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Newsletter of the Göttingen Graduate Center for Neurosciences, Biophysics, and Molecular Biosciences

GGNB Times

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Meet the GGNB Student Representatives

2020 Benedict Wild

Hi, my name is Benedict, I'm a 4th year PhD student in the Systems Neuroscience program. I work on the neural underpinnings of visual perception, specifically the perception of visual motion, in the Cognitive Neuroscience Lab at the German Primate Center (DPZ).

I was honored to be elected as one of the student representatives for all of GGNB last year. During my term, I learned that GGNB is constantly changing and trying to improve. I believe that it is very important for us students to have a voice in these changes, to make sure they really are improvements. When I'm not in the lab, you can usually find me running somewhere on the streets of Göttingen, preparing for my next marathon.

2020 Salma Sohrabi-Jahromi

Hi, I am Salma and I am also a 4th year PhD student at the IMPRS Molecular Biology program. I am a computational biologist working at the Max Planck Institute for Biophysical Chemistry. Like Benedict, I was involved as the program representative before I decided to step up as a GGNB student rep.

I enjoyed organizing social events and pushing forward changes that we considered crucial in enhancing the students' experiences. I joined GGNB with the same motive and have enjoyed working with Benedict and the GGNB Office since then. This experience has been further enriched by working alongside and learning from other brilliant program representatives.

Some words from the previous student representatives

We want to use this opportunity to encourage you to consider running for student representation in the future. If you feel the passion to change our graduate system, this can be a good place to start, as it provides you with a platform to push forward your ideas. During our term, one of our main goals was to improve the cooperation with the GAUSS student representatives. With GGNB changing its status from Graduate School to a Graduate Center within GAUSS, we have, so to say, joined a bigger family. We used this opportunity to improve the communication across graduate schools. Together with GAUSS representatives, we have initiated regular informal meetings to bring student representatives together, transfer knowledge, and discuss issues that affect students in all graduate schools. Unfortunately, Covid-19 made all large-scale social events impossible for 2020, so we couldn't have many of our traditional gatherings, but we hope they will resume in the near future.

2021

Laura Hansmeyer

Hi everyone, I'm Laura and I started my term as a GGNB student representative at the beginning of this year. I'm in my second year of PhD working at the German Primate Center in the Sensorimotor Group led by Prof. Gail. There, I study the neural mechanisms underlying complex action sequences. After being a student in the Systems Neuroscience program for one year, I wanted to find out more about the internal processes of the program and serve as a voice for students. Outside the lab, I enjoy climbing, playing the piano and preparing a nice dinner with friends.

2021

Ali Cillov

Hello fellow students, I'm Ali and I'm at the end of my 1st year. I work on the auditory system of bush crickets with Prof. Andreas Stumpner in the Sensory and Motor Neuroscience program. During my Master's, I already witnessed many students having to work their way through the complicated university structures or deal with mental problems caused by their studies with little to no support from the university. I believe that university institutions should not only organize and bureaucratize, but also help. I became a student representative hoping to contribute towards achieving this goal.

What do student representatives do?

As the term already suggests, it is our main role to represent the interests of the students in GGNB programs. This is done by participating in the GGNB board meetings every three months and voting on budget decisions. Besides this, the position further allows us to understand the structure, working mechanisms, and politics of the university more deeply, enabling us to tackle PhD-related problems in a more fundamental way. We also want to use this opportunity to encourage students to consider becoming a student representative. If you see any necessary changes to the graduate system, go ahead and run for office!

COVID-19 challenges

To this date it's been more than a year that we are living in a pandemic. We have to deal with a lot of constraints that affect both our personal and work-related life. The lack of social interaction, worries about one's own, as well as friends' and family's health, reduced options for communication and recreation can make an already demanding PhD life even more difficult.

Many restrictions can cause projects to take longer than originally planned. To account for this, all GGNB students were already granted a three-month extension. We want to achieve further extensions for PhD students that need it, and for this we are already in contact with GAUSS student representatives about an emergency fund.

Fostering student representation within GGNB and to GAUSS

Together with fellow GGNB program representatives, we are actively working on various new projects to promote, connect, and empower this position. We think that stronger and more autonomous representation will help shape GGNB as we want to see it and support student-life quality. In addition, we want to continue working on projects that former student representatives started, such as presenting the results of the survey that had been conducted early last year and providing new PhD students with a welcome package to help them in their first months in GGNB and in Göttingen.

If you have a question, comment, or suggestion, don't hesitate to contact us or the next representatives that will come after us. We appreciate your feedback and our job is to help you when you face PhD-related problems.

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GGNB Survey 2020

From the idea to the final questionnaire
A story of questions, data protection and team coordination

The idea behind the survey and working on the questionnaire

The idea to conduct a survey among GGNB students arose in November 2018. During their time as student representatives, Katharina and Jason got the impression that, although the GGNB is offering confidential help and support to students in case of all PhD related problems, some students are not aware of this offer or do not feel comfortable enough to ask the GGNB for help. To investigate the reasons for the discrepancy between the support offered and the willingness to take advantage of it, a survey among GGNB students was conceived. At the same time, a published research study (Evans et al., 2018) made it clear that a large number of PhD students were suffering from mental health concerns. In order to examine the mental wellbeing of GGNB students, we intended to include a mental health section in the survey as well.

The main idea was to conduct a survey from PhD students for PhD students in order to improve student life in GGNB. We decided to involve the GGNB Office and the GGNB Board right from the start, to increase their acceptance of the outcome of the survey. However, while talking to students about the survey and the involvement of the GGNB we noticed some reservations among them. Some students were afraid that the board might forbid asking unpleasant questions or that the GGNB might hold back any unpleasant outcomes of the survey. Although we always experienced open interest in the survey and were not holding back negative outcomes of the survey when corresponding with the GGNB Board and the GGNB Office, we took the concerns of the GGNB students seriously. The highest priority for us was that from start to finish, the questionnaire design, the data evaluation and the report writing would be done exclusively by GGNB students.

After we were assigned to work on a GGNB-wide survey by the student representatives and the GGNB Board, a working group of about ten students was formed. During a brainstorming session at the kick-off meeting in March 2019, we came up with many general topics that we wanted to address with the survey: demography, life satisfaction, TAC meetings/supervision, help for international PhD students, career development, help in all situations, motivation, mental health, parenthood, stigma/harassment/discrimination, work place environment, payment, working hours, acknowledgement of work, and gathering credit points. During the following weeks, we started to group, reorganize, define the categories and fill each category with relevant questions. It turned out to be much easier to come up with new questions, than to delete some and shorten the preliminary questionnaire. Since the aim of the survey was to improve student life in GGNB, only those questions whose outcome could help to draw meaningful conclusions regarding GGNB improvement remained. To allow anonymity, we cut down the background information section. Unfortunately, also the mental health part, which was one of the initial reasons to start the survey and which had a huge interest to all survey working group members, had to be drastically shortened

and modified due to interference with the General Data Protection Regulation (GDPR) (see below).

The PhDNet Survey 2019 team of the MPG gave us permission to incorporate some of their questions in our survey, especially in the supervision and work-life-balance sections. This allowed us to cross compare answers from GGNB students with answers from Max Planck Institute graduate students - groups which of course overlap to some extent here in Göttingen.

The final questionnaire consisted of 46 questions organized in seven categories: background information, TAC and supervision, work-life-balance, work environment, issues specific to international students, motivation, harassment and mental health.

How the GDPR affected the survey

When we started to work on the survey, we were aware of the fact that we not only have to work on the content of the survey, but that we also have to gather information regarding the legal aspects of conducting one. While the GGNB Board supported the survey from the very beginning, the members of the board also made us aware that that legal issues regarding data ownership and data storage would have to be clarified beforehand, as well as information about who will receive the results of the survey in the end and in which format.

Soon after our kick-off meeting, we got in touch with the deputy Data Protection Officer from the university. Mr. Hallaschka was extremely helpful whenever we needed advice regarding the GDPR. He provided us with a clear and detailed handout covering all points that needed to be considered and a list of all documents that had to be evaluated and approved by the data protection office before conducting a survey. We quickly realized that the survey project does not only consist of the two main parts, questionnaire design and data evaluation, but also of a third - and not much smaller – part: dealing with legal and administrative requirements for the survey.

We first met with Mr. Hallaschka in beginning of April 2019. During the meeting, he suggested that for legal reasons, the GGNB Board should be the official initiator of the survey and the owner of the survey data afterwards. In order to avoid any decrease in acceptance of the survey among the students when the GGNB Board was officially involved, we decided – together with the board – that the survey working group would continue to be in charge of developing the questionnaire, evaluating the survey and reporting the results.

For legal reasons, we have to store the data for 10 years, which will make it possible to compare this data with follow-up surveys in the future. We decided to build and conduct the survey with the LimeSurvey tool offered by the GWDG. After data acquisition and during data evaluation, the survey data is stored on GWDG-hosted servers and therefore complies with strict data protection regulations. While corresponding with the GWDG about arranging an official agreement between GWDG and GGNB on job processing, we learned that stored data is categorized in five protection stages (A-E). On GWDG hosted servers, a processing of personal and sensitive data falling into the categories D and E is not allowed. Based on this constraint, we reduced the number of questions in the background information section in order to anonymize the survey further. Additionally, due to the highly sensitive nature of the data from the mental health part, we had to severely cut it so we could store it in these servers. Another GDPR related aspect to consider was the addition of email addresses of all GGNB students. Because the survey group is not allowed to obtain the email addresses of the students, the GGNB Office added all the addresses to the LimeSurvey system.

Working in a team

Doing the survey was teamwork and could not have been possible without motivated people who were willing to spend their free time working on it. The time was divided between meetings with all members of the group and working on individual assigned tasks. Organizational issues and sharing of documents was and is organized via a Slack group. We divided correspondences with the GGNB Office, GGNB Board, GWDG and Mr. Hallaschka among us and kept the other group members updated in the Slack chat or during regular meetings. Discussing and setting up the questionnaire turned out to be most effective when meeting in person. We mostly met in the LSG (Learning and Study Building) on the central campus, where we made use of the different sized working rooms and large computer screens.

We started with a group of around ten GGNB students that were highly motivated to work on the survey. Unfortunately, this group was reduced to three or four persons finalizing the questionnaire and setting up the survey. Reasons for people stepping out of the group were either time-related (some students finished their PhDs) or topic-related, because the questionnaire was developing into a different direction than initially expected. While conducting the survey in the beginning of 2020, we advertised the survey working group again and new members joined the team who are excited to analyze and evaluate the obtained survey data.

