



GGNB *Times*

GGNB

*The present
and future
of the GGNB*

RESEARCH

*From good scientific
theory to practice –
A true story*

RENDEZ-VOUS

**WITH
SCIENTISTS**

GÖTTINGEN

*A melting pot where
the world meets to
follow their passion*

ALUMNI

*Simone Mayer -
Postdoc with ocean
view*

SCIENTIFIC

COMMUNICATION
*A thesis in three
minutes*

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We, the editorial team of *GGNB Times*, are delighted to present to you the second issue of our annual newsletter. We share with you our endeavor to strengthen the communication among GGNB students and bring to you valuable insights into the GGNB, Göttingen and your fellow students. Like in our first issue, you will find diverse articles about the research happening with GGNB participation, opportunities for graduate students in and around Göttingen, and fascinating stories from GGNB alumni about their life after graduation.

The GGNB is currently at the crossroads as the funding of the excellence initiative ends next year. While there are still open questions how GGNB will join forces with GAUSS as the umbrella school, all institutions hosting the GGNB have already made firm long-term commitments this year regarding the team of the GGNB Office, paving the way for a future securing most of the benefits to GGNB students. On page 13, we recapitulate what makes GGNB special and provide some first insights about what the future might hold.

2017 was an extraordinary year not only for the GGNB but for the scientific community worldwide. In many countries, free and independent science is under threat. The most noteworthy answer from the scientific community was the March for Science in April. It was the largest demonstration for scientific values ever, and in most places, including Göttingen, a grassroots movement. As science communication becomes more and more important for researchers, we dedicate a whole section to this topic, starting on page 35.

But above all, *GGNB Times* is a tool to connect and to bring you closer to your fellow students. It is a newsletter from students for students. We are looking for your feedback, your stories, your ideas and your help. Get in touch with us, contact us and share your thoughts. You can reach us by mail (ggnbnews@gwdg.de) or by visiting our newly established Facebook page (facebook.com/ggnbtimes). You can also join our Facebook group (GGNB network) to connect with other GGNB students, or check out the GGNB LinkedIn group. Soon, we will actively look for new editors to work on the third issue and you can be part of it. We are very excited to hear about your opinion and receive your feedback.

The *GGNB Times* team

Welcome

A research tale from paradise

Carlos J Duque-Afonso

Sun. Black sand beaches. Surf. Volcanos. Mojo picón. A perpetual summer. These might be the first thoughts that come to mind when someone thinks about Tenerife, a well-known touristic destination in the Atlantic Ocean. What about science on the Canary Islands? There are two public universities, one in La Laguna, Tenerife and one in Las Palmas de Gran Canaria, and more than 30 research centers focused on Astrophysics, Geology, Volcanology, Marine Sciences and Biomedical Sciences, among other disciplines. A year ago I spotted a post-doc position advertisement in the FENS newsletter in La Laguna for an ERC-granted project. To me, this meant that a niche of neuroscience was growing back home. I wanted to know more about the

group which, despite the difficulties of being in Spain and in a remote island, earned a highly competitive European grant. During the Christmas break I talked to the PI of the group, Teresa Giraldez.

Teresa started her research career in the lab of Barros and de la Peña, after completing her bachelor in Biochemistry at the University of Oviedo.



Teresa Giraldez and one of her imaging setups © Francisco Trujillo

She continued her post-doc training in the Sigworth lab at Yale, where she contributed to the development of patch clamp fluorometry and met her husband, Diego Álvarez de la Rosa. Diego was awarded with a Ramon y Cajal fellowship, a luxurious post-doc position created by the Spanish government to bring back brilliant talents that have left the country. This opportunity led them to the decision of coming back home. But why Tenerife, and not Barcelona or Madrid? Even though they contacted many labs around Spain, the conditions implied working under the supervision of another PI. In contrast, the University of La Laguna provided them with the perfect environment to establish their own independent research group. After weighing pros and cons, they decided to take a leap of faith and come to the island in 2006 with a two-month-old daughter, a prestigious scholarship for Diego, uncertainty for Teresa

and a dream of making a difference in the scientific Canary scene.

Two years later, Teresa earned the Miguel Servet award allowing her to establish her own group, “Molecular Basis of Human Channelopathies”. Her team investigates the role of Kv7 channels in an epilepsy mouse model, the conformational dynamics of calcium- and voltage-gated BK channels through patch clamp fluorometry, and the development of probes to study neuronal calcium nanodomains using super resolution microscopy.

The most important reason for choosing Tenerife was the quality of life and its compatibility with producing cutting-edge science. The current status of biomedical research on the Canaries is improving, as reflected by the increasing number of national and international projects, including two ERC-granted projects. More importantly, the regional government of the Canari-

es is strengthening its support with different strategies. This included the creation of the Agustin de Betancourt and the Viera y Clavijo post-doc funding options (also known as the Canarian “Ramon y Cajal” scholarship), and the renewal of PhD funding programs that were discontinued because of the economic crisis. This situation creates a thriving niche where the investment in infrastructures is high and the local researchers can perform their science in a comfortable environment.

Unfortunately, several disadvantages do exist. A characteristically endemic difficulty is a slightly obscure customs system. Every single time that a piece of equipment or a reactive arrives, its price can be surprisingly, substantially and randomly increased just due to customs and processing fees, which Teresa likes to call “The revolutionary tax”. Additionally, the transport of animal

lines is difficult since airlines have ceased their transport. Lastly, funding agencies do not provide additional financial resources for attending conferences or visiting other research centers, which can only be done by plane, adding to the already high expenses.

Moreover, problems common in the entire Spanish academic environment contribute to the difficulties. For example, teaching is regarded as the main academic activity, while research does not weigh in as important. Another challenge is attracting staff from outside the EU.

Teresa pointed out that international collaborations are established mainly as a result of a proactive disposition from the researcher. Furthermore, the fact of counting with state-of-the-art but unpacked facilities and being located in such a fortunate enclave does make a

difference and positively encourages many collaborations and visits. Over the years, many scientists have established long-lasting bonds with Teresa and Diego and have produced a very positive impact on the University with their seminars and lectures.

With a smile, Teresa assured me that the overall balance is positive and in many aspects Tenerife is a privileged location. The approval for the creation of an Institute for Neurosciences (IUNE) at the same university last February and the increasing attempts to recruit research personnel for every stage is paving the ground to convert the University of La Laguna into an excellent research hub. Hopefully, when you start thinking of your next career move, Tenerife will not only come to your mind as the perfect holiday destination, but perhaps as the perfect place to continue your scientific career.



