and feedback, and promoting novelty and challenge, educators can help students reach their full potential and become lifelong learners.

Research has shown that brain-based teaching can have a positive impact on student learning outcomes (Willis & Willis, 2011). By understanding how the brain works and using that knowledge to inform teaching practices, educators can help students develop important cognitive and socio-emotional skills that are essential for success in school and in life (Wolfe, 2010).

Brain-based teaching is used in various educational settings, including K-12 schools, colleges and universities, and professional development programs for educators. This approach to teaching is not limited to any particular subject or discipline and can be applied to a wide range of academic areas, including math, science, language arts, social studies, and more. Brain-based teaching is particularly useful for educators who are interested in creating more engaging and effective learning

meaningful for students. The approach is grounded in neuroscience research, which has shown that the brain is capable of growth and change throughout life, and that it is highly adaptable to new experiences and environments.

Some of the key principles of brain-based teaching include:

Creating a positive and safe learning environment: When students feel safe and supported, their brains are more open to learning. Educators can create a positive learning environment by fostering a sense of belonging, providing clear expectations and feedback,

and what they already know, using analogies, metaphors, and other techniques.

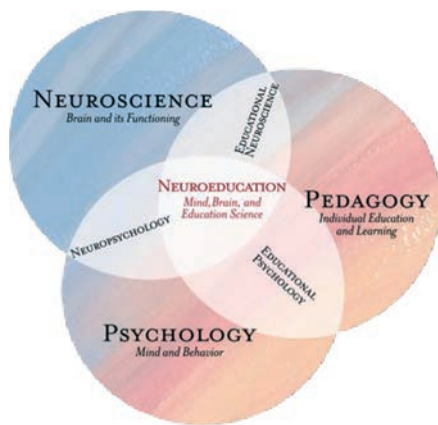
Providing opportunities for reflection and feedback: The brain needs time to process and consolidate new information. Brain-based teaching includes opportunities for students to reflect on their learning, receive feedback from peers and teachers, and revise their understanding based on new information.

Promoting novelty and challenge: The brain is stimulated by novelty and challenge, which can help promote learn-



Alumni Careers

experiences for their students. By understanding how the brain works and using that knowledge to inform teaching practices, educators can help stu-



dents develop important cognitive and socio-emotional skills that are essential for success in school and in life. Many schools and educational organizations offer training and professional development programs for educators who are interested in learning more about brain-based teaching. These programs can provide teachers with the tools and strategies they need to create more effective learning environments and improve student outcomes. Additionally, there are many resources

available online that educators can use to learn more about brain-based teaching, including books, articles, and webinars. While there may be variations in how it is implemented, the principles of brain-based teaching are applicable in any educational setting and can be adapted to suit the needs and cultural context of different regions and communities.

I have been able to generate interest in brain-based teaching in India, as educators and policymakers recognize the importance of using evidence-based practices to improve teaching and learning outcomes. Many schools and educational organizations in India have started to incorporate brain-based teaching principles into their curricula after my training programs and workshops across India. Baba Farid Group of Institution has introduced Brain Based Teaching into curriculum of Bachelor of Education (Teacher Training). I am sure this will set the precedence in other colleges in India.

In conclusion, brain-based teaching is a powerful approach to education that has the potential to transform teaching

and learning outcomes. By using evidence-based practices that are grounded in neuroscience research, educators can create learning environments and experiences that are more engaging, effective, and meaningful for students.

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Zaved Ahmed Khan completed his Master's thesis in Ludger Hengst's lab at the Institute of Biochemistry in Martinsried. After graduating in 2004, he joined VIT University as a lecturer and completed his PhD in the field of neuropharmacology. He has worked on "Pre-clinical studies on the role of green tea polyphenols/EGCG nanoparticles for cancer therapy" and "Encapsulation of L-theanine to increase its bioefficacy as anxiolytics" with research grants from the National Tea Research Foundation, India.

Presently he is working as Dean, Faculty of Sciences, Baba Farid College, Baba Farid Group of Institutions, Bathinda, Punjab, India. He has been given the additional role of Dean of the School of International Studies at the same institute. He is exploring the neuroscience extension to education, psychology, engineering and management. He is also a coordinator of the Consortium of Higher Education Institutes, Bathinda, which has been inspired by the International Max Planck Research School, in Germany.