Thank you

Setting up the questionnaire and conducting the survey would not have been possible without the support of several people. First of all, we would like to thank Sabine and Aditya for their efforts in developing the survey and all former and current members who gave input in our discussions. We want to thank the members of the GGNB Board for supporting the survey and being open to and interested in concerns raised from the student site. The GGNB Office (Antje, Jonas, Kirsten and Steffen) deserves a large thank you for proofreading of the questionnaire, helpful input on the questions and a lot of administrative support regarding the survey set-up. We also want to thank Mr. Hallaschka for all his help regarding data protection and his valuable suggestions. Thank you also to the GWDG for hosting our survey with the LimeSurvey system and answering all of our questions. A special thanks to Jana and all members of the PhDNet survey group 2019 collaborating with us and sharing their questionnaire. Many thanks to all GGNB students who gave us feedback and suggestions on the questionnaire.

Last but not least, a huge thank you to all students who participated in the survey. We are more than happy that 74 % of GGNB students took part in the survey — a huge success that would not have been possible without so much solidarity. Thanks to all of you for sharing your impression, ideas and experiences and for supporting our mission to improve the GGNB.

TIMELINE

November 2018
Idea to conduct a survey among GGNB students dealing with mental wellbeing, discrimination and support for international students was hatched

November 2018
Discussion of survey idea with student representatives and the GGNB Board

February 2019
Call for volunteers

11 March 2019
Kick-off meeting

4 April 2019
First meeting with Mr. Hallaschka from the data protection office

April 2019
First correspondence with GWDG regarding agreement on job processing

May 2019
Finalizing of the questionnaire

Summer 2019
Successive rounds of evaluation of the questionnaire by Data Protection Office and GGNB Office

24 September 2019
Approval of questionnaire by GGNB Board

November 2019
Completing the official documents for the survey with Data Protection Office and GGNB Office, creating a LimeSurvey account for the survey with GGNB

December 2019/January 2020
Implementation of the questionnaire in LimeSurvey, proofreading

13 February 2020
Start of the survey

6 March 2020
Closure of the survey

Ongoing
Data evaluation and writing of the report

Christian Roth and Katharina Vollheyde

Evans TM, Bira L, Gastelum JB, Weiss LT, Vanderford NL. Evidence for a mental health crisis in graduate education. Nat Biotechnol. 2018;36(3):282-284. doi:10.1038/nbt.4089

Group photo of the guest speakers, attendees and organisers of Third Infinity 2020. Photo from Irene Böttcher-Gajewski *13/8/2020*

The Science of Third Infinity 2020

The first of the three domains in which physics advances involves astronomy and relativity, thus concerning the *infinitely big*; we then have quantum mechanics and particle physics, involving the *infinitely small*; finally, there is the domain of the *infinitely complex*. Encompassing this last category, Third Infinity is a conference organised for and by students of the International Max Planck Research School (IMPRS) for Physics of Biological and Complex Systems (PBCS). As such, it offers a platform where PhD candidates can present and share their research not only amongst their peers, but also with highly renowned researchers, and where topics relevant to the PhD life and education can be discussed.

The last edition was held in the Max Planck Campus of Göttingen last February, just before the COVID-19 madness hit us all. To cover as many topics as possible within the multidisciplinarity of PBCS, the conference was divided into five main sessions with contributions from guest speakers and PhD students, and included a panel discussion, a talk on open access in science, and two poster sessions introduced by a FlashTalk event. In this regard, we would like to congratulate Anna Schepers once again, winner of the FlashTalk speech! Additionally, we had for the first time two companies offering consultation on-site, which hopefully set a precedent for career fairs to be included in future editions of Third Infinity.

Cristina Marchetti was the keynote and thus one of the highlights of the event. Departing with examples from the living (such as the flocking of birds) and non-living worlds (such as active gases that do not fill their container), she gave a wonderful lecture on how researchers are currently unveiling 'The physics of active matter'. Stefan U. Egelhaaf was the guest speaker of the Soft Matter session, and talked about how these systems behave in front of external stimuli. Opening the session of Fluid Dynamics we had invited Björn Hof, who talked about the transition from laminar to turbulent flow. Udo Seifert introduced the session of Statistical Physics by talking about stochastic thermodynamics and the trade-off between the thermodynamic cost and the precision of systems such as molecular motors. The last session, Complex Networks and Nonlinear Dynamics, had Elena Agliari as the main speaker, who commented on the good and bad inherent to these systems, and showed an example of "optimal complexity".

In the panel discussion titled "The future of doctoral education in Physics", we considered whether doctoral programs fit the current needs of academia while also preparing students for the diversification of career paths after completion of the PhD, and had the opportunity to hear the opinions and experiences of a diverse group of minds. Moderated by Katrin Wodzicki, Head of HR and Organization Development of the University of GÖttingen, the panel consisted of Helmut Grubmüller, at that time IMPRS PBCS Spokesperson, Jana Lasser, IMPRS PBCS Alumna, now Post-Doc at the Complexity Science Hub Vienna, Arianna Bottinelli, Associate Editor of Communications Physics, and Clemens Buss, IMPRS PBCS Alumnus, now Big Data and AI Consultant.

Arianna Bottinelli also talked about the current challenges of Open Science, a topic that has been the center of intensive debates over the past 20 years.

If by reading this commentary on Third Infinity 2020 your curiosity was piqued, we invite you to attend the next edition in 2022!

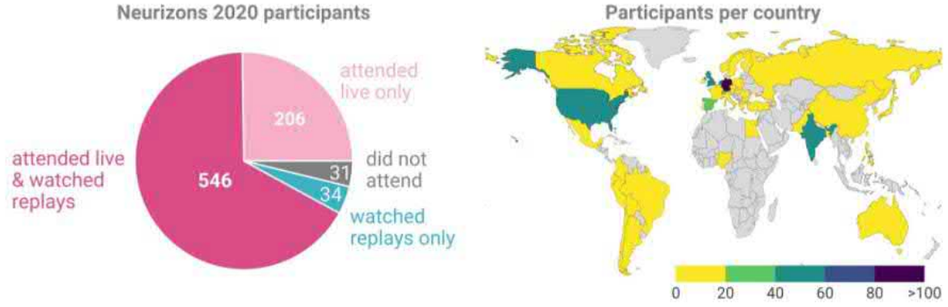
Aina Gallemí Pérez and
Venecia Chávez Medina

Neurizons 2020: Adapting in Crisis

Neurizons is a biennial conference organized by graduate students of the International Max Planck Research School (IMPRS) for Neurosciences. It was scheduled to take place in May 2020 at the Max Plank Institute for Biophysical Chemistry in Göttingen. However, the COVID-19 pandemic exposed everyone to a new reality. For us, the organizers, it meant that we had to decide whether to cancel the conference completely or to have it online. We decided to try our best to adapt to our times and offer the first virtual Neurizons, even though we only had two months to prepare. We had to find a platform to host our event, become familiar with it and make sure our speakers and participants also knew how to navigate around it. Crowdcast was selected and before we knew it, we were ready to go.

Since this is the first time we were organizing something like this, we had no idea what to expect, so all of us were surprised and excited by the remarkable response. A total of 792 people registered, watching from 48 different countries. We had an average of 205 people attending each session live, which is already well above the average from previous Neurizons. Each talk was recorded and available on Crowdcast for one week after the conference finished, so people could watch the replays if they missed a talk, something that 546 people took advantage of.

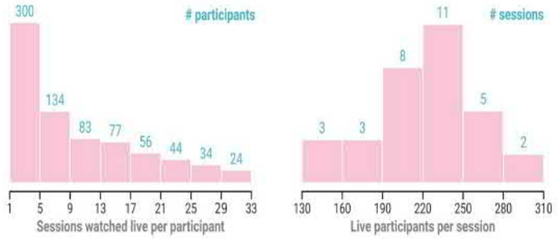
Neurizons always aims to bring together people from different fields and with different interests, so the themes of the talks ranged from molecular to cognitive neuroscience. There were two keynote speakers: Daphna Joel, who gave us an insight on representations of sex in the brain, and Wolf Singer, who talked about computations in the cerebral cortex. We tried to recreate all of the events that would be present in the physical conference, such as the career fair, which included talks about alternative career paths available to biology PhDs, like consulting, as well as interactive workshops on scientific communication and



Participation demographics from Neurizons 2020

stress management. The presentation on mental health in academia further stressed the problem and pointed out the importance of talking about it. The panel discussion also took place as planned. With the topic being “Natural and Artificial Intelligence”, it brought experts in the field of computational neuroscience and artificial intelligence together for a stimulating exchange of ideas. Moreover, three selected participants had the opportunity to give a talk during Neurizons and compete in the Young Investigator Contest, sharing and attracting attention to their research. The hardest to coordinate were the poster sessions, which are pivotal in a conference as they provide the best chance for networking, but with good planning and organization, we still managed to include this aspect. Lastly, ‘speed-dating’ CoachMe sessions were also offered, during which participants and world-renowned scientists came together.

While some aspects of the physical conference were still missed, particularly the social side of it, there were many advantages to the virtual format, such as the ability to join from anywhere in the world from the comfort of your own home, resulting in higher participation than ever before and a much more eco-friendly conference. It also made it more convenient for introverts to actively participate, by allowing them to indicate they want to stay hidden and get their questions asked by the moderator. Even though changing from a physical to a virtual format required a lot of effort and dedication from everyone involved, it was definitely worth it, and I am curious to see whether future iterations of the conference will take something away from Neurizons 2020, maybe by combining physical and virtual formats. Whether this happens or not, Neurizons will come back in 2022 to continue sharing the excitement about neuroscience!



Participation demographics from Neurizons 2020

Aishwarya Bhonsle

The Green Office of the University of Göttingen

The Green Office is the central office for sustainability at the University of Göttingen which was established at the beginning of 2019. Its responsibility is to coordinate and summarize all activities and knowledge in the field of sustainability at the University of Göttingen.