The volcano Teide and the “sea of clouds” © Paola Agüí González

Our body V910xs plus

Raúl Quiñonez Uribe



© PhOtOnQuAnTiQuE/flickr

Considering how we take care of our material goods, why don't we take better care of our body?

Our body is the most fascinating, complex and functional “ma-

chine” we will ever own. Each organ is state-of-the-art technology! An ever-stopping electromechanical pump? The heart. Adaptable lenses with built-in polychromatic light sensors? The eyes. The most sophisticated data exchange network anyone will use? The brain.

At any single moment, billions of events take place allowing us to stay alive and do whatever we want. Events that

lead to: our state of consciousness, secretion of hormones regulating several processes, neuronal signals and connections that - using electricity - communicate our different

systems and organs and of course the thousands of ideas that cross our mind every single day as well as our ability to reason and feel emotions. Simply amazing!

I repeat: our body is the most fascinating “machine” we will ever have. Trying its best to follow our demands without complaining. Taking us everywhere and enabling us the perception of so many colors, smells and tastes. Train to run a marathon; it will adapt to achieve it. Aim to learn math or to become a great dancer; it will also allow you to do that. No technology in the world can be compared to what it offers. We must be thankful for it and treat it like the “super machine” it is. Eat healthy, sleep as recommended, exercise, go to the doctor.

Thanks, science, for helping us better understand our body. Thanks, body, for letting us do science.

How do salty deserts form?

Jana Lasser

I am an experimental physicist interested in pattern formation on the surface of salt deserts. Salt deserts are major sources of atmospheric dust. Understanding their surface morphology contributes valuable insight to climate modeling and the prevention of harmful dust storms. Most salt crusts in deserts express very intricate and ordered polygonal ridge-struc-

tures with a diameter of about one meter. There are several competing theories explaining why these structures form but none of them is able to explain the rather large diameter of the polygons. In my PhD, I follow a new theory where I connect the patterns expressed on the surface with subsurface dynamics, which could explain the formation of patterns as well as their observed length

scale.

Salt deserts are not dry. The crusts lie on top of a body of sand filled with salty water. Water constantly evaporates on the crust's surface, leaving the salt behind and building up a concentration gradient: saltier and therefore heavier water sits on top of fresher water. This configuration becomes unsta-



Racetrack Playa in Death Valley, California © Jana Lasser

ble and, eventually, the evaporation drives convection rolls that constantly transport fresh water up and salty water down. My theory now states that the patterns visible on the surface form on the boundaries of these convection rolls, as salt concentration there is highest. This predicts that salt concentration in the underground is not uniform. To test my hypothesis, I recently went on a field campaign to the salt deserts of California to collect sub-surface sand samples and analyze them with respect to their salt concentration.

From good scientific theory to practice – a true story

Science is built on trust. All your education and your theories are derived from scientific studies you believe are correct. But what if they are not? What if those results from former studies motivating your own work are just artifacts resulting from sloppy research, or worse, are manipulated on purpose by the authors?

No matter how frustrating and cumbersome scientific research might be, we all need to perform our work appropriately. A key phrase usually used in this context is “good scientific practice”. It is also the title of the only mandatory seminar for GGNB students, a clear sign from the GGNB underlining its importance. The most prominent cases of scientific misconduct discussed in this seminar are the most extreme like plagiarism, data manipulation or data fabrication. Although I knew that such cases are real, I had a hard time picturing that something similar could happen wi-

thin the field related to my research. Perhaps you can imagine my surprise when I learned that a former PhD graduate exactly in this research field got stripped of his PhD title due to alleged misconduct.

To realize what good scientific practice entails, I think it is important to keep in mind how easily scientific misconduct can happen and that it can happen anywhere and in any field of science. I would like to tell you this story, a case of a student like you and me. To protect the identity of that person, I will use the pseudonym John and I will neither tell you where he worked at nor my own identity.

John was a student just like everyone else. Driven by the fascination for the scientific world he decided to pursue the road towards a PhD. As every graduate student knows, it is a long road full of turns, pitfalls and dead ends. It can be frus-

trating sometimes, but earning a PhD means to deal with such frustrations. John conducted his work thoroughly. He was neither lazy nor careless. He worked closely together with Pete, another graduate student at that time. When John graduated, his work led to promising results, not groundbreaking or Nobel Prize-smelling, but solid. To clarify and strengthen his results the lab decided to do additional experiments. Therefore, apart from the PhD thesis, no scientific publication originated from John’s work at the time of his graduation. John left the lab and quit academia for a job outside research.

About a year later, John’s supervisor teamed up with scientists from a different lab for further data analyses. John had already left the lab but Pete was around for inquiries. Explaining lab-specific data formats and processing routines to outsiders can be a

cumbersome task considering the many potential ways of misinterpretation. After a while Pete received an email regarding some ambiguity in John's data. Pete started to look into what seemed at first to be just a mishap, but unfolded to become an actual problem. He spent hours, days, weeks, but the data did not look right. He checked each step of the data analysis process, looked at each data plot, the lab-book, the data acquisition and the raw data. After a few weeks, he went to a person more experienced with the data processing methods used in the lab. They started all over, double checked, triple checked, quadruple

gave John the benefit of the doubt and consequently, the clear goal was to find a scientific explanation for the discrepancies, meaning that no manipulation had been conducted. The best person for help was John himself. They did not accuse him of misconduct; they did not want to believe it after all. John was asked for help to explain the discrepancies in the data. However, he was not exactly happy about helping out after he quit this chapter of his life. How can you blame him? If you ever had the pleasure to work with your data much later, you would know how painful and time consuming it is to figure out all the details within

to find a harmless explanation for the problem with the data. They contacted their superior about a possible case of scientific misconduct involving data manipulation, who in turn informed John's graduate school. Data manipulation is a strong accusation and the graduate school took it very seriously. The case was evaluated by outside experts. After carefully reviewing the original data, the experts concluded that manipulation of the data could not be ruled out. The graduate school informed the university and its legal department. From then on, all communication was between the university's legal department, John and his lawyer. Instead of denying the accusation or cooperating to explain the problem with the data, John tried to deflect any responsibility, to no avail: It is the responsibility of the PhD student, not the lab's or anyone else's, to ensure all results reported in the thesis are correct.

Eventually, the university decided to revoke John's doctorate degree. He could have filed an objection, but he did not and returned his PhD certificate. Now the case is closed.

John never confessed nor explained himself. Pete was deeply frustrated that a person he considered a friend might have ended up manipulating data in a project they worked on together. The reasons why John might have manipulated the data will remain unknown. However, probably all scientists may know the feeling of wanting to make their findings appear more groundbreaking than they are. It does not always matter how smart you are or how much time you in-

Are you looking for more information about "good scientific practice"?