Joining the program since 2022



Michael Heide

came to Göttingen in 2022 as an ERC starting grant funded Junior Research Group Leader. After his studies in Tübingen and Heidelberg, he did a postdoc in Wieland Huttner's lab at the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden. His group at the German Primate Center focuses on development and the evolution of the primate neocortex. In our program, Dr. Heide gives lectures on Vertebrate Neural Development as

well as on Primate Brain Development and Organoids.

Further information: <https://www.uni-goettingen.de/en/670953.html>



Oleksiy Kovtun

Having started his career as a Bachelor student at V.N. Karazin's Kharkiv National University in Kharkiv, Ukraine, Dr. Kovtun followed his path through the following stations: MSc in Kharkiv, PhD in Brisbane (Australia), postdocs in Brisbane and Heidelberg. In 2021, his next

career step brought him to Göttingen where he became a Max-Planck Research Group Leader at the MPI for Multidisciplinary Sciences (City Campus). The group's current research projects decipher how vesicular coats drive molecular cargo retrieval in endosomes, the central cellular transport hub. In our program, Dr. Kovtun teaches in the area of Signal Transduction, Membrane proteins and Trafficking.

Further information: <https://www.uni-goettingen.de/en/659736.html>

Left the program since 2022



Arezoo Pooresmaeili

joined our program in 2015 when she became a junior group leader of the Perception and Cognition Group at the European Neuroscience Institute. Ever since, she supported our program in the selection procedures of the new students and as host of the lab rotation seminars. She offered lab rotation projects to our first year students, and accompanied several Master students on their ca-

reer path. Dr. Pooresmaeili taught our students the Quantitative Methods in Psychophysics and in Decision Making Studies. She now is an Associate Professor of Psychology at the University of Southampton, UK, bringing in her expertise in Visual Attention and Perception, Visual Processing, Psychophysics, fMRI and Imaging, and Cognitive Neuroscience. We thank Arezoo for her commitment to our program and wish her all the best for her future endeavors.

Further information:

<https://www.uni-goettingen.de/en/550502.html>

<https://www.southampton.ac.uk/people/62bxyp/doctor-arezoo-pooresmaeili>

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Wiebke Möbius
Maria-Patapia Zafeiriou

*For details regarding the research of all faculty members, please see
<https://www.uni-goettingen.de/en/665804.html>*

Glimpses from the Indian Culture Night '23

by Sukanya Chakraborty, Dyutika Banerjee and Vismitha Nadig

“In India we celebrate the commonality of major differences; we are a land of belonging rather than of blood.”

~ Shashi Tharoor

India - a land where harmony thrives in every sphere of art and culture, with a nexus for community and brotherhood weaving the tapestry of one of the most vibrant and complex nations in the world. We celebrate diversity, while rejoicing in customs as old as Time to build and foster closely-knit bonds, which the Indian students of the IMPRS programs try to present every year in their very own culture night.

The Indian Culture Night has always been an event well looked forward

to in the IMPRS community, promising a tryst with rich and unique cultural highlights, delicious food, dance, music and a lot more. Since the halt in the culture nights due to the pandemic, this year marked the first Indian Culture Night after many years and needless to say, expectations and excitement were brimming. It was quite daunting to plan and organise such an event, which welcomed a crowd of over 400 people, but the night turned out to be an unforgettable one.

The cultural programme showcased the social, linguistic and classical diversity of Indian dance and music. There were performances including semi classical dances, aimed at blending some of the most elegant classical

art forms like Kathak and Bharatanatyam. The music performance encompassed an instrumental rendition of “Raaga” (a unique classical Indian music tradition characterised by the feature of improvisation during the performance of the melodic framework) with the flute and sitar as well as an assemblage of popular Bollywood and semi classical songs. The latter was accompanied by instruments like the duduk and sitar and was truly a euphonious experience. The conclusion of the cultural programme was a fun and lively medley of very popular Hindi cinema dances performed by multinational students of our IMPRS family. It was a vibrant, colourful scene unfolding on stage with enthusiastic performers clad in gorgeous Indian attire.