In an interview, Marco Lange, the Coordinator for Sustainability of the Green Office, explained the founding process. In November 2015, the partners of the U4 Network (the universities of Ghent, Groningen, Uppsala and Göttingen) came together on a presidential level to discuss previously exchanged information about the role of universities towards sustainability. At this point, Ghent, Groningen und Uppsala had already established organizational units in the form of a “Green Office”, or a “Center for Sustainability” or a “Coordinator for Sustainability”. After the U4 peer review session on Sustainability in September 2016, the University of Göttingen decided to enlarge their own official structures for sustainability. In spring of 2017, the University of Göttingen appointed Marco Lange as the Coordinator for Sustainability. In the following two years, students and Marco Lange successfully applied for funding from the “Ideenwettbewerb 2018” and “Campus Q+” to establish a Green Office. Therefore, the current Green Office at the University of Göttingen is a cooperation between the Coordination Office for Sustainability, where Marco Lange is employed, and student engagement. Currently the team of the Green Office consists of the Coordinator for Sustainability and three student assistants. Dina Nehring is responsible for the ‘Interconnection of students around sustainability issues’; Ramona Schwarzenberger focuses on the topic of ‘Sustainability in teaching and learning’ whereas Anuschka Linner is dealing with ‘Research and exchange on sustainability’.

The Green Office fills a huge gap at the University of Göttingen. Its function is to promote and foster sustainability at the University in research, education, operations, transfer and its governance. It is the goal of the Green Office to collect and summarize information about educational offers and research related to sustainability, as well as to increase awareness about sustainability within the University’s community and beyond.

The Green Office has the important mission to contribute to a University for the future. Therefore, it is firmly integrated into the governance structure of the University of Göttingen. It is also the responsibility of the Green Office to connect the University, the city, research institutions as well as societal and business partners, to facilitate cooperation on a local, national and international level and to develop structures that ensure the participation of employees and students in order to support sustainable development in all fields of action.

While universities are mainly responsible for imparting higher knowledge and providing higher education to society, they also hold responsibilities to spread awareness and address important topics relevant for society. Universities should act according to the concept of Education for Sustainable Development and thereby address topics such as climate change or social inequality. The homepage of the Green Office (***www.uni-Göttingen.de/nachhaltigkeit***) summarizes the University’s current educational offers in the field of sustainability, such as “Studium Oecologicum” or public lecture series, such as “Tier oder Tofu?”.

Furthermore, the Green Office has created a platform to collect and consolidate information about ongoing research projects at the University focusing on sustainable development of the natural world and the society. For interested readers, an overview of projects related to sustainability is published on their homepage.

Last but not least, a university acts as an operational business. Many daily activities, such as eating at the Mensa, printing an article and conducting experiments at the bench have an effect on the environment. Only if we as a university community become aware of our individual responsibilities, we can contribute to protecting the environment in our daily work life. The Green Office is the first contact point for questions, ideas, projects and all dialogues related to sustainability at the University. If you have an idea about something that you would like to actively change in your working environment at the University, contact the Green Office. Previous students’ projects were: returnable beakers at the Mensa, printers using only recycled paper and the reduction of products in the laboratory.

Kristin Kaduk

Portrait: New Group Leaders in the GGNB

In this edition, we aim to introduce recently arrived or newly recognized group leaders in the GGNB.

In 2019, several newcomers have been admitted, namely: Michael Wibral (Dynamic Biological Networks), Peter Lenart (Live-cell Imaging), and Jochen Rink (Tissue Dynamics and Regeneration).

Meanwhile, several already established researchers in Göttingen were incorporated into the GGNB. They are: Rubén Fernández-Busnadiego (Molecular Structural Biology), Christoph Bleidorn (Animal Evolution and Biodiversity), Hauke Werner (Neurogenetics), Brett Carter (Synaptic Physiology and Plasticity), Till Ischebeck (Plant Biochemistry), Marcel Wiermer (Plant-Microbe Interactions), Stefan Dreizler (Astrophysics), Stefan Glöggler (NMR Signal Enhancement), Christine Stadelmann-Nessler (Neuropathology).

We reached out to all of them for further details about their work and what brought them to Göttingen.

Peter Lenart

I am the head of the Live-cell Imaging Facility, while simultaneously leading my research group at the Max Planck Institute for Biophysical Chemistry. This was quite a unique offer, which I accepted without hesitation, as it allows me to pursue my ideas in technological development, as well as my own biological research questions – I still cannot decide, which one I like more. In this position, I can do research in a small group, which allows me to be directly involved with experiments. The service aspects of running the imaging facility is also a great source of motivation as people from across the institute come to us every day with new and exciting projects. I can hardly imagine being in a better place than the MPI-BPC: the institute is a world leader in the development of imaging technologies and fluorescent probes. The institute also hosts some of the world's best departments on my favourite biological problems, such as oocyte biology or nuclear envelope dynamics.

My research focuses on a specific form of cell division, oocyte meiosis, that produces the fertilizable egg. Our main interest is understanding how the cell division machinery, the cytoskeleton in particular, is adapted to carry out these specialized divisions. Oocytes are exceptionally large cells storing nutrients for the embryo that divide very asymmetrically in order to retain these nutrients in a single egg cell. How does the cytoskeleton support divisions in this extreme geometry? To explore the conservation and diversity of these meiosis-specific functions, we are using marine model species such as the oocytes of starfish. These oocytes are highly transparent, exceptionally resistant to light and are easy to handle, rendering them an excellent model for live-cell microscopy, and indeed these oocytes are an excellent test system to prototype imaging assays as well as novel fluorescent probes.

Brett Carter

I am interested in synaptic transmission from the point of view of the ion channels involved. Ion channels drive the fast signalling processes both presynaptically, generating and propagating the action potential and presynaptic calcium entry necessary for vesicle fusion, as well as postsynaptically to regenerate, integrate, and transmit the synaptic information. Ion channels also contribute to synaptic plasticity: their activity can drive long term changes in synaptic strength. One particular focus in the lab is the function of NMDA receptors in the long-term depression of glutamatergic synapses.

To study these processes, we use electrophysiology and 2-photon calcium imaging coupled with pharmacology in acute brain slices to measure and dissect ion channel signalling during synaptic transmission and plasticity.

The scientific community in Göttingen is a world-leader in synaptic research. My research benefits from this environment as tools and ideas are developed and can complement this research with functional studies at the single-synapse level.

Hauke Werner

Myelination of neuronal axons is beneficial because it markedly accelerates the transmission of information in the nervous system. Indeed, the evolutionary innovation of myelin in ancient fish has facilitated the success of vertebrates. However, myelin is vulnerable to inflammation or genetic perturbation that affect its long-term integrity. This is best illustrated in acquired myelin diseases, heritable white matter disorders (leukodystrophies), or demyelinating neuropathies.

We aim to understand the molecular and evolutionary mechanisms of myelination, the maintenance of myelin integrity and how myelination affects axons. To study myelin in health and disease, we combine the tools of mouse genetics, molecular cell biology and biochemistry, including systematic proteome analysis.

In the picture, me and my group are seen downtown on a recent graduation day.

Till Ischebeck

I don't know if you can really call me a new group leader, since I already became a group leader in 2015. But I guess I had not been a member of GGNB, yet.

I am interested in plant lipid droplets, especially with respect to their protein composition and the role that these proteins have. More details can be found on my homepage:

http://www.uni-goettingen.de/de/ag+ischebeck/574062.html

I came back to Göttingen, because Prof. Feussner offered me a position and I knew of the great possibilities and support that I would have in his lab to build my own group.

Neil Singh

The Max Planck School Matter to Life

The Max Planck School Matter to Life is a graduate programme which involves three main universities plus Max Planck Institutes (MPIs) and other research organisations across Germany. One of the principal universities is the University of Göttingen. Six academics, known as Fellows, are based at the university in Göttingen , and six Fellows are based at the MPIs in Göttingen. The other two main universities and other research organizations are the Heidelberg University, the Technical University of Munich (TUM), the RWTH Aachen University, the Saarland University, the German Cancer Research Center (DKFZ), the DWI Leibniz Institute for Interactive Materials, the Heidelberg Institute for Theoretical Studies, the DWI in Aachen and other various MPIs.

What unites these researchers is the emerging research field “Matter to Life”; all the Fellows use their expertise in Physics, Chemistry, Biology and Bioengineering to study quantitatively scientific questions around life including: what is life? Can living systems be created from the bottom up? Are there universal laws which govern living systems? All these questions require scientists to work at the boundaries between different fields and one of the aims of the school is to train new researchers to be comfortable working in interdisciplinary environments.

Matter to Life students start the programme immediately after their bachelor’s degrees: they study for a MSc at one of the three main universities. Each university offers a slightly different focus, with Göttingen highlighting Complex Systems and Biological Physics reflecting the research interests of the Göttingen Fellows. At Heidelberg, the focus is on Molecular Systems Chemistry and Engineering and at TUM students study Matter to Life with a focus on Bioengineering. After successful completion of their MSc degree, students can be directly admitted to a PhD programme and work with any of the Fellows in the school.

Even within Göttingen the Fellows have a broad range of research interests and this is reflected in the master’s courses available to the students. There are courses on fundamental biophysics, how to model biophysical systems computationally and how to describe dynamic systems mathematically. This last course is currently extremely relevant as it covers the mathematics behind epidemic modelling. In the second semester, students in Göttingen have a wide selection of courses to choose from, these span topics from active matter to theoretical neuroscience, biochemistry to X-ray tomography. There are also two new courses created explicitly for the program, one on the latest experimental methods and an in-depth seminar to familiarise the students with the current literature.

In addition, the Complex Systems course along with courses on Synthetic Biology and Synthetic Chemistry are shared with the MtL students at the University of Heidelberg and taught from the Technical University of Munich and RWTH Aachen, respectively. The students join these courses via live video conferences. In the second year of the MSc program the students start lab rotations followed by master’s theses in Fellows’ labs all over Germany with most students changing cities. The first group started in the labs in October 2020, so if you come across one of them please make them feel welcome.

So far, we’ve only discussed Master’s students, what about PhD students? 31 PhD students are currently members of Matter to Life, they did not go through the MSc because it did not yet exist. The program has 7 students in Göttingen, 3 of whom are also students of the GGNB. We are happy to have gathered their opinions of the school that you can read in the respective box.

To keep the students connected, all students initially meet for a welcome course, followed by an annual summer school with all members of the school. There are also retreats and conferences organised by the coordination office of the school.

Applications and more information can be found in the central portal: https://www.maxplanckschools.de/en/matter-to-life.

Nadja Miosga

Box on the opinion of three GGNB students

As students in the Matter to Life (MtL) program and GGNB programs we are in the extraordinary position to have a supportive network in Göttingen as well as in institutions in other cities. We meet and discuss (digitally) with other doctoral students and can share ideas and experiences.