The internal page of the GGNB website offers a collection of articles and information materials from various sources helping you to conduct your research properly

checked, but no matter how they looked at it, it appeared the data were flawed. Pete worked for years together with John. He was not able to manipulate the data without Pete noticing, was he? Of course, they did not constantly look over each other's shoulder, but would John really have been able to present false results and still look Pete in the eyes?

Pete and his colleague contacted their supervisor and described the situation: they had found discrepancies in the data, which they could not explain. They

the analysis again. But a PhD thesis is a scientific publication and a research project does not end with publishing. You are responsible for your work and your thesis years after publication. Pete and his supervisor pushed John stronger towards a meeting. They even offered to visit him at his home for his convenience. But he avoided offers and played for time.

Around two years after Pete received the first email regarding John's data, Pete and his supervisor, frustrated by John's unwillingness to help or explain, gave up trying

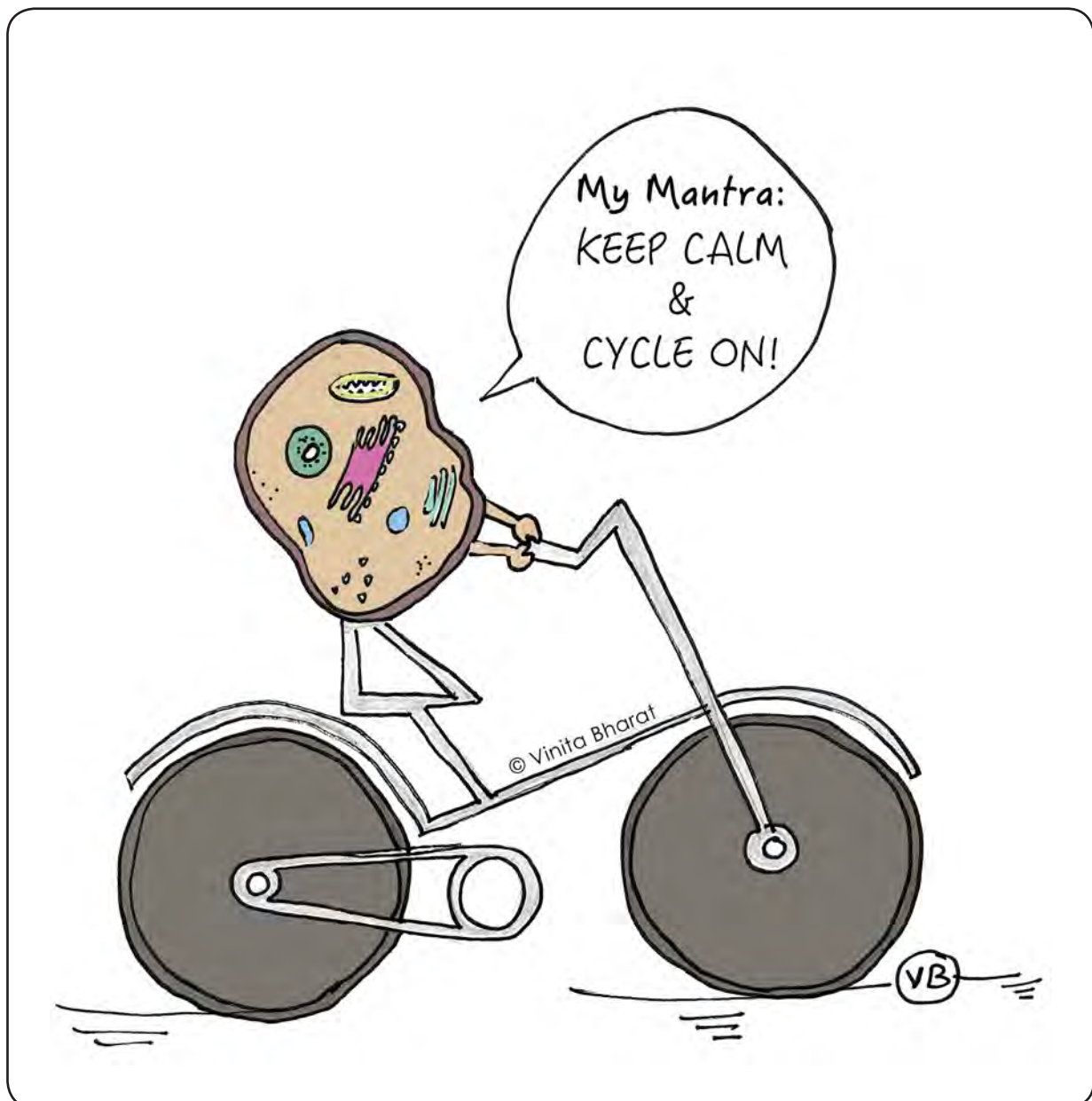
vest in your project, you might end up in a dead end. But the committee judging your PhD is aware of the circumstances; after all, they are scientists as well. John's project was risky from the beginning but he had designed and conducted all his experiments well and thoroughly. He clearly would have gotten his degree even without the interesting results and since he quit science, the stakes were not all that high for him anyway.

Next time you attend a "good scientific practice" seminar or listen to a talk on a similar topic, keep in mind those cases are real. John's gra-

duate school and the legal department very carefully considered the case with the help of two experts. This was in addition to the two years of investigation by the lab; all intended to ensure that John gets the benefit-of-doubt and can contribute to answering the questions about the data. And just like John's graduate school, the GGNB will neither treat misconduct lightly nor judge you easily.

During your PhD, you will encounter ups and downs, sometimes the downs might seem overwhelming but this is just scientific research. The people around you under-

go the same experience and it does not have to be your fault or lack of competence if your project is stuck. Research means trial and error. Consequently, the error is an integral part. The key is to learn from errors and not to disguise them. Our main responsibility is honesty that we can continue to trust each other.



Dr. Melina Schuh

Anupam Raina

Dr. Melina Schuh is director of the Department of Meiosis at the MPI for Biophysical Chemistry. The Schuh-Laboratory aims to understand meiosis in human oocytes. They pioneered methods that facilitated the first study of meiosis and causes of aneuploidy directly in live human oocytes.



What is the driving force behind your career?

A major driving force is scientific curiosity. I really enjoy to discover something new and to think about topics from a different, unusual angle.

What do you think recruitment committees look for to hire a scientist for the position of a Group Leader or a Director?

Recruitment committees often search for scientists who work on new topics that will ex-

tend the research profile of the institute and that are likely to remain interesting in the longer term. Working on new topics, techniques or model organisms may therefore help you to obtain a group leader position in the future.