Campus Events

The show engaged the energetic audience, and the room was filled with loud cheers and applause as hundreds of people grooved to the beats of Bollywood music.

It was truly refreshing to witness the group choreographies which succeeded in bringing together Indians and Non-Indians across several batches of the program and having what many of them later described as “one of the most fun experiences” they ever had. The performances then melded into some exciting competitions - Rangoli making (an Indian art form created often using symbolic or floral patterns on the floor with flowers, colours or sand) as well as Golgappa eating (a common street food-based snack pop-

ular all across the country by many names, consists of spicy potato filled crispy dough balls dipped in a tangy tamarind water). The attendees at the event were then treated to a delectable taste of India’s rich culinary heritage. The menu included Rajma Chawal, a classic North Indian dish comprising red kidney beans cooked in a blend of traditional Indian spices and served with rice. In addition, the guests savoured Chicken Tangri Kebab, succulent chicken marinated with spices and cooked to perfection in the oven, served with a spicy coriander chutney. For a sweet end to the meal, Suji ka Halwa was prepared, a famous dessert made with semolina and clarified butter. The food has always been the centerpiece of the Indian Culture Night,

and this time was no exception as the guests returned for seconds and even thirds.

India is home to over a billion people, boasting incredible cultural diversity encompassing languages, geographic regions and features, religious traditions, art forms, literature, spirituality and social customs. In recognition of this plethora of exotic and distinct culture, a single night would fall short in representing our homeland. Nevertheless, we hope the night offered a glimpse into the colourful and beautiful life in India and in the years to come many more such culture nights would continue to do the same.

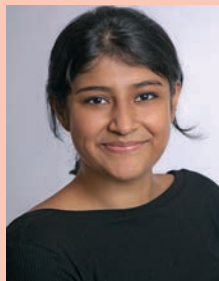
Dyutika BANERJEE, Sukanya CHAKRABORTY and Vismitha NADIG

are first year Master students of our Neuroscience Program:

<https://www.uni-goettingen.de/en/666507.html>

<https://www.uni-goettingen.de/en/666513.html>

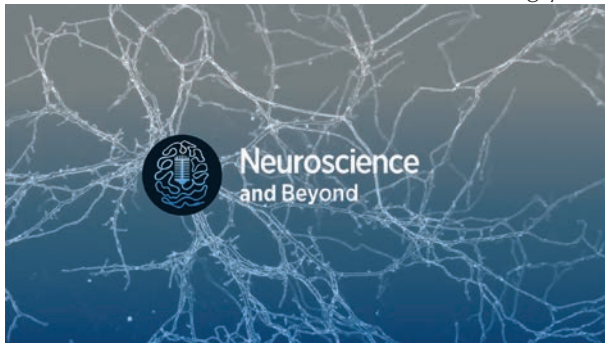
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Podcast “Neuroscience and Beyond”

Learn more about neuroscience and the life of a scientist by *Svilen Georgiev*

Get a glimpse of a scientist’s job and learn firsthand about the latest research in neuroscience! A new podcast series “Neuroscience and Beyond” supported by IMPRS was launched in March 2023 by a Göttingen-based team. Each month we meet with various neuroscientists in our pop-up studio at the Deutsches Primatenzentrum (DPZ) and talk about their research and life in academia. By doing this, we aim to bring science and especially neuroscience closer to the general public and thus make the latest scientific discov-



eries and the knowledge derived from them understandable and accessible for everybody.

“Neuroscience and Beyond” is an initiative started by IMPRS very own student Svilen Georgiev together with his fellow PhD candidates from University Medical Center in Göttingen: Kristina Jevdokimenko, Lennart Schneider and Sabina Nowakowska. Svilen investigates the role of extracellular matrix in neuronal plasticity in the lab of Prof. Dr. Silvio Rizzoli. Kristina works on synaptic vesicle biogenesis in developing neurons using state-of-the-art microscopy techniques in the group of Dr. Eugenio Fornasiero. Lennart researches neurocardiac diseases using organoids in the lab led by Dr. Patapia Zafeiriou. Sabina studies synaptic integration mechanisms in the neurons

of the cochlear nucleus in the group of Dr. Antoine Huet.