In MtL, we are in closer contact with the master students compared to other graduate programmes. This exchange that is not solely based on teaching seminars or supervising theses, leads to an inspiring interaction between students. Because of the de-localised approach of the Max Planck Schools, digital lecture series are easily accessible. For example, in the weekly virtual seminar series, many of the MtL faculties presented their research in a less formal setting than at conferences or colloquia. Such exchange between institutions plays a considerable role in setting an atmosphere where collaborations are highly encouraged. By adding remarkably motivated students, the MtL is a place where research is fun.

Clara-Marie Guerth, Anna Schepers, and Marius Reichardt

Dual Career Couples

The long hours spent in the lab, together with the great intellectual challenge that science represents, are just two factors that create the so-called disciplinary endogamy (i.e scientist partner with scientist, preferably from the same research field). It is not a surprise that according to a research from three professors from the Clayman Institute for Gender Research at Stanford University (Schiebinger, Henderson, & Gilmartin, 2008) showed that 36% of the respondents of the survey had partners who were also scientists. And not only scientists are prone to have a relationship with other scientists, it was shown by another study (Ruschkowski, 2003) that career opportunities in the same area for their partners is the second most important factor for German researchers wanting to return to Germany.

One solution for this is the dual hire practice that some universities do. "Dual hires" are an increasing proportion of faculty hires over the last decades. A study in the US found it has increased from 3% in 1970's to 13% in 2000's (Schiebinger, Henderson, & Gilmartin, 2008). This practice not only helps dual careers couples move on with their careers equally, but also helps decrease the gender gap at some research institutions.

So how often have you asked yourself the timeless question: love or career? That is one of the many questions and uncertainties that especially early career researchers, including PhD students, must solve. Either you follow your loved one to a different country, maybe risking your own scientific career or you end the relationship and follow your career.

To give the young researchers from the Göttingen campus an insight, we contacted three couples and we asked them several questions about how they have managed to balance their personal life with their own scientific careers. The first couple is Prof. Dr. Manuela Schmidt (Department for Pharmacology and Toxicology, University of Vienna, previously Somatosensory Signaling Group, Max Planck Institute for Experimental Medicine) and Dr. David Gómez Varela (Systems Medicine Innovation Group, Max Planck Institute for Experimental Medicine). The second couple is Prof. Dr. Melanie Wilke (Department of Cognitive Neurology, University Medical Center Göttingen) and Prof. Dr. Mathias Bähr (Department of Neurology, University Medical Center Göttingen). The third couple is Dr. Kathrin Kusch (Institute for Auditory Neuroscience, University Medical Center Göttingen, previously Department of Neurogenetics, Max Planck Institute for Experimental Medicine) and Dr. Harald Kusch (Institute for Medical Informatics, University Medical Center Göttingen and Data Manager Multiscale Bioimaging (MBExC)).

How did you meet your significant other?

Couple 1: Manuela was a PhD student at the IMPRS, David was a postdoc at the MPIEM. We met at the Neurizons 2005 conference here in Göttingen ;).

Couple 2: We met initially at a scientific meeting in Washington during a head-hunting search for a director of the Institute of Cognitive Neurology, where Melanie Wilke was one of the potential candidates for the position. Later, when she had accepted the offer and moved to Göttingen we also became a couple.

Couple 3: It was the nice guy in the lab next door. Where else could we have met?

How difficult was it to get an academic position in the same city?

Couple 1: The difficulty increases the farther you are in your career (Group Leader > PostDoc > PhD). There are two main reasons, in our opinion: 1) the ever increasing bottleneck of the current academic pathway, and 2) the need to find personal and professional compromises for both persons, which challenges the expectations/egos that we all have after many years of hard work in a laboratory. Our strategy has been based on a very open communication, mutual respect, and support for each other – knowing to step down is not a skill taught in our competitive landscape.

Also, dual-career options are very important. For example, the MPIEM offered us a dual-career option, which allowed us to work together in our laboratory fully harnessing the complementary expertise of ours. We are very grateful for this opportunity.

Couple 2: This question does not apply. (Both of them got their respective position in the city independently).

Couple 3: Quite a bit. To increase chances to find a position in the same city, we decided to "get divorced scientifically". Meaning, that the first one finding her/his dream position would stay in field and the other one changing field of research and find something. Meanwhile, we both changed fields.

Did you consider having a long-distance relationship if necessary?

Couple 1: No. It was not necessary for our time in the USA and it was not desired when we came back to Germany. Despite our devotion for science, we value our family more. In addition, the main reason for our success at the MPIEM was to blend our expertise in a common project.

Couple 2: Does not apply. Generally, we would consider long distance for shorter time periods (i.e. 1-2 years).

Couple 3: We had it with 2 very small kids for just 3 months. It was a nightmare. Somehow, we managed, but it took me another 3 months to recover from this phase (finishing my PhD-lab-work, alone with the 2 kids, organizing the movement). After that, we decided that a long-distance relationship is not really an option for us. Plus, to be able to work in science (with long lab days, travelling etc.) we need each other being present for the kids in those days.

Did you consider quitting science to be able to be together?

Couple 1: No, it was fortunately not necessary.

Couple 2: We luckily never had to think about that, but neither of us would have considered quitting science for a relationship.

Couple 3: Absolutely. I can only be a good scientist when my private life is functional. However, so far, this was not necessary.

How is a typical conversation during dinner? Do you talk about science or is it strictly no science time?

Couple 1: A lot of science talk at the dinner table. Why not, we love science, we love our work, so it is fun sharing it within the family. Certainly, talking about lab challenges needs to be well-timed and cannot happen at the dinner table (also for the sake of our son and family-life). For that, we reserve designated time slots.

Couple 2: We often discuss organizational issues from the Department of Neurology (M.B.) or the Institute of Cognitive Neurology (M.W.), but also scientific questions and our collaborative projects. We did make the rule however that from about 9 pm onwards, there will be no conversation about administrative issues, no restrictions on scientific topics. Since both of us are also interested in contemporary art, music and politics, dinner topics are relatively broad.

Couple 3: Mainly family-related topics. But also, the big topics, e.g. at the moment changing labs in my case. Or in the category, how was your day, we exchange science things also. As science is part of our lives, it would not feel natural to exclude it from dinner conservation, would it?

How would you react if on the same day you get a paper/grant rejection and your significant other gets an acceptance?

Couple 1: Such roller coasters happen. We would try to get over the rejection and postpone the celebration until the other one has managed to "stand up" again.

Couple 2: Open a bottle of Champagne in case of acceptance and a bottle of wine in the case of rejection (M.B.).

I would celebrate the success together, but probably first disappear to my music room to get my spirits up if the rejection were on my side (M.W.).

Couple 3: Good question. Be happy for the other one? We were never in direct competition to each other. Indeed, we published together. It was one of our cooler projects, born on a mensa table together with another scientist couple.

Have long hours in the lab interfered with your family life?

Couple 1: No and yes. Certainly, long hours are necessary to get things done or calmly solve a problem. This requires personal flexibility, very good organization and supporting each other as

parents. On the other hand, we have the wonderful opportunity of flexible working schedules: so, if our son has a theatre play at school, we can be there and watch. Once he is in bed, we continue our work. It is a luxury to have this flexibility, not many people have this. The same applies to situations when a child – especially a young one – is sick and cannot go to daycare.

Couple 2: Yes, but this is a matter of priority, which is the science. In this view, family life rather interfered with lab activities and not the other way around.

Couple 3: I would say, it influences family life. But that is how our family is. Sometimes long working hours, yes. High flexibility to be present for a school-theater presentation in the morning, yes. Working on weekends, yes. Leaving earlier for picking up kids for ice cream on last school day, yes. It is a matter of balance.

We communicate quite a lot about who needs what on every day. Usually, we try to have dinner together, but it is okay if this is not possible. As scientists, we both know, the long working hours are sometimes just required and that we do not do over-hours to punish each other.

Did the German system help you in any way to stay or join your significant other in Göttingen?

Couple 1: The German system, in particular the DFG, is helpful for parents: Scientists with kids can access a wide variety of DFG resources from prolonged deadlines (this is common across most funding agencies), to reducing work time for family needs, to applying for extra funding to compensate for family – or sick-leaves where possible. We have made use of these instruments, which has helped a lot.

Couple 2: Does not apply.

Couple 3: No.

When you were interviewing for your position, did you mention that the situation with your partner was a motivation for the job? If yes, how did the interviewers react to this?

Couple 1: Does not apply.

Couple 2: From my own experience (M.W.) as dual career couple during PhD/postdoc times and from being on the interviewing side now, I suggest being open about it in the interview. On the other hand, most lab leaders are likely disappointed if their lab was chosen primarily for relationship reasons. At the postdoctoral level, PI's would derive the fit from your CV anyway. At the group leader and professorship level, reactions of the interviewer's range from true support with accommodating additional group leader/professorship positions to suspicion and weird questions in hiring committees. My impression is that German institutions made a big leap in the last years to enable double careers.

Couple 3: No, not during the interview. But it was once the motivation for not accepting a job in another city that was offered to me. And I communicated it also like that. But it was OK, the potential boss still remembered the years of long-distance relationship they had and could fully understand my reason for not starting there.

Do you have any advice for couples in your same situation?

Couple 1: Doing what you are really passionate for is the prerequisite for managing hurdles in every job. Also, remember, no matter which profession, it is always a struggle and requires extra-effort and luck for both couple members to get the job they want at the same place. This is not just a problem of being in science.

Couple 2: It is hard to give a general advice that applies to scientists with varying views on how a successful and happy life looks like. One approach might be to get clear about your priorities. Let's assume you consider a suboptimal PhD or postdoc position to keep your relationship: Would you feel bitter about this decision if the relationship does not work out in the long run? Is it okay for you (or even a relief) to not move up the scientific ranks and possibly also earn less while your partner flourishes at her/his new position? Empirically, from a scientific career perspective, trying to find a lab nearby, e.g. in train travelling distance appears to be a better option.

Couple 3: Be flexible in science. Accept your personal limits for flexibility in private life. It is OK to not do like "all the others". Talk to each other. Support each other. Aim for 100% equal opportunities (not every day, but in the long term). Find support by good friends. Support these friends. Have interests outside of science.

If your budget would allow you to, would you hire a family member from a candidate (PhD or postdoc) just to get that potential candidate?

Couple 1: No, if the only merit is being a family member. It is not even legal to do so. A different thing would be if the family member is well qualified for the position – in that case we would be happy to consider this possibility.

Couple 2: We would hire couples, but only if both candidates are independently a good fit for the position. Couples in the lab can be difficult because of the strong default coalition in the lab, but this might occur with regular lab members too as they form close friendships or even love relationships. On the other hand, scientist couples often inspire and help each other and work longer hours, so we clearly see advantages too.