What advice would you like to give to Ph.D. students?

Be ambitious when you choose your project, but also constantly monitor if things are progressing or if you should change your project.

Do not spend all your time with experiments but reserve enough time for reading and thinking. In this way, you can optimize the experimental strategies that you use and avoid that you waste your time on something that has already

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been done or is unlikely to work. You should also feel responsible for your project. Think about experiments yourself and learn how to work independently. But also listen to advice from your supervisors of course, as they will be able to judge whether the experiments you suggest are useful or not. Finally, it is helpful to join a good and scientifically rigorous lab so that you experience first-hand how cutting-edge research is done.

Dr. Halyna Shcherbata

Shruti Chhetri

Halyna Shcherbata is Max Planck Research Group Leader at the Gene Expression and Signaling Group. She was recognized as an EMBO Young Investigator in 2014. Her passion to utilize Drosophila as a tool to study the complex role of miRNAs in human disease makes her unique in the field of Developmental Biology.

What is the motivation and the driving force in your career?

I want to know the unknowns. There is no other job that allows this. There is so much more to learn and to discover that it's almost ne-

ver ending. You can find one answer and many other questions will pop up which is very exciting.

What do you think is the most rewarding aspect of science and what do you enjoy the most in science?

Freedom to think independently. You can test your ideas and see the result and no one can take away this freedom from you. You see your ideas becoming reality and giving hopes to many inventions and research that are yet to be discovered.

What advice would you like to give to PhD students? What do you expect from them?

It depends on students and their personality. I most importantly would like to motivate them. Be

motivated, as without motivation one cannot thrive and commit the hours and dedication that a PhD will demand from you. Be patient and learn to believe in some ideas that may sound absurd but at the end, it will be rewarding.

Besides science, what are you most passionate about?

My family and friends.

What are your hobbies?

I read a lot. I'd like to see what we are as a society and why people are doing different things. My current read

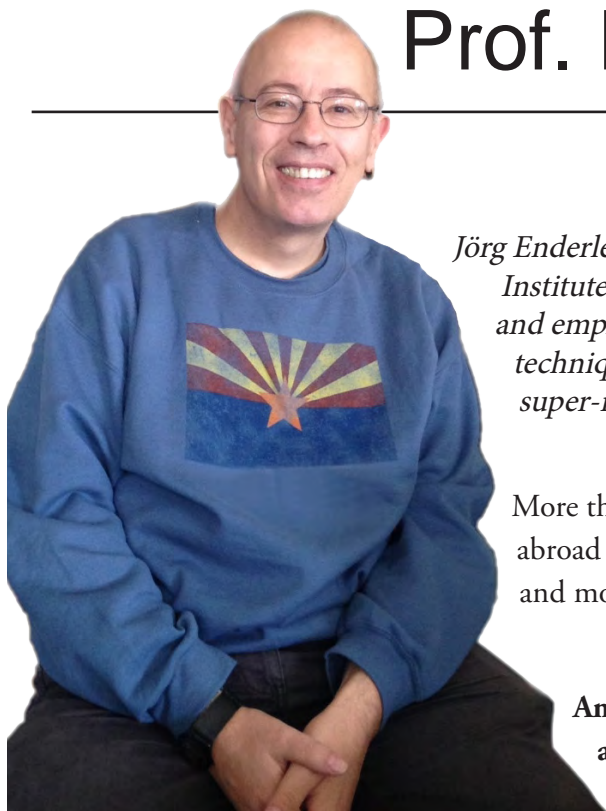


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is "How to thrive in a world of too much".

Prof. Dr. Jörg Enderlein

Raúl Quiñonez Uribe



Jörg Enderlein's group for Biophysics / Complex Systems is part of the Third Institute of Physics of the University of Göttingen. The group develops and employs a broad array of fluorescence microscopy and spectroscopy techniques with an emphasis on single-molecule techniques and novel super-resolution methods of light microscopy and their application to biophysics and the physics of complex systems.

More than half of the group is from abroad and that makes it more fun and more productive.

Any advice to balance career and personal life?

Pff, this is a difficult one. There must be commitments. As a scientist, you often change working/living places, and then, of course, it really depends on how much your partner is willing to tolerate this.

What is the most rewarding aspect of your career as a professor in science?

Two things: One is to get your work published in a good journal and see that the scientific community appreciates your ideas. The second is to have a good influence on my students. I really put emphasis on my teaching, and when a student comes to me and tells me "wow, I learned so much", for me that is super rewarding.

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How important is it to work with people from abroad, with different cultures, customs, religions?

It is very important. Science is an international enterprise. I really love having a super international group.

What is your main goal in life?

Haha! To be a good person. I really mean it. It's not about achieving success at any price. One of my go-

als is that people in my group feel happy. Science is not only a profession, it is a lifestyle and we should have fun while doing it. So, I want

my colleagues to have fun together with me.

Dr. Julia Gross

Anita Smarandache

Julia Gross is a Junior Group Leader in the Department of Developmental Biochemistry and the Department of Hematology and Medical Oncology at the University Medical Center Göttingen. Her research focuses on extracellular signal transduction.

You are working on exosomes, how did you come across this new field?

Exosomes are currently a hot topic, however they were already discovered in the 1990s. These 100nm membranous particles are secreted by cells in various tissues, being important in cell-cell communication. They could have tremendous potential as biomarkers, similar to circulating tumor cells. Still, better methods are required to verify their functional relevance in vivo.

How do you manage to balance personal and professional life?

It is all about the French revolution theme: liberté, fraternité, égalité. Besides having flexible working hours offered by the academic environment, it is very important to have

flexible day-care and a supporting environment and family. You need solidarity, for example, we have a parents group organizing play-dates with dinners. Most importantly in my eyes: you need equality with your partner! Then both of you can have a family and a career.



Do you think it is possible to switch to industry and return to academia?

I think if you want to try something different, you should have good reasons for it, and if you revert on your decision, you should have good reasons for that as well. Whatever you do, you should have a strong personal motivation for it.

What advice would you like to give to Ph.D. students?

Stay open and true to your interests, curiosity and enjoy your time making your way in science. Enjoy the international atmosphere, the different thinking patterns, change fields, universities and countries.

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The 3 plus 1 year time limit of the GGNB on PhD projects

Sebastian Jähne

The GGNB offers an excellent structured framework for its PhD programs. Within this structured framework, it provides a set of regulations that support its PhD students. One of these regulations is a restriction on the duration of PhD theses. A project should be completed within three years. If this aim is not met, the students have the possibility to avail of up to one year of extension (I will refer to it as 3+1 rule).