We are passionate about communicating science, but also excited about a scientific career! Not only do we ask our guests to break down their research in simple terms, but also to tell us about the road that took them to where they are now, with all the struggles and joys along the way. At the end of each interview we dive deeper into the research topics, for those of you, who are hungry for more advanced scientific content. In addition, we discuss current problems in science and talk about their possible solutions.

In the first episode, we talked to Dr. Felipe Opazo about the use of antibodies and nanobodies in microscopy. In brief, we discussed how to visualise molecules in the brain. Dr. Opazo also gave us an interesting comparison of doing research in academia and industry. In the

second episode, we dove into the exciting topic of stem cells and organoids with Dr. Patapia Zafeiriou. We touched on the topic of having a family and pursuing a career in academia. So far, we have several additional episodes, which you can check online. And there is more to come!

Our podcast is freely available to watch on YouTube and listen on Spotify, Amazon Music and Apple Podcasts. The episodes are published regularly on the last Monday of the month. Neuroscience and Beyond is also present on the main social media platforms: Facebook, Twitter, TikTok and Instagram. You can follow us to stay updated and get some extra easily digestible neuroscience content: <https://linktr.ee/neurosciencebeyond>

We would like to express our deep gratitude to the IMPRS for Neuroscience Program Committee as well as to the Cluster of Excellence Multiscale Bioimaging in Göttingen. Without their enormous support this podcast would not have been possible.

Svilen GEORGIEV joined the IMPRS program for Neurosciences in October 2020 and is now working as a PhD student in the lab of Prof. Silvio Rizzoli at the University Medical Center in Göttingen

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The 20 year Jubilee of Sandra Drube

by Anna Marie Müllen

All of us students have been there: bureaucracy. Especially the anachronistic pen-and-paper version that Germany makes out of bureaucracy, relying with unwavering faith on fax machines, the ability to understand “Beamtendeutsch”[1], and in-person attendance. Though with all its drawbacks - German bureaucracy has made many of us understand one important thing: With our invaluable Sandra Drube, life in Germany is decidedly easier, and scientific careers are less prone to failure.

Even the speech of Prof. André Fischer during this year’s graduation ceremony contained advice on how to deal with bureaucracy, namely “to not let it get in the way of science”. It was during that very graduation ceremony, where Sandra and I had a long over-

due conversation to catch up on life, and where she causally mentioned her 20 years of experience with the IMPRS Neurosciences.

Since January 2003, Sandra has worked her way right into the heart of the IMPRS, helping students throughout their Göttingen-time. She has coordinated applications, admissions, visas, and organized the three most important things for life in Germany: health insurance, liability insurance and bank accounts. She has arranged for accommodations, stipends, NEURIZONS conferences, city tours, and many more. She even took care of those neat little Welcome Packages my classmates and I received in October 2017; including a map of Göttingen’s bike lanes accompanied by pointed advice to please just wear a helmet.

Not just competent in the Do’s, Dont’s and Must-Do’s in Germany and academia, she has proven time and time again to care personally about every single student passing by her office. She has given us careful advice, pushing us sometimes rather pointedly towards a twice-extended deadline, and backed us up whenever needed. She has always done so in a friendly and calm manner, with unfailing professionalism.

So naturally, - when being told there is a 20-year jubilee coming up - alumni and students decided to give something back. A small team was quickly assembled to organize a celebration for January 2023. With the help of Jonas Barth, Steffen Burckhardt and Christiane Becker, a rather extensive list of email addresses from alumni, students, faculty members, colleagues from the GAUSS/GGNB offices, the staff of the European Neuroscience Institute, and every other person that came to mind was assembled.

Mails were sent out to alumni and students, who provided us with monetary support, and sent stories about Sandra to be collected in a Guestbook. By early January, we had the pleasure to have received close to 150 emails, every single one containing a positive response and/or confirmation to attend the event. Often adding a line on how Sandra put a smile on people’s faces and outlining a personal story, these mails are a testimony to the value Sandra has brought to the IMPRS Neurosciences.



On Friday, 13th of January, we had the pleasure to welcome around 80 guests at the decorated cafeteria of the Max Planck Institute for Multidisciplinary Sciences (City Campus). Escorted by Jonas, an unexpected Sandra arrived at 10:15, and - given only a very brief warning to take the edge off - she entered a room full of people applauding her 20 years of service.