Couple 3: It would depend. If that one could do something really useful for the lab and him-/herself, yes. Otherwise picking up the telephone and arranging meetings for the partner to find a matching job is the better option. Bosses can do more than just giving money. All their connections are worth so much, this resource can be used much better than at the moment.

If you have a kid, how difficult was it to harmonize daily lab work with family life? Did you need to make some compromises?

Couple 1: There are always compromises a family has to make – again, no matter which job you have. We think that this is crucial to have in mind, as simply complaining about the difficult situation for scientists is far too easy for most people. Certainly, daily lab work, publication pressure, lectures, etc. are often exhausting. On the other hand, a career in science gives you amazing flexibility, which makes family life much easier, see our examples above.

That said, certainly, there are several things, which are particularly challenging for balancing lab and family life:

If both members of the couple mainly do wet-lab work (i.e. they can only accomplish a minor fraction of their work in home office) dividing the work time during the day becomes more challenging and, definitely, exhausting. Here, high-quality, easily accessible, and long-hour daycare options are of utmost importance. We were lucky that the

Prof. Dr. Mathias Bähr & Prof. Dr. Melanie Wilke

Dr. David Gómez Varela & Prof. Dr. Manuela Schmidt

Dr. Harald Kusch & Dr. Kathrin Kusch

MPIEM provided very good daycare for kids between some months of age to 6 years old – all just in front of our offices. Thus, if we needed some extra time in the lab, we simply picked up our son and had him paint in our office while we finished our work. This certainly makes a difference in organizing your day.

Limited contracts make you feel insecure and really take a toll on you in terms of worrying what the future brings. We wish this would change in the future, while limited contracts cannot be turned 100% into unlimited ones, several improvements would be possible e.g. providing contracts limited to 4-5 years at the postdoc level. This would give enough time to accomplish one's project and go on to the next step. At the young group leader level, limited contracts should ideally span 7 years (and options for well-justified prolongation) to have a real chance to accomplish projects, publish, and get your next position.

Couple 2: Does not apply for the two of us. My kids (M.B.) are grown-ups and when they were

young my partner at that time was not a scientist. Nevertheless, when she started to work part-time again it was very difficult to organize the schedules of three children. At that time (90's) we organized the first Max-Planck daycare in Tübingen (Planckton) with the help of Prof. Nüsslein-Volhard, who realized the need to provide day care for children of scientists at the institute.

Couple 3: We have two kids. Every day is a compromise, like in any family. They were grown in a scientist family, so we all know only this way of family life. However, our highest priority is always the kids. In case of real need (sick kids and similar issues), their welfare is our main interest. In these moments, science is just science. And it will continue to be after.

In our daily business, we try to live the flexibility in science as flexibility to both sides, enabling us to spend time in the afternoon, but continue working in the evening, if really required.

The first thing we organized after signing the work contract in a new city was childcare. Even before applying for the second job or looking for apartments. We pay for holiday-sports for the kids, we payed babysitters. We teamed up with other (scientist)-families for taking care together on school-closed days (e.g. corona). Meanwhile, they are quite independent and they say that they have 3 moms. They really feel at home.

Although each case will be different and probably these three couple's examples do not cover your particular situation, the goal was to show different perspectives. From the GGNB Times, we would like to thank ***Prof. Dr. Manuela Schmidt, Dr. David Gómez Varela, Prof. Dr. Melanie Wilke, Prof. Dr. Mathias Bähr, Dr. Kathrin Kusch*** and ***Dr. Harald Kusch*** for taking the time to answer our questions and supporting this initiative.

References

Ruschkowski, E. v. (2003, March 7). Raising Awareness. Science. Retrieved July 2020, from https://www.sciencemag.org/careers/2003/03/raising-awareness

Schiebinger, L., Henderson, A. D., & Gilmartin, S. K. (2008). Dual-Career Academic Couples. What Universities Need to Know. Stanford University, The Michelle R. Clayman Institute for Gender Research. Stanford: Stanford University. doi:978-0-9817746–0–2

Alejandro Restrepo Arango

QUIZ

What Career Fits You Best After Your PhD?

Are you almost done with your PhD and thinking about what you should be doing next? Or maybe feeling completely confused with what choices you have and in which field you could see yourself in?

Being in exactly the same position as you, I have tried to gather up as much information as possible by attending career fairs, workshops and by doing my own private research online. Looking for a fun way to share this knowledge with you, I decided to make up this quiz*.

The game goes as follows. Select your answer in each question and complete the table with the respective symbols at the bottom. If an answer has more than one symbol in the parenthesis, you add (or, in some stated cases, remove) one symbol of each to the table.

Then see which one (or more, in case of a draw) has the highest sum and see your results to the next page. I hope you find this quiz enjoyable (and maybe a little bit useful)! But don't forget to do your own research; and, of course, the decision is always yours!

How would your friends describe you?

A. Imaginative (%)
B. Diplomatic (^)
C. Analytic (!, #)
D. Practical and realistic (@, $)
E. Calm and organized (&)

Would you like to travel frequently for professional reasons?

A. No, too much trouble. (%, &)
B. Some traveling would be a nice change of routines. (!, @, $)
C. Sign me up! (#, ^)

What kind of people would you prefer to interact with (cause, unfortunately for some, usually you have to, to some degree at least)?

A. A team of scientists (!, @, $)
B. Interacting with a variety of people coming from many different backgrounds. (#, %, ^, &)

Do you prefer having a routine in your work-life or to change among different tasks?

A. Doing the same things everyday makes me bored, I prefer change (!, @, #)
B. I like a little bit of both. (^, &)
C. I prefer having a usual routine. ($, %)

What kind of advice do your colleagues ask you for?

A. If their figures look nice and clear ($, %)
B. Feedback for abstract/manuscript ($, ^)
C. How to solve problems with their experiments (!, @, #)
D. Tips on developing time management skills. (&)

How important is the salary for you?

A. A LOT! (#, ^)
B. Of course it matters, but it is not my primary concern. (!, @, $, %, &)

Which of the following skills do you think you are the best at?

A. Problem solving (!, #)
B. Decision making (@, $, &)
C. Negotiating (^)
D. Creativity (%)

What are you really bad at?

A. Constructing clear arguments (Remove one ^)
B. Making posters (Remove one %)
C. Writing a thesis, manuscript or grant proposal (Remove one each !, %)
D. Leading a project (Remove one of each !, @, #, &)
E. Giving feedback (Remove one $)

Do you like being challenged?

A. Not too much, but sometimes. ($, %)
B. I live for the challenge (!, @, #, ^, &).

Which task of the PhD do you enjoy the most?

A. Experiments and analysis. (!, @)
B. Making figures. (%)
C. Reading articles. ($)
D. Writing. (%, ^)
E. Attending conferences. (!, $)
F. Troubleshooting (#, &)

I prefer:

A. Applying what I learned (@, $, %)
B. Learning new things (!, #, ^, &)

Are you a team player or do you prefer working alone?

A. Mostly working alone. (!, %)
B. Mostly working in a team. (@)
C. A little bit of both. (#, $, ^, &)

Which of the following hobbies do you enjoy the most?

A. Participating in a debate club (^)
B. Reading books ($)
C. Writing (!, %)
D. Playing strategy games (@, #, &)
E. Drawing (%)

How career driven are you?

A. My work is my life. Having a successful career is important to me. (!, #, ^, &)
B. I don't care about climbing the ladder, having a good work-life balance is more important to me. (@, $, %)

In your dream job you primarily want to be:

A. Independent (!, #, %, ^, &)
B. Creative (%, &)
C. Travelling all around the globe (#)
D. Leading a team to achieve a goal (@, #, $, &)
E. Doing wet lab experiments (!, @)

Do you find troubleshooting enjoyable?

A. Yeah, it's exciting when you have a breakthrough. (!, @, #)
B. No, I wish things that are supposed to work would actually work. ($, %)
C. I don't mind it as part of the process, but it's not my favorite thing. (^, &)

What is your life goal?

A. To learn as many things as I can (!)
B. To change how science works (!, $)
C. To teach and inform people (%)
D. To help people achieve their objectives (#, ^)
E. To create something new and useful (@, &)

*The questions and conclusions of the quiz are not validated. The quiz is aimed to present the general image of a career direction, not a precise job description.

Now count your symbols and see your results below!

!	@	#	$	%	^	&

Academia (!)

This is probably the path you are most familiar with. Choosing to pursue an academic career allows for relative freedom in the choice of projects you want to work on. If you love science and enjoy challenges, independent work and frequent change in your working routine, this could be the ideal career for you. However, the low salaries in comparison to other choices, the difficulty with which you can obtain a permanent position and the constant need to find funding are the main reasons people turn away from academia. Moreover, it can be hard to become a recognized researcher in your field, as success and ability to create a good publication record can also depend on luck, besides leadership and management skills.

Industry (@)

If you enjoy wet lab experiments and the scientific process, but don't feel satisfied with an academic career due to the absence of job stability, then working in industry could be for you. While there is not so much pressure for publications, you will be losing some (but not all) of the independence of a job in academia. Instead of working in a single project of your own, you will be working on multiple projects as a team; and if one project doesn't seem promising after a few months, your boss will want you to drop it. Things progress a lot faster, while success is not determined by the discovery of something new, but by delivering the product or service that your clients want and selling it properly to them. Good marketing, business, presentation and teamwork skills are thus important.

Consulting (#)

Since your main responsibility will be to determine the best strategy for the development of your client's company, the most valuable skills will be planning and problem solving, while communication, marketing, presentation and leadership skills are also important. Working as a consultant usually requires a lot of traveling, as you will have to visit your clients to better observe the situation, and since your project changes frequently, so do your tasks. If you want to get away from experiments and interact with people from a variety of backgrounds, this career path might be for you, especially if you also happen to enjoy a challenge.

Science Publication ($)

How about instead of worrying about publications, you become the one deciding what gets published? Working in a scientific journal refers to the positions of scientific editor or publisher. As an editor, you are responsible for the manuscript selection process, meaning reading and evaluating papers, making the initial editorial decision of the review process, managing the external review and checking accepted papers for corrections. Other responsibilities include writing editorials and press releases, while you should also participate in many conferences to keep up with hot topics in science. You will therefore need good critical thinking and communication skills, as well as knowledge and interest on a broad spectrum of topics. While an editor works hand in hand with the authors, a publisher is concerned with bigger scale decisions that affect the overall picture of the journal. The role generally encompasses greater responsibilities that may have to do with hiring, assigning tasks, making financial decisions and ensuring the progress of the journal. It comes with higher salaries and gives independence and freedom to shape the face of the organization.