This limit is regularly discussed and disputed among the faculty and the students, as it has an impact on the type of projects that are possible, the flexibility in planning the project, and the pressure on the student to finish in time.

GGNB Times wanted to know what the GGNB students think about the time restriction imposed on them, and which advantages and maybe disadvantages they see for themselves.

In general, the students we spoke to were thinking favorably of the 3+1 rule. In the following paragraphs, I will present the major pro and con arguments that we encountered during our interviews.

The feeling of having a defined time range for their research projects was seen as a main positive aspect of the regulations. A PhD in Germany used to be organized individually, and for other universities it is still the case. This leaves a lot of

freedom for the students and their supervisors, but may lead to the fact that theses greatly vary in length and quality. For a lot of students, this freedom can mean insecurity and a feeling of increased dependence on the supervisor. The time limit partially decreases this dependence. Not only does it force the student to work efficiently, but it also puts pressure on the supervisor to provide a structured research and work environment.

On the other hand, a strict limit makes the successful completion of certain projects almost impossible (note: the GGNB allows further extensions, but only in exceptional cases). Factors, which the student or the supervisors are not able to influence, may include the type of model organisms, the amount of previous knowledge, or time-consuming methodologies. One student we spoke to pointed out that studies involving behavioral tests on certain animal models (especially, if primates or disease models are involved) may require more than four years. In such a case, the limit affects the research possibilities and increases the stress levels of the student – and it is no news that a PhD can be stressful at times in any case. When confronted by this problem, other students pointed out that this depends on the design of the project too. When the GGNB programs admit a new student, care should be taken to ensure that the aims of the projects that are devised can be met.

One could argue that there may be students who want to carry out projects which require more time. However, in such a case, there is always the possibility to join a graduate school that does not impose a time limit (such as GAUSS - Georg-August University School of Science), the overarching graduate school for natural sciences in Göttingen).

Another positive aspect that was mentioned is that the 3+1 rule promotes a better project management and a more goal-directed working. The thesis has to be finished within a time frame, which makes trailing off less possible. If you are the type of person that likes trailing off, then this might not be the right thing for you and create unnecessary stressful boundaries.

Rather than having as a main goal the PhD completion many GGNB students see their dissertation as a step on their way into academia or industry. Being only one of many steps, there is usually only a small gain by prolonging this stage of the career.

A problem that was mentioned to us is that the 3+1 year time frame is not sufficient for finishing a research project and

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to publish it, which is in most cases necessary for finding a postdoc position. In many cases, GGNB students remain in their labs after the completion of the thesis to finish off projects and to publish the results.

Difficulties in the funding situation may occur during this period. However, since the GGNB does not guarantee financial support to its students, this could also happen during a prolonged PhD (note: the GGNB provides bridging funds that ensure that the student can continue with his or her project). Ideally, after completion of the PhD

the person is employed as a postdoc for a short time.

Naturally, a time restriction is only one part of many that contribute to a structured PhD program and there are more positive features. But it is a strong signal that the more structured forms of PhDs – often they have a time limit – are increasingly favored. The number of programs that are offered in Germany and the number of students participating in these programs is on the rise, e.g. the percentage of students in structured programs, increased from 8 % in 2010/11 to

23 % in 2014/15 (Quelle: Promovierende in Deutschland Wintersemester 2010/11 and 2014/15, Statistisches Bundesamt).

All in all, the GGNB students think positively of the time regulation. In fact, we talked to some students who were given the chance to choose between joining the GGNB and GAUSS, and who decided for the GGNB, one of the reasons being the time limitation. It promotes a more structured and goal directed PhD, seems to decrease the dependence on a supervisor and allows a better planning of the future.

The present and future of the GGNB

Arshiya Bhatt, Burak Bali, Sebastian Jähne, Georg Hafner

Education is comprised of multiple stages. At each stage, one encounters different people and usually at each successive stage the diversity of people increases. In primary school, we sit with the children from the neighborhood, in high school we have company from the local district, during undergraduate studies we mostly study with people from the whole country and during graduate studies many may have the opportunity to operate internationally. This diverse group of students and faculty in a graduate school requires a strategic administrative and academic structure that provides support, governance and encouragement to thrive intellectually and professionally. Turning this vision to reality, is our beloved Göttingen Graduate School for Neurosciences, Biophysics, and Molecular Biosciences, con-

veniently called GGNB.

It is no hidden secret that the German Research Foundation (DFG) supported, official funding of the GGNB as part of the excellence initiative ends in December 2018. In the wake of this funding deadline, the GGNB is facing the challenge of finding ways to continue. With this article, we would like to recapitulate the features that make the school outstanding and bring to light the uncertainties the future holds

In contrast to a conventional PhD in Germany, the GGNB provides a more structured environment for its students, with a special set of regulations. In what way does a typical PhD student benefit from this, you ask? These specific rules include amongst others, a performance-based credit system, a thesis

advisory committee, and regular submission of progress reports. This ensures a goal-directed PhD. What many students highly appreciate about the GGNB is the time limit (3+1 years submission deadline), a rather controversial issue that puts the faculty and students in a metaphorical tug-of-war situation with proponents on both sides having their own set of fair arguments in support of their opinion.

On top of this, as we all know, the GGNB provides a plethora of valuable services. It offers methods courses that allow students to learn new scientific techniques and the opportunity to get in contact with other labs. Complementing this, professional skills courses provide a learning platform for everything ranging from scientific writing to time management. To step outside the academic world a bit, industry

excursions organized with the help of alumni give a flavor of what's on the other side. One very important activity of the recent past was establishing and building up the career service. It is an invaluable service as part of which Career Impulse Sessions take place, where PhD graduates of the GGNB, now working in diverse positions, share their experience with the participants. As part of the same service, 'Career workshops' are held, to help postdocs become aware of their key competences. The above-mentioned measures and activities are complemented by

become active in networking on the internet by setting up a LinkedIn group. An additional database, the GGNB Alumni Portal is currently in preparation and will become functional soon. Everything put together, there is a strong support system encompassing administrative services, skills development and personal career-guidance that makes your PhD journey a very wholesome experience.

In keeping with the importance of a graduate school to promote interaction among students (and pro-

models from the scientific community and do networking.