A short speech, flowers and gifts from many people later, it was time to open the buffet, though Sandra herself rarely found time to enjoy the food as she was constantly crowded in by people trying to congratulate her personally. Speaking for the organizing team and myself it was a pleasure to catch up with fellow students, and current and former colleagues, supervisors, and PIs over coffee & quiche.

My thanks to my fellow organizers of this event: Andrew Octavian Sasmita,

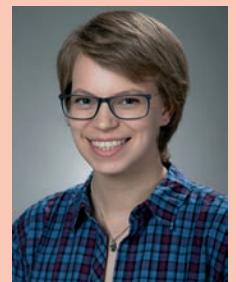


Henrike Jungeblut, Krishna Perianen Ramasawmy, Thao Thanh Do, Tor Rasmus Memhave, and Varsha Ramakrishna. My thanks to the alumni and students who enabled this event with their donations and their support. My thanks to the attendees, and to all

those who replied with kind words. And last but certainly not least, speaking on behalf of the students, our heartfelt thanks to Sandra.

Anna Marie MÜLLEN graduated from the Neuroscience Program with a Master's degree in 2019, after which she enrolled in Medical School in Göttingen (tentative graduation: March 2027) while continuing her work in research. Since October 2022, she is a PhD candidate in the GGNB program Systems Neuroscience under the supervision of Dr. Renate Schweizer at the German Primate Centre

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A Glimpse of Globality in Göttingen

Marking the Return of Culture Nights *by Erinne Ong*

When we first arrived in Göttingen and began our master's program, the prospect of meeting 20 new people had been both exciting and nerve-racking. Even more so because we had to grow accustomed to an entirely new environment and shake off the rust of engaging in social interactions. Multiply this by five-fold and you get the Culture Nights—bringing together fresh faces and diverse backgrounds, and reflecting the internationality of the IMPRS programs.

As newcomers, we had no idea what to expect. It turned out that many of our seniors were also in the dark. After all, these events were being held again for the first time since the COVID-19 pandemic dashed hopes of in-person gatherings back in 2020.

But we need not have worried. Between the tasty delicacies and lively music, the Culture Nights delivered on the promise of blending cultural exchange with high-spirited recreation.

In a science-themed event, Cell Culture Night kicked things off with glowing light sticks and an event poster that

was creatively designed in a research article format. When else might you ever see Eppendorf tubes at a party? For us scientists-in-training, a light-hearted night out was a refreshing start to our time in Göttingen.

Fast forward to December and the Winter Culture Night served as the perfect prelude to the festive season. As Christmas songs filled the cold air with warmth, guests wore reindeer headbands and enjoyed mugs of hot chocolate and sweet treats like gingerbread cookies. Through a quiz game, we appreciated the variety of ways that the world celebrates the holidays and broke the ice by getting to know others in our group.

Continuing with the celebratory atmosphere, we turned the page to 2023, with the Spring Festival Culture Night taking place to ring in the Year of the Rabbit. Among the many highlights, we put our chopsticks skills to the test by passing a ping pong ball in a relay game. Another challenge came in the form of a quiz that posed questions about Lunar New Year traditions and asked participants to distinguish the

Asian language used in songs—by no means an easy task even for avid anime or K-pop enthusiasts. Guests also got the chance to taste jiaozi (Chinese dumplings), klepon (Indonesian glutinous rice balls), Chinese wine, and soju (Korean spirit).

The Indian Culture Night followed, featuring a captivating show of music and dance and several flavorful dishes to spice up everyone's taste buds. This spectacular event deserves a story of its own (see page 25) as several of our classmates took part in the preparations, from cooking to performing on stage.

Beyond enjoying the events, the Culture Nights also granted us the opportunity to strengthen our teamwork as part of the organizing committee. We became friends with previous batches of students, sharing the responsibilities of planning activities, hosting during the night itself, and cleaning up afterwards. As we came from similar cultural backgrounds, it felt like a comfortable integration into a familiar space, while simultaneously appreciating the individuality of our experi-





ences. Above all, together we savored the sweet success of hearing that everyone had a great time.