Science Communication (%)

If you are particularly creative, maybe you should consider working in science communication. The most conventional job in this path would be working as a journalist, writing about new scientific discoveries in a simple yet entertaining manner. You have the option to apply to journals and blogs that are either entirely science related, like Neuroscience News, or general, such as the Guardian. Many scientific organizations and institutions also hire science communicators to inform the public of their findings. Alternatively, you can work as an animator for clients who wish to concisely communicate their scientific results in an enjoyable way. Lastly, having a YouTube channel aiming to educate the audience about recent advances in science is a more modern approach to find employment in this field. There are many options you could go for and it depends on what way of communication you see yourself in the most.

Patent attorney (^)

Working as a lawyer may sound as the opposite of what you have been doing so far. Nevertheless, only people with a degree in engineering or natural sciences can become patent attorneys. A number of transferable skills you developed in your PhD are needed for this job, such as independence, verbal and written communication, attention to detail and critical thinking. Even though you won't be an active scientist, you will still have to conduct research to determine the novelty of an invention. The main task you will have to perform will be to describe the invention and negotiate patent applications, while also providing legal advice to your clients. This means you will interact with other lawyers, scientists, engineers and people from the business sector. However, you will need to work as a trainee for 3 years next to an established patent attorney and pass the relevant qualification exam that tests your knowledge on intellectual property law to become one (requirements might differ from country to country). Given that lawyers enjoy prestige and good salaries, it might be worth the extra effort.

Scientific Coordination (&)

You should already be aware of the scientific coordinator of your program. This is the person who is in charge of the scientific, technical, financial and administrative management of it. The responsibilities vary depending on the university or institution you will be working for. Besides organizing duties, scientific coordinators also have to take care of public relations and correspondence with members of the institute. They should be able to conceive and realize improvements to their programs and provide support to all the participants. Therefore, qualities such as communication, planning, problem solving and leadership are very important here, while experience in science management and administration is very useful. The number of responsibilities comes with a salary similar to a postdoc and allows you to play a critical role in the development of the respective program or project. If you have a talent for business, this could be for you!

Chrystalleni Vassiliou

The GAUSS Career Service is here to support your career!

If you have open questions after this quiz take the opportunity and explore the different offers by the GAUSS Career Service, which is supporting late-stage PhD students and postdocs in life and natural sciences on the Göttingen Campus. In addition to a tailored workshop program, information on research funding and our Career Impulse Sessions, where our alumni share their individual career path stories, we are also offering individual counselings and advice sessions where different topics, including CV and application checks, can be covered. No matter which path you are planning to take – inside or outside of academia – contact us and we are happy to help and support you in your future career.

IMPRS Alumni Mentoring Program

The IMPRS Molecular Biology and IMPRS Neurosciences ***alumni mentoring program*** aimed to connect alumni who entered various fields after completion of their studies and are now experienced professionals in their fields with PhD students or recent graduates who would be interested in that career path. The program was launched in 2019 and finished its first circle in 2020. Two participants of the program, Madhobi Sen – who finished her PhD as part of the IMPRS Molecular Biology program - and Robert Epple – a PhD student of the IMPRS Neuroscience program -, have shared with us their impressions and remarks from their experience.

Robert Epple

Job hunting felt like chasing a phantom to me. While reading descriptions of different job profiles, I would stare blankly into the void, trying to picture what phrases like "you show leadership potential, are flexible, open for changes that deal with uncertainties and ready to do the extraordinary" actually mean. When listening to career talks, a lot of those phrases were repeated and usually the speaker would answer questions about their typical day either with pointing to the fact that there is no typical day, or by staying vague and listing synonyms for meetings. So, I realized that in order to get a glimpse of what the regular week of a professional looks like, I would have to stay in long term contact with one and talk to them on a regular basis.

This is why I decided to participate in the IMPRS Alumni mentoring program. The mentor I got matched with currently works as a supply chain manager for Bayer. Before that, he started as an in-house consultant, one of the positions I already considered applying for. We talked twice a month on the phone, with me emailing him questions and talking points beforehand. Eventually, he also visited me in Göttingen and gave me the opportunity to become his shadow at work for two days. Even though the covid-19 pandemic put a halt to our plans, our interactions helped me become much more familiar with an industry job and the career opportunities provided by big companies.

Madhobi Sen

After finishing my PhD in Molecular Biology, I was quite confused about what I wanted to do. I knew I had a broad interest in scientific communication, but I wasn't fully aware of the kinds of jobs that would allow me to work in the field. When I asked our program coordinator, Dr. Steffen Burkhardt, for advice, he immediately gave me the contacts for a number of interesting alumni. Over the next few months, interactions with them helped me tremendously in identifying what various scientific communication jobs entail and also to get hired as a medical writer.

When the IMPRS Alumni Mentoring Program was announced, I applied for it hoping that it would help me to improve my skills and advance in my career. This program matches you with an alumnus contact after surveying your interests and their experience. Over the next six months, you have the opportunity to interact with them regularly. In the program, there are some events aimed at everyone, including career counselling. However, further on, each match works out individually how they will carry on their interaction. By the time the matches were made, I had already gotten the job I wanted. Nevertheless, I decided to continue with the program, as it would let me interact with someone with an experienced perspective on the job market and I was already aware of how crucial guidance and support of this kind could be. I was matched with Bettina Görner who works at Springer at product development and management. I have had several particularly interesting conversations with her, learning many useful things for someone at the beginning of their non-academic career. She has made me aware of the importance of looking towards the future and staying updated with cutting-edge and emerging areas, as well as the usefulness of acquiring a diverse set of skills. The network of alumni is vast and they are happy to support and advise you in more ways than you'd imagine. So, I would encourage anyone who finds themselves a bit lost in all the possible options after a PhD to take up this opportunity.

Chrystalleni Vassiliou

Summa cum Liesel: PhD Blog

Summa cum Liesel is a blog managed by students, aimed towards answering some important questions of the academic life of PhD students. Their idea is to make valuable conversations about the nitty-gritty of academia that happens over lunch or next to the coffee machine, available on an online platform. The chief editor, Tal Dankovich, and website designer, Niko Sirmpilatze, sat down for a chat with the GGNB Times to discuss their reasons for this initiative.

What is the blog Summa cum Liesel about?

Tal: We are a team of final stage PhD students from the IMPRS Neurosciences program. Our blog is aimed towards PhD students in life sciences. Our goal is to share science and aspects related to academia in an informal way. As a team, we developed various skills during the organization of Neurizons - a biennial conference organized by the students of the IMPRS Neurosciences program. These skills helped us start an unofficial blog about PhD student life in Göttingen, for people based in the city, as well as a more distant audience.

What kinds of blog articles do you publish?

Tal: We cover various aspects of the PhD experience, including but not limited to what everyone thinks you should know when you're a PhD candidate - but no one specifically tells you. For example, some of our articles are, "How to organize your research literature", "Leveraging RSS feeds as an academic in training" and "A valuable introduction to Pre-print Servers". On a monthly basis, we also have a column on what to do in and around Göttingen when you need to take a break from the lab.

Do you write articles for the blog as well, or do you rely on articles written by your readers?

Tal: We often have interesting conversations with people from various backgrounds. If we feel that something fits within the scope of our blog, we request them to write an article. Around 10% of people who indicate interest in submitting actually follow through. We write our own research-specific articles as well.

Is there a checklist that you follow when you ask someone to write an article for you?

Tal: This is a 'collective blog' where we create a platform for everyone to pool their knowledge. So, insights from each of our respective lunch tables, conferences or interactions are distilled into a common repository. Postdocs, who have moved on, end-stage PhD students who wished they knew stuff when they first started - everyone can contribute. We don't limit by filters or keywords but rather expand by interest. The blog and its contents are dynamic and have grown with us.

What sort of topics do you believe need more awareness?

Tal: Problems specific to students and topics that are often considered taboo. For instance, what are normal PhD salaries, aspects of doctoral supervision and the various issues that crop up - can we address them instead of ignoring them until we graduate? Also, topics that we are each talking about in our research groups but no one is really writing down - like how to plan and build careers, pitfalls to avoid in a PhD and lessons learnt the hard way from end-stage PhD candidates.

Are you looking especially for the students' perspective or would you also like to get a postdoc's or professor's perspective, if they were willing to do it?

Tal: No, we would definitely be willing to get a postdocs or a professor's perspective. I don't know if professors can relate to the problems of PhD students so much. The first or second post on the site

was written by a postdoc that used to work in the same lab as me. He wrote about pre-print servers, and how valuable they were for him at the end of his PhD, which is a very relevant topic.

Niko: That post is a pretty good example of what we need more of, and it personally affected me a lot. I had heard about pre-prints, but I never actually sat down and analyzed all the pros and cons. This article was really eye-opening for me. From that day on, I was sold on preprints. I went on to upload papers on BioRxv. This is the kind of stuff that could be of great benefit for others. There are also some nice posts about how to organize your literature or how to keep up with the latest papers in your field. Although we all know how to do it, or we all have our ways of doing it, it's useful when somebody systematically writes it down. I guess it aggregates the pros and cons. This allows you to take it in one go and digest it.

Do you have any articles in mind that will be published in the future?

Tal: Something which I hope to do in a few months or so, is how to go about the entire process of publishing a manuscript. I'm currently going through the process of submitting a manuscript for the first time. There are a lot of really technical things that no one talks about, but you need to know. For instance, what are the chances of the manuscript passing beyond the first step of rejection or going on to review. What are the chances that after it goes on to review, it'll keep continuing to go on to the next round? How to choose a journal or how to change which journal you're choosing? Your supervisor might think that you already know it. However, it's not information that you can find anywhere at the click of a button.

Niko: In the future, I would also like to see more content related to open science or how to ensure the reproducibility of results.

It appears that a part of the motivation for this blog was born out of the frustration that no one knows where to find important information related to academia.