But in this vast structure governed by pre-laid rules and a strict, almost mechanistic precision of functioning, do seemingly lonely PhD students have a say? Or are they just part of the "system"? How can their voices shape the decisions that are bound to directly/indirectly affect them? This brings us to a relay of individuals whose sole responsibility is to make sure that the school not only runs efficiently but also accommodates the views and opin-

Currently, fourteen doctoral programs are united in the GGNB:

- IMPRS Molecular Biology (MSc/ PhD)
- IMPRS Neurosciences (MSc/PhD)
- IMPRS Genome Science (since 2017)
- IMPRS Physics of Biological and Complex Systems
- Biomolecules: Structure - Function - Dynamics
- Molecular Biology of Cells
- Genes and Development
- Microbiology and Biochemistry
- Molecular Physiology of the Brain
- Sensory and Motor Neuroscience
- Systems Neuroscience
- Theoretical and Computational Neuroscience
- Emerging Infectious Diseases (Leibniz Graduate School)
- PROTECT2 (DFG International Research Training Group 2172, since 2016)

individual counseling sessions on request. Last but not the least, there is a central portal of career transition-related information called the 'GGNB Career Blog'. You want to know about the latest career resources or need to polish your networking, mentoring and job-hunting skills? Just visit the career blog. It is a wealth of treasures for those looking for pointers in the nerve-racking phase of making critical career decisions. Keeping up with the digital era, the GGNB has also

provide opportunities for networking), there are countless opportunities for young, motivated minds to come together and discuss ideas of scientific innovation and discovery. Programs organize PhD retreats giving students an opportunity to present their research to their fellow PhD students. For a more global exposure, there are various student-organized international events like Horizons, Neurizons and the Third Infinity meetings, giving students a chance to invite and meet their role

of the people it serves. It starts with the PhD student representatives of the respective programs. It is their responsibility to reach out and engage with the fellow PhD students in the program and tend to their grievances. On the next level are the student representatives who are also part of the GGNB board, currently, Jan Ole Frister and Shruti Chhetri. They depend on the input they get from the respective program PhD representatives and the state of affairs is subse-

quently reported to the GGNB executive board. In an interview with the student representatives in the GGNB board, they explained to us that the GGNB board follows a very democratic set-up in which everything is decided by vote. It gives an equal weight to the voice of the students in framing critical administrative policies. A highlight from the past term of the GGNB student representatives has been defending the 3+1 year rule. When we asked the GGNB representatives what other big issue they want to tackle in the near future, they expressed they would ask the students to participate more. They urge the program representatives to strengthen their communication with the students, bring everyone together at events like a Stammtisch and get to know their issues. It is only when the program representatives are well informed about all relevant issues and concerns that they can relay the information to the representatives in the GGNB board.

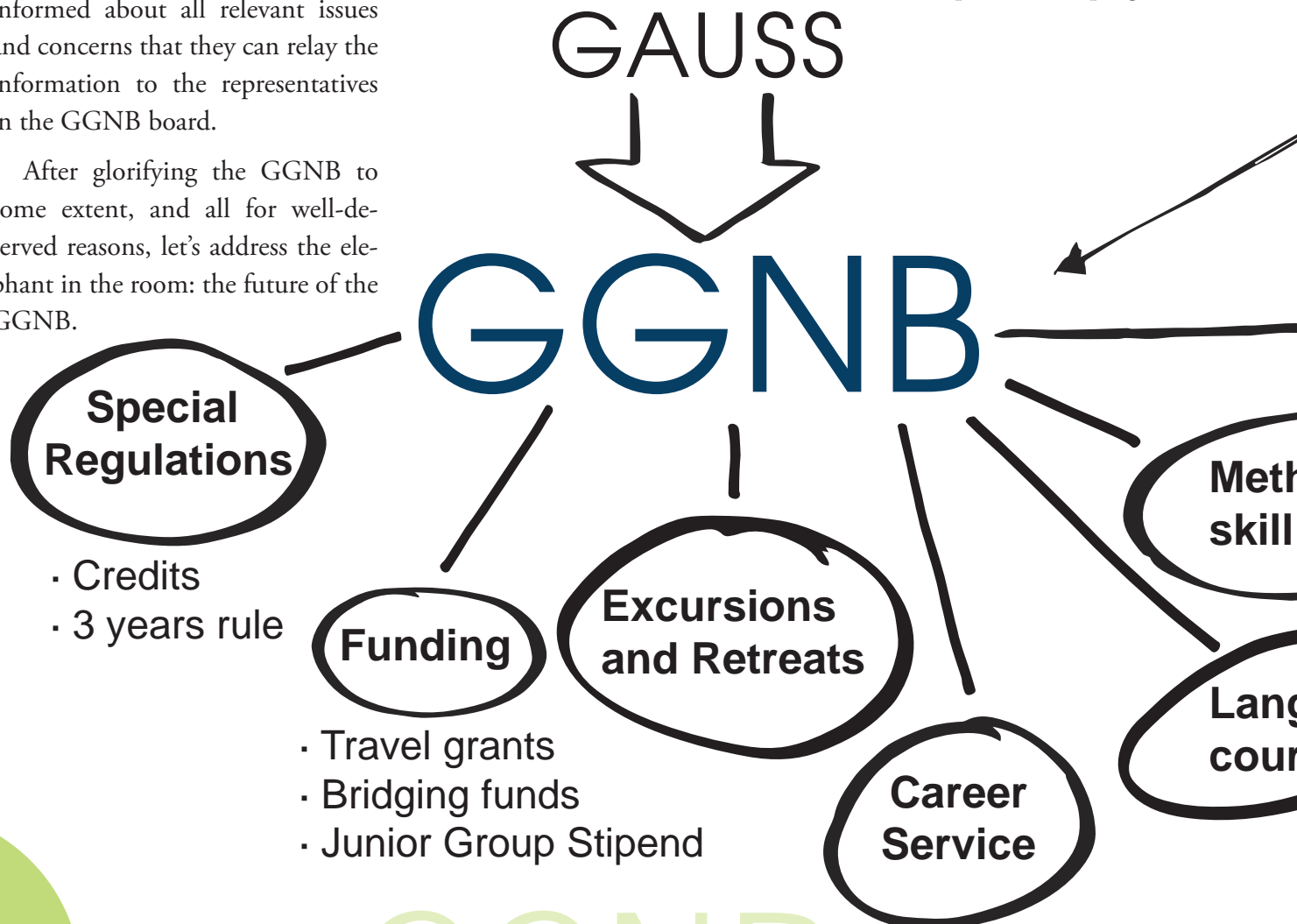
After glorifying the GGNB to some extent, and all for well-deserved reasons, let's address the elephant in the room: the future of the GGNB.

The excellence initiative funding of the GGNB runs out in 2018. The biggest transformation that accompanies this is the future collaboration of the GGNB with the Georg-August University School of Science (GAUSS). As part of this transformation, the GGNB will be renamed to "Göttingen Graduate Center for Neurosciences, Biophysics, and Molecular Biosciences". Fortunately for us, GGNB still remains the official abbreviation. The idea is to transform the GGNB into the 6th pillar of the GAUSS structure in addition to the five science faculties of Biology, Chemistry, Geosciences, Mathematics and Physics.