With the next Culture Nights on the horizon, we can look forward to vibrant events that bridge the diversity of people in the IMPRS community, as more cultures are set to take the spotlight and give us a glimpse into the globality of Göttingen.

Erinne ONG is currently a Master's student of the IMPRS Neurosciences program. She graduated with a degree in Biology from De La Salle University, Philippines.

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Neurizons 2022- networks grow, ideas flow

by Varsha Ramakrishna

On the crisp, sunny morning of 7 June 2022, the Max Planck Institute for Multidisciplinary Sciences (MPI-NAT) at Fassberg was bustling with activity. Students and faculty members from Germany and abroad were eager to attend the popular neuroscience conference

in Göttingen, in-person after four long years. Neurizons was back!

Organized by the MSc and PhD students of IMPRS for Neurosciences in Göttingen, Neurizons is a biennial conference that aims to promote the

exchange of knowledge and establish connections among senior scientists and young researchers from various fields of neurosciences. As Neurizons 2020 had to be shifted online due to the pandemic, Neurizons 2022 was a hybrid conference (for the first time



ever!) held from 7-10 June 2022 at the MPI-NAT, Fassberg Campus.

In addition to the scientific sessions, there was a career fair with workshops and talks, poster sessions (both online and in-person), the young investigator contest, short talks by young scientists called the 'Power pitch talks' and a stimulating panel discussion. As part of the social events, the participants enjoyed a tour to the Deutsches Primatenzentrum (DPZ), one of the biggest primate research centers in Germany and an exciting barbecue dinner party.

The career fair consisted of interactive workshops and talks from people who chose varied career paths after a PhD. There were insights from the fields of education (Nandini Chatterjee Singh), academia (Jayeeta Basu), entrepreneurship (Patrick Günther), consultancy (Oleksandr Yagensky) and science management (Christian Schlögl). The workshops included "Becoming an effective scientific storyteller" by Chapin Rodriguez and "Improv for Sci-

entists" by Katie Pagnucco. Both the workshops were very interesting and received glowing reviews by the participants.

The scientific sessions of the conference began with a keynote lecture by Nora Abrous, Director of Inserm, France on the topic "The Temporal Origin of Dentate Granule Dictates Their Morpho-functional Properties". The rest of the day consisted of talks by Mickael Tanter on using ultrasound in neuroimaging, Anna Planas on immune reactions due to brain damage after a stroke, Gerd Kempermann on adult neurogenesis and Georg Keller on predictive processing in cortical circuits. In addition to this, there were power pitch talks, a new event introduced this year. Here, young scientists, selected among the top 10 abstracts submitted for the poster session, shared a five minute 'teaser' of their work with the audience.

On the next day, the scientific talks began early in the morning with Andre Fenton talking about memory and

cognition in the hippocampus, Ivana Rosenzweig with mechanisms of dreaming and Sylvia Schröder discussing how behavior affects visual processing. The contestants of the Young Investigator Contest, Madhura Ketkar (University of Mainz), Zurna Ahmed (DPZ) and Natalie Yashoda Dikwella (University of Ulm) shared their work with short talks and the winner received attractive prizes from Nature and EIT Health Alumni (congratulations Zurna Ahmed!). Continuing with the scientific sessions, Denise Cai and Timo van Kerckorle enthralled the audience with their talks on memory stability and flexibility and three-photon imaging in macaques while Ruben Busnadiago shared his work on understanding protein aggregation in neurodegeneration using cryo-electron tomography.

A lively panel discussion moderated by Stefan Treue (Director, DPZ) on "Are we smart enough to understand our brains?" brought up interesting questions and stirred up conversation amongst the participants. The panel-

ists Marta Carava (Ruhr-University Bochum), Lucia Melloni (MPI Empirical Aesthetics, Frankfurt), Catrin Misselhorn (Uni-Göttingen) and Fabian Sinz (Uni-Göttingen and Tübingen) brought their interesting and varied perspectives on bias in experimental design, can technology make us 'smarter', hierarchy of intelligence amongst species and much more.