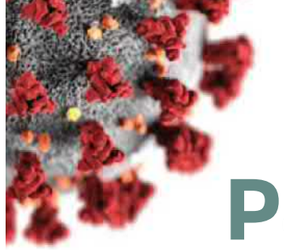
Tal: Not necessarily, not knowing where to find, but rather the unspoken assumption that everyone just knows it. We never formally learn how to submit a manuscript or how to manage our literature. Lots of people who have gone down that road before have really useful advice on it. For example, there's one post that I've been perpetually working on, which is about disposing chemicals and hazardous materials in the lab. You see people who are third-year PhD students, (I'm not excluding myself from this category) who don't know where to dispose of formaldehyde or glass waste. Many don't know how to correctly dispose of acids because when you come into a lab, nobody formally tells you what the waste disposal protocol is, because it's assumed that you already know it. And by the time you're a third year PhD student, it's humiliating to ask where you should dispose the PFA. Every lab does something different, and it seems that 90 percent of people are doing it wrong.

Niko: There's a lot of collective knowledge amongst us in the community. However, it's fragmented and hidden and only exchanged during face-to-face conversations. The way I see it, the purpose was to create a collective blog. That's what I call it, because it's not my blog or our blog. It's a space where the community can store and aggregate their tidbits of knowledge and information.

What do you envision for the blog beyond your own PhD life?

Tal: I never thought about it. In a post-PhD world, I don't know if there would be room for a blog or a need for it. I'm not a postdoc yet, but I think it probably throws up different challenges in comparison to a PhD. If I'm still interested in writing something, then I'll find some other way of getting it out of my system. As I said, it's a community initiative, so if there are people in the community who are willing to maintain it, then I don't see why not. I would be very happy to pass on the task or the joy of this blog to other people. That way it can continue to grow and evolve long after we leave the city of Göttingen.

Dajana Galka, Neil Singh, and Jennifer Rachel



What Has the Corona Pandemic Taught You?

Deniz Yüzak
Corona has taught me that going outside is not so necessary to be a functional member of society.

Rashi Goel
I have learnt that online conferences are very fun and are great to give less privileged people a chance to attend! Also, people can ask questions without being seen which is great

Valentina Manzini
By doing lab shifts I made a weird discovery. I learnt that I work so much better from 2pm to 10pm. I am going to continue with these working hours for the rest of my PhD.

Linda Olsthoorn
Part of the work we do for our PhD is done way more productively at home (reading/analysing/thinking) than in the lab environment. And my lab work is more efficient when I am forced to optimize and pre-plan my experiments in more detail than normally.

Melanie Nuesch Germano
The pandemic has taught me to value stable, robust workplaces and jobs. It highlighted how important it is to have a healthy work environment, good management and support. The same for the home and relationships - strong, healthy interactions will stay strong and help you through any bad time, and even make it feel easy.

Dmytro Nesterenko
For me having a separate work environment turned out to be very important. It's easier to be productive in the lab.

Anonymous
During Corona time I was mainly reflecting on my PhD life so far. I have realized that it was nothing but a rushed, sleepless, friendless period that got me nowhere. During March I had time to slow down, get some badly needed rest, think about the project more deeply and actually read more (not just think about how I should read more). That helped me to look at my work and myself less seriously which greatly reduced the stress I felt. As by magic, the project started working like never before. In summary, Corona time taught me that when I'm feeling fine, everything else will fall into place. Additionally Corona time was a time of intense learning for me.

Larissa Breuer
I found out that I am a very decent cook, especially when I have time to do so! It also helped me realize that much of the office work at the lab can easily be done at home.

Chrystalleni Vassiliou
I realized that, even though I really enjoy staying at home and spending time alone, changing environments by leaving the flat and having social interactions are also necessary.

Kristin Kaduk
I was surprised that we are very well equipped with technology and creative ideas to keep in touch despite no option to meet physically. I experienced funny gaming evenings with friends and family playing for example "codenames" or participating in digital conferences.

Jenifer Rachel
I realized that I work much more efficiently and get more work done, when I am forced to work shorter hours, which was a side-effect of the pandemic for me. I was also really surprised to see how well courses could translate from an in-person to online format!

Ting-Hsuan Lu
I have learned that meetings can be more efficient when they go to an online format. And according to the change of the pandemic situation, I have to get my daily plan more flexible to fit the new rules. I do also feel that I need to consider more carefully about the priority of social activity to limit the risks.

The Gänseliesel

The Gänseliesel in Göttingen, which has been standing on the old market place in front of the historic Göttingen town hall since 1901, is considered the most kissed woman in the world. The fountain is the best-known landmark of the city, despite its small size. Today, it is mostly famous as an integral part of the celebration for doctorate students who kiss her after their graduation from the University of Göttingen. But do you know how it all began?

It was not always a goose girl who was standing on the market square of Göttingen. Before, there was the Löwenbrunnen (lion fountain) placed in 1568. On its pillar stood a crowned lion looking towards the town hall and holding the town coat of arms in its claws, probably an allusion to the fact that the descendants of Heinrich der Löwe (Henry the Lion) had granted Göttingen town rights. In 1800, the fountain figure was removed and replaced by a simple fountain with a lattice fence. About 140 years later, the idea of designing a lion fountain again came up, but this was rejected by the citizens. Thus, in February 1898, a competition was held to design a new market fountain in Göttingen. Out of 46 designs received, only 12 remained in the competition after a preliminary selection. The goose girl won second prize and the best three designs were put on exhibition.

The simple design of the goose girl has stolen the hearts of Göttingen citizens. In the city, there were already numerous statues of famous university scientists and they wished for one which would represent them - the common people and their work. The Gänseliesel sculpture symbolizes a girl‘s work. The bronze figure is barefoot and wears a simple dress. It is an ordinary girl, unknown by name. The Gänseliesel carries geese for sale at the market. Göttingen was famous for its geese, which were sold at Christmas at the market as „Chöttinger Mastchänse“. As a result of a long discussion, the Gänseliesel, designed by the architect Heinrich Stöckhardt, won the competition and was created by the sculptor Paul Nisse.

Right after it was placed on the square market in 1901, it attracted newly enrolled students of the University of Göttingen who began to climb up the fountain and kiss the goose girl for good luck, which became the university tradition. As the number of students increased sharply after World War I and the police were overwhelmed with maintaining order on the market square, the city issued a decree in 1926 that made climbing the market fountain - and thus kissing the Gänseliesel - a punishable offence. However, it was not seriously followed and on the occasion of the 100th anniversary of the Gänseliesel, the city council officially lifted the ban on kissing. The tradition itself has changed over time and in recent decades it was no longer the newly enrolled students who kissed the Gänseliesel, but doctoral students after their graduation. At this occasion, the students also leave flowers at the Gänseliesel.

Not many visitors are aware of the fact that the original Gänseliesel has been removed from its pedestal. After several damages, it was replaced by a copy in 1990. The restored original of the sculpture is in the Town Museum (Städtisches Museum), from where it occasionally makes an excursion, last time being last year. Well packed in a large wooden box, it was brought to the Deutsches Theater and was part of the stage decoration of the opera „Rodrigo“ during the International Handel Festival.

To honour the Girl of the Geese, the city of Göttingen organizes the so-called Gänselieselfest. It takes place every year on a weekend in September since 1995. The main attraction of the festival is the election of a young woman who represents the city and the statue for one year as the Gänseliesel.

References

http://geschichtswerkstatt-goettingen.de/stadtrundgaenge/frauengeschichte-19-jahrhundert/gaenseliesel/mehr-ueber-das-gaenseliesel.html
http://goest.de/gaenseliesel.htm
https://www.brauchwiki.de/das-goettinger-gaenseliesel/
https://www.thevintagenews.com/2016/08/16/priority-10/
https://www.geocaching.com/track/details.aspx?guid=5e5d6e38-1811-4898-9d1e-725554a65e89

Dajana Galka

Scientists for Future Göttingen

Most of our readers have probably (hopefully!) heard about the Fridays for Future (FFF) movement – an international climate movement originating in Sweden, where it was initiated by environmental activist Greta Thunberg in August 2018. To support the pupils' movement with scientific facts, the initiative Scientists for Future (S4F) was founded in 2019. Between March 12th and March 22nd of the same year, more than 26,800 German, Austrian and Swiss scientists signed the "Statement of scientists and scholars concerning the protests for more climate protection" [1,2]. Ever since then, more than 70 local groups were founded from all over Germany. We talked to **Dr. Alok Weßel**, founder of the S4F regional group in Göttingen.

Alok, thanks for giving us some insights into your work for the Scientists for Future (S4F) movement. So, first of all, what are the Scientists for Future?

Scientists for Future was founded as a science-based support for the protesting young students about two years ago. It began with a petition stating that the claim for more climate saving policies is in strong agreement with science, and the knowledge about ongoing climate change. We, in Göttingen, were one of the first regional groups founded, but still needed a couple of months to grow from a bunch of interested people, loosely coupled through Whatsapp, to a functioning work group.

Wow, one of the first regional groups! How did you come up with the idea of founding a local group?

That was a rather spontaneous decision when we joined a Fridays for Future protest. I had printed the S4F logo, but since I ran out of ink, the famous red warning stripes had turned into an ugly pink. [laughs]

When I was asked to give a speech there, I had nothing prepared. So, I improvised a few encouraging sentences for the young students and asked the crowd how many scientists were present – and a few yelled back at me. Afterwards, some of them approached me, and asked if there was a local group existing already. When I set up a messenger group on the same day, a quiet voice in the back of my mind raised a warning that I might run into a lot of work. Back then, I did not expect how true this would turn out to be.

Do you do all that work alone?"

No, the founders of S4F-Gö (which is our local group) was a triumvirate of friends, consisting of a technical editor, an ocean biologist and a physicist (me). When the group grew, we managed to share responsibilities and distribute the workload on more shoulders.

That sounds like a very diverse scientific background! Are your members equally diverse in their fields of science? How many (active/passive) members do you have?

We cover plenty of science disciplines ranging from classical physics, chemistry and biology to psychology, engineering and social science. In my opinion, the broader the member background, the better – because climate change (and its demand for solutions) is a topic influencing all groups of society and economic fields.

Last summer, we finally made the step to establish our own mailing list. For this, we separated active members from passively interested people. The ratio now is 25/60. After an initial recruiting phase with info posters all over the campus, we saw new faces in almost every meeting (which takes place in odd calendar weeks by the way *recruiting, recruiting* - just in case you might want to join!). But many came just once.

So now we are facing a stable plateau, maybe even more of a negative than a positive trend during the last weeks. COVID-19 anyhow slowed down climate protest dynamics, overall.

Ok, so let's get a bit deeper into the matter. What does the S4F Göttingen work look like?

We spent quite some effort in defining the orientation and rules of cooperation of our task force, finally stating that our major focus lies on public relations and communicating science to the broad society. Therefore, we had information desks and poster sessions in public. I myself was involved in a panel discussion with our local parliamentarians – an exciting experience! Others held public talks, e.g. on health risks due to climate change, negative emission technologies, or the state of local climate politics. We also had a running series of talks in the Deutsche Theater.