The big question is, of course: "How will it affect us, the students?" As the exact process of the transition into GAUSS is not fully

spelled out, we must wait for the months to come. But there is a good chance that the students will not see a difference, at least not in a negative way. For instance, opening the GGNB courses to GAUSS will likely lead into a more diverse program, as GAUSS students will also be eligible to offer student methods courses. Additionally, much to everyone's delight, the experienced, competent, and reliable one-stop service unit, aka the GGNB Office, will continue with the current staff, leveraging the burden of academic bureaucracy off the students' shoulders allowing them to learn and discover with pleasure.

To conclude, GGNB will continue to be a platform to build strong scientific networks and the multitude of services will continue to uphold its status as a unique qualification program.



The GGNB Structure



✓ Regulations
✓ Funding

PROGRAMS

Student Representative of individual programs

Methods and courses

Language courses

PhD student with doubts/complaints

GGNB expands: Two new doctoral programs

Compiled by Georg Hafner

The GGNB comprises 14 doctoral programs, two of which have been added rather recently. IRTG 2172: PRoTECT has admitted its first group of students in June 2016. IMPRS-Genome Science will officially start in October 2017. Those two new doctoral programs train students in very innovative and increasingly important branches of science. Both are highly collaborative and compile the expertise of many institutions in- and outside of Germany. They are embedded into the scientific infrastructure of GGNB but still come up with their own specialties and charm. The respective coordinators would like to introduce these newest members of the GGNB network.

IRTG 2172: Plant Responses To Eliminate Critical Threats (PRoTECT)

The DFG funded International Research Training Group 2172: PRoTECT is a PhD training program with the focus on plant molecular defense mechanisms against microbes and insects. It is a collaborative program between eight research groups of the University of Göttingen and seven research groups of the University of British Columbia in Vancouver, Canada. Plant diseases result in vast yield and quality losses to crops. To ensure food security for the growing global community new approaches in plant protection are



First IRTG retreat in Vancouver 2016 ©Dr. Stefanie König

urgently needed. A better understanding of how plants interact with their biotic environment will be beneficial to find improved strategies for crop protection against microbial pathogens and support sustainable agriculture.

With this vision in mind, the main aim of the IRTG is to train PhD students to be able to address questions in plant defense on a system-wide level, having been prepared for careers related to plant protection in agriculture, industry and academia. Concerning this goal, the scientific focus of the IRTG is to elucidate defense mechanisms that are operational in different cellular and extracellular compartments of model and crop plants.

The PhD projects as part of this program address a wide variety of topics in molecular plant defense, like, involvement of cell walls as

barriers in defense, fungal sensing of the environment, defense specific metabolites, systemic acquired resistance and classical signaling events. All projects are organized in a collaborative manner with at least one of the partner labs in Vancouver. Students will have a joint thesis committee with one member of the partner university and they are supposed to stay for at least six months in the partner lab abroad. Thus, the students strongly profit from the complementary infrastructures and expertise between the two universities and additionally, experience how research and life is organized in them. The program is open for students holding a Master's degree with biological, agricultural or forestry background. Twelve PhD positions are funded by the DFG. The first cohort of students started in June 2016, recruitment for the next cohort will start at the beginning of

2019. In addition to the DFG-funded positions, up to eight PhD students with own funding and interest in topics of the IRTG are welcome to apply for the program as associated members.



Dr. Stefanie König

Program coordinator.

E-Mail: protect@uni-goettingen.de

International Max Planck Research School for Genome Science

Adding another member to the GGNB family, the International Max Planck Research School (IMPRS) for Genome Science will start in October this year. It is a coope-

ration between the University of Göttingen and four Max Planck Institutes (MPI) – the MPI for Biophysical Chemistry, for Dynamics and Self-Organization, and for Experimental Medicine in Göttingen as well as the MPI for Molecular Genetics in Berlin. Additionally, the German Primate Center, the German Center for Neurodegenerative Diseases, and the Gesellschaft für wissenschaftliche Datenverarbeitung Göttingen participate in this new research school. Over the last decade, the molecular life sciences have undergone a major development. By now, the analysis of individual genes, RNAs, proteins, and metabolites is often complemented by an analysis of cellular systems in their entirety. This change has been made possible by the fast progress in next generation sequencing, which has enabled the development of a multitude of protocols to study cellular regulation and chromatin structure on a genome- and transcriptome-wide level, quantitative proteomics, high-resolution bioimaging, new computational and algorithmic approaches, and ad-

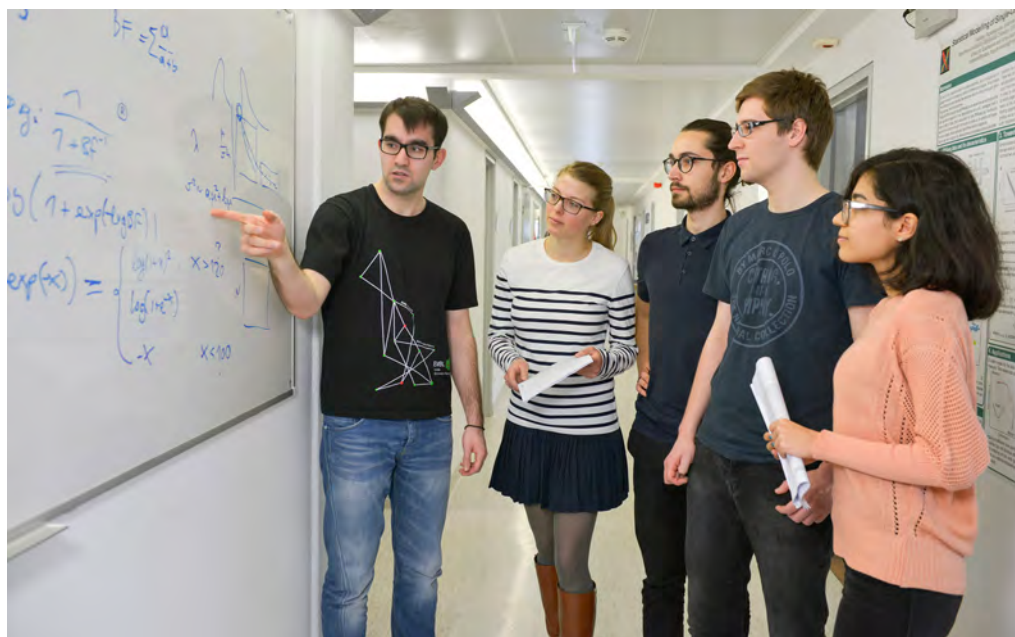
vanced computing resources. This development, however, also posed a major challenge, namely to close the cycle of experiment, data analysis, and the generation of testable hypotheses.