In the poster session, the on-site participants enjoyed discussing their work along with some wine and cheese while the online participants presented their posters in a scheduled Zoom call. The best poster prize (sponsored by Nature and EIT Health Alumni) was awarded to Nikoloz Sirmopilatze (DPZ). In the evening, an exciting barbecue party was hosted by the organizers for all participants, giving them another opportunity to network among their fellow scientists while enjoying some Currywurst and beer.

The last day of the conference consisted of another keynote lecture by Matthew Larkum (Chair, Neuronal Plasticity, Humboldt University of Berlin) on "The Dendrite Hypothesis-the role of dendritic structure of pyramidal neurons in high-level cognition", while Floris de Lange discussed the predictive neural representations in vision and Vatsala Thirumalai presented her

work on recent advances on cerebellar activity during motor behaviour. Lucia Melloni and Christian Lüscher impressed the audience with their talks on cognition of speech comprehension and drug-evoked synaptic plasticity. Elizabeth Buffalo and Jorge Jaramillo introduced the audience to neural dynamics of memory formation in the monkey hippocampus and subcortical-cortical interactions for cognitive computations respectively.

In the closing ceremony, the Creutzfeldt PhD thesis award* was given away by the IMPRS (congratulations Nikoloz Sirmopilatze and Agnes Steixner-Kumar!) along with the prizes for the best poster and Young Investigator Contest by Nobel Laureate Erwin Neher. The Creutzfeldt Award is endowed with

2,000 Euros and is donated by Sartorius stedim.

A heartfelt thanks was delivered to all the attendees for such a lively participation and active discussion; to the sponsors and partners who helped make this event a great success and finally to the organizers who worked tirelessly for over a year to put this event together. Thank you all and see you in 2024!

*Editor's note: The Creutzfeldt Award is endowed with 2,000 Euros and is donated by Sartorius Stedim Biotech GmbH.

Varsha RAMAKRISHNA is a doctoral student in the lab of Tim Gollisch at the Department of Ophthalmology in the Universitätsmedizin Göttingen (UMG).

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Fire, wire, inspire

A short tale of people sitting around a hearth, sharing stories of science *by Lucía Rojas & Theocharis Alvanos*

Every person embodies a gathering of experiences from their lives as they come from a different context and reality. The beauty of connecting with someone new can come from throwing anchors at the other to find a common ground when discussions shape in the comfort of a shared space. Working in science is funny, we have

prevent us from connecting with them. We believe that both sides have to gain from meeting in non-threatening, non-competitive environments and sharing not only the wisdom of old, but also new perspectives, having fun and pondering together at the possibilities of the future. Sometimes we compare ourselves to others thinking, “What

Such a welcoming setting was provided by the IMPRS Neuroscience retreat in August 2022 in Durbach, Germany. The municipality is famously touristic, visited by people who appreciate nature and wine-connoisseurs alike. What more can anyone ask for than endless, sunlit hill ranges decorated with vineyards and picturesque houses as far as the eyes can see? In such a setting, discourse and intellectual exchange is sure to flourish. But there is more. Starting off on the initiative of the organizing students, we had a round of circular speed dating with all 30+ participants of the retreat. There we were, with 5 minutes on our hands for “date”, balancing on a rope between small talk, and deeper questions that would later spark engaging discussions. Being placed face to face with faculty, coordinators and students alike, all sharing the same feeling of slight awkwardness quickly started breaking the proverbial ice. Imagine, if you will the tension leading up to any kind of scientific presentation. “How will they think about my project?”, “Is my work exciting enough?” are some common automated thoughts, afteref-



to ground our own ideas and connect with them before sharing them in an academic environment. Overthinking about the accuracy of thoughts and getting to the point, fast and efficiently, can feel like sinking in a sea looking up at some sunrises that escape through waves of insecurity. It is through play and storytelling, however that humans naturally grow inside and integrate to larger communities. Why should the scientific community be any different?

We stand in the shoulders of giants. In fact, as students in Göttingen we have come across some of these giants in the form of our professors. Now, it may be a tinge of impostor syndrome or an idolization of their imposing academic records that would normally

makes me special among these gifted people”. Well, all you need sometimes is to hold your drink and tag along for funny conversations. Maybe, as our coordinator Jonas shared with us, drinking a lot and pushing through the night is your special talent.



fects of switching off empathy, first of all to ourselves. When you start your day with a hike through the vineyards, marveling together at the nature and playing all kinds of group games, these limiters will unavoidably melt away. Importantly, the participation of IMPRS Neuroscience alumni yielded some reassuring, relaxed discussions. Their diverse and ever-evolving career paths snapped us away from the all too common tunnel vision of the PhD, lowering the career related anxiety.