In cooperation with groups and coordinators of "Scientists for Future" in other regions, we also assess to what extent current developments, policies, proposals and campaigns are based on scientific evidence, and support or impede sustainable development and mitigation of climate change.

Apart from that, a sub-group is working on local solution strategies to make Göttingen and its vicinity climate neutral as fast as possible. Some of our members assist the town council by topic-specific work groups.

However, climate science is a broad field of knowledge. And we are expected to have expertise in all areas. So, in the background, we are also very active in teaching and educating each other – which for instance was our main activity during the virus lockdown. By saying so, I want to encourage you – readers and potential new members – to not be afraid of lacking wisdom. We all walked a long road and still do so.

That sounds really interesting, you have a lot of varied activities! So, is there any activity or anything else that you are particularly proud of so far, any personal highlights?

For myself, this entire process of watching our group and its working structures grow, was amazing. Many of us work full-time beside our S4F responsibilities or have families, so this kind of 'world-changing-activities' often take much longer to plan and establish than expected. Hence, I am most proud that we still exist, and are active. Moreover, guiding a group of volunteers is very different from leading a project team as I know it from my current employment. I believe a strong emphasis on democratic decisions and a pronounced agile leading is crucial. My strategy is to offer potential projects, but in the end, only those that I and my fellows have the drive for survive. In sum, I am happy to see the ongoing growth of knowledge and ideas for improvements for our future.

That is indeed something to be proud of! And what are your goals for the near/far future?

As mentioned, we lately shifted our focus mostly on internal talks. So, the next step will be to start the kind of activities which will have more impact on the public again, like the theatre talks. Many of our fellow citizens already have the rising feeling that 'business as usual' will run our society into severe problems. You – with your background in science – know that too. But many people are just not sure, or lack knowledge, on how strong the scientific evidence and the need for change really is. That's why many of them are susceptible to statements by people denying the urgency for action or even the existence of the problems at all. But in the end, all of us have to stand up for a change. The good news is that not only our climate system has a tipping point (dangerous) but also our society (cool thing!).

In physics terms: If we manage to raise the amount of excited people over a certain threshold – the movement will grow by itself. Only if we manage to make a critical mass of people engage with this topic, it will have the necessary impact for change in politics and the entire society.

Very well said! So how can our interested readers join or support you?

It's rather simple: contact us via goettingen@scientists4future.org or join us in one of our meetings (Tuesday evenings 7 – 9 pm, every odd week). We are still in strong need of helping hands. It's not only about specific science knowledge but also simple organization skills needed, like coordinating work groups, maintaining social media channels, or performing information desks. Surely, we are happy for any support.

That was a very insightful interview, thank you so much, Alok! Any concluding words you want to give our readers?

Once I realized the terrifying scenario into which we have manoeuvred our planet, I could no longer stand back and do nothing. I am being completely honest, when I end this interview with a serious invocation: Please stand up to fight climate change! It will change our world irreversibly for centuries, causing a lot of harm to all living beings and making a life on earth as we know it unlikely. The coming few years are absolutely important to make a change. We should use it as best as we can.

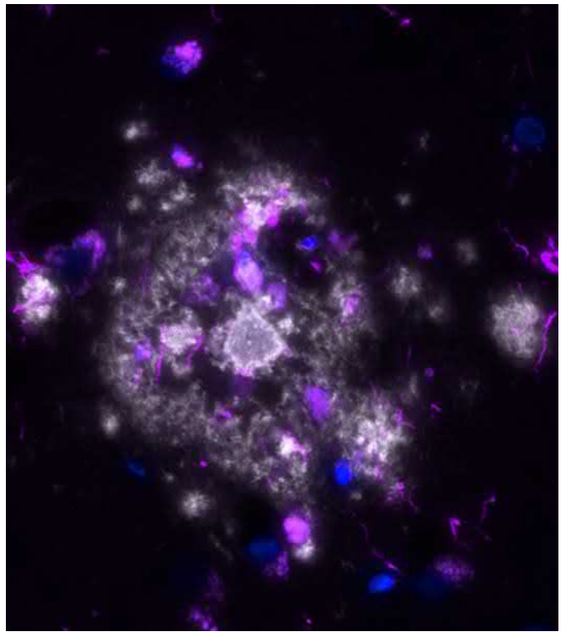
Elisa Krawczyk

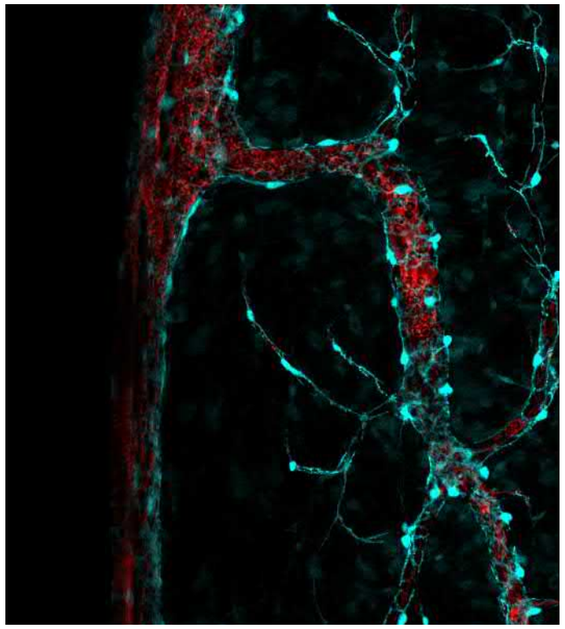
References

[1] https://www.scientists4future.org/stellungnahme/statement-text/
[2] https://www.scientists4future.org/stellungnahme/unterschriften/

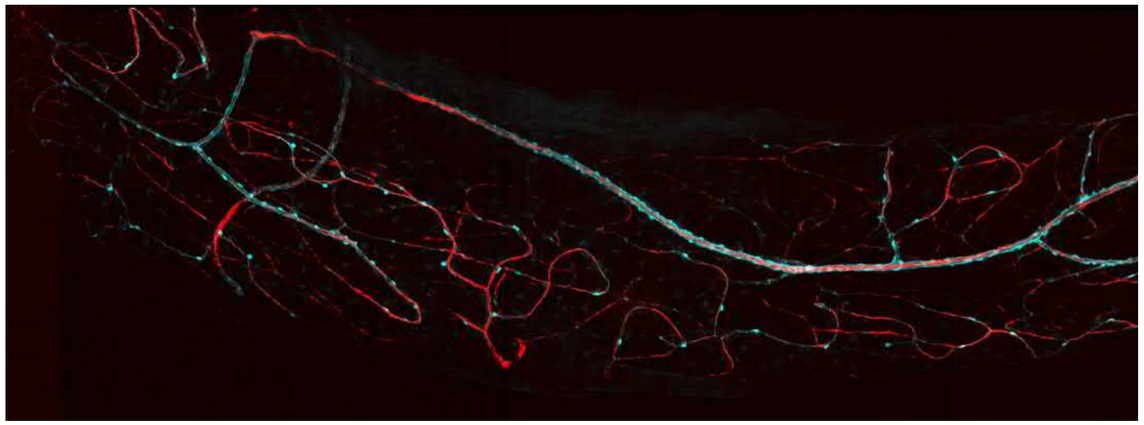
Photo Gallery

Human Amyloid Plaque and Microglia
Andrew Octavian Sasmita

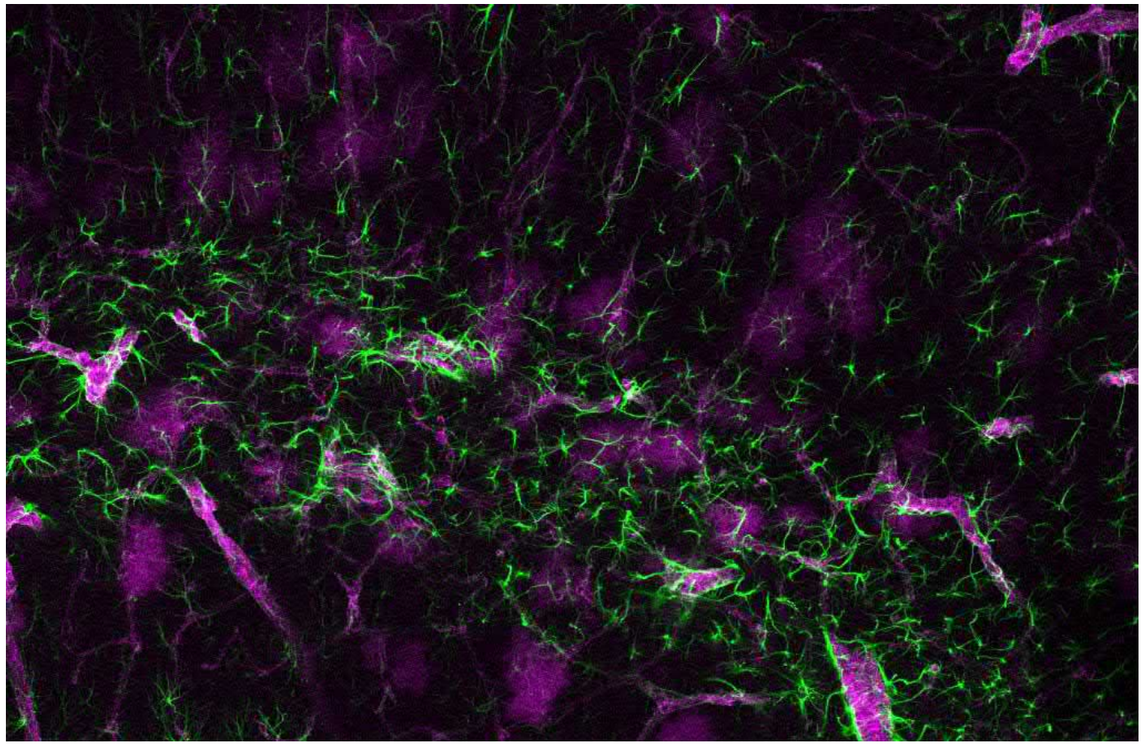




Vein and Pericytes (Mouse Optic Nerve)
Alejandro Restrepo Arango



Mouse Optic Nerve Vasculature | Alejandro Restrepo Arango



Blood Vessels and Astrocytes (Mouse Optic Nerve) | Alejandro Restrepo Arango

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