Many among the readers may recognize the phrase “neurons that fire together, wire together”. Much like neurons, this batch of gathered Neurons were on their way to wire together. Once the scientific content was complete, once the scientist’s role was shed and the firing threshold was lowered by the locally produced and highly recommended Riesling wine, wiring started. Day after day during our all too short stay, we felt more and more part of a fostering community. It is good to know that others go through similar joys and challenges as you. It is precisely these shared experiences that can give us value, when science seems like a harsh wasteland, but also ground us to take on responsibility and share accountability. For us, this retreat was instrumental in inspiring ourselves through different stages of our PhD and we will be forever grateful to everyone who fired and wired together there.



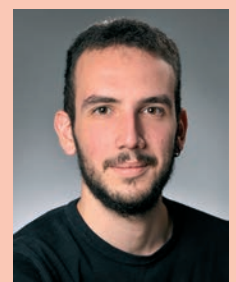
Lucía ROJAS completed her Master’s in 2020. She has been a doctoral student since May 2021 at the Molecular Neurobiology department, Synaptic Physiology Group (Prof. Rhee).

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Theocharis ALVANOS joined the Neuroscience Program in 2016. In 2022, he did his Dr. rer. nat. under the supervision of Prof. Moser in the area of molecular synaptic physiology at Max Planck Institute for Multidisciplinary Sciences, Fassberg Campus, Göttingen.

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Donations for Culture Nights

A big THANK YOU to our alumni and faculty members for the overwhelming response to our call for donations in support of our Culture Nights! For more than 20 years, the students of our Molecular Biology and Neuroscience programs have jointly organized with great commitment, heart and soul monthly Culture Nights for friends, colleagues, and all those interested in campus life, taking advantage of the enormous cultural diversity in a student community from more than 50 different countries.

During the pandemic, we realized even more how precious the Culture Nights are in terms of intercultural exchange and for establishing friendships across both programs and all student generations (see also p. 30 of this newsletter). Last November, this tradition could be re-launched with great success. Before the pandemic, we had a small budget to cover the costs for rooms, drinks, the buffet and decoration. Now we are dependent on donations in order to be able to continue the Culture Nights free of charge.

The numerous donations and emails we received in response to our call impressively underline the significance and high value that our Culture Nights have for the members our programs. Within less than two weeks, we received 6,235 € of donations! We sincerely thank you for your contributions, through which the Culture Nights can continue to live and bring people of diverse backgrounds together.

Current profession and location of our Neuro PhD alumni

Profession		Country Distribution	
Academia / Research	(50%)	Europe	(72%)
Professor	12%	Austria	3%
Group leader, PI	8%	Belgium	1%
Staff/ senior scientist	5%	Czech Republic	1%
Postdoc	22%	Denmark	1%
Science management	3%	Finland	1%
		France	1%
Private & Public Sector	(34%)	Germany	51%
Scientist, team leader, manager R&D	18%	Hungary	1%
Staff, team leader, manager non-R&D	10%	Ireland	1%
Science manager/ coordinator	2%	Liechtenstein	1%
Consulting	4%	Netherlands	2%
		Spain	1%
Other Profession	(11%)	Switzerland	6%
Media, publishing	3%	Turkey	1%
Resident, Chief resident	4%	UK	3%
IT, software development	2%		
Self-employment	2%	North America	(18%)
		Canada	1%
Other	(5%)	USA	17%
Other professions, internships, job applications, family management etc.	5%	Africa	(2%)
		Ghana	1%
		Lesotho	1%
		Uganda	1%
		Asia	(7%)
		China	3%
		India	1%
		Israel	1%
		Qatar	1%
		Taiwan	2%
		U.A.E.	1%

This call for donation is still open (<https://www.alumni-goettingen.de/spenden/culture-nights-international-er-studiengaenge/?lang=us>) and was

made possible with the kind support of the Alumni Office of the University of Göttingen.

StB