To tackle this challenge, this program intends to train a new generation of genome scientists who are specialists in an experimental or a theoretical discipline, but who also understand enough of the other disciplines to speak a common language and embark in fruitful exchange and collaboration. The IMPRS-Genome Science will train researchers in functional genomics, quantitative proteomics, bioimaging, computational biology, and bioinformatics. Theoretical and methods training is complemented by regular mentoring and a lecture series on genome sciences.

Dr. Henriette Irmer

Program coordinator

E-mail: imprs-gs@mpibpc.mpg.de



Students from the IMPRS for Genome Science ©Dr. Henriette Irmer

A song of ice and fun: PhD retreat in the Austrian Alps

Andreia Cepeda, Ermis Pofantis

Annually, the students of the Sensory and Motor Neuroscience (SMN) program and of the Collaborative Research Center 889 “Cellular Mechanisms of Sensory Processing” (SFB 889) get together for a retreat. This year’s joint retreat was held from 16th to 20th January in the town of Pichl in the midst of the snow-covered landscape of the Austrian Alps. These retreats are especially organized for the students with the goal to give them an overview of the research done by their fellow PhD students. The event includes a broad range of topics from molecular biology to biological systems modeling. We get introduced to it in a cozy and relaxed environment perfect for meeting new people and exchanging ideas.

Every year, the students are encouraged to give oral presentations. As the name of our program suggests, the topics focus on the fields

of sensory, mainly hearing and vision, and motor research. This year, we learned about basic synaptic transmission in different model systems. Moreover, we were familiarized with various applied research projects such as optical cochlear implants and transcranial magnetic stimulation. Looking at the vast interest of the students and their active participation during the discussions, despite different backgrounds, we are very pleased to conclude that this year’s retreat was a great success. We consider such retreats to be important and stimulating events which are essential for broadening the horizon and providing an opportunity to think outside the confines of one’s own PhD project.

During the retreat, our days would start with the students’ talks, but these were followed by long lunch breaks, in which we had the chance to socialize and participate

in exciting winter sports and activities. Since many of the students come from warm countries, this retreat provided them with the opportunity to learn skiing with a professional instructor and to practice the following days at one of the four peaks of the nearby ski resort. The experienced ones went straight to the slopes with their own skis and snowboards! The less adventurous of us, who wanted to enjoy the snow nevertheless, had fun tobogganing on a special seven-kilometer-long track, or went on walks or hiking tours.

During dinner, we had the chance to indulge in traditional Austrian cuisine. The mouth-watering desserts were a particular hit. Every night a different student group organized a social gathering. We had activities like a snowman-building competition, board-game night, quiz-night, snowball fight, and a



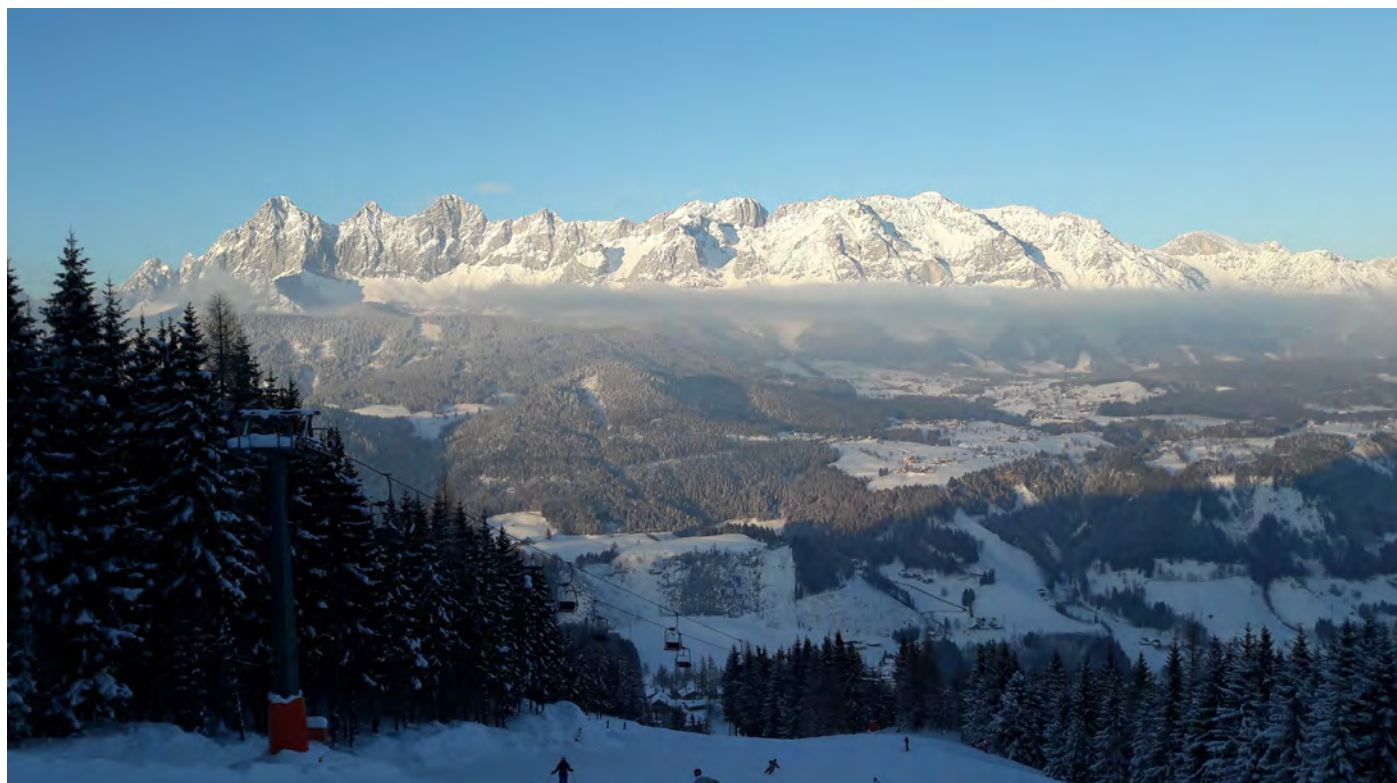
Group picture of the Sensory and Motor Neurosciences programs in Pichl, Austria © Daniel Keppeler

night in the game room of the hotel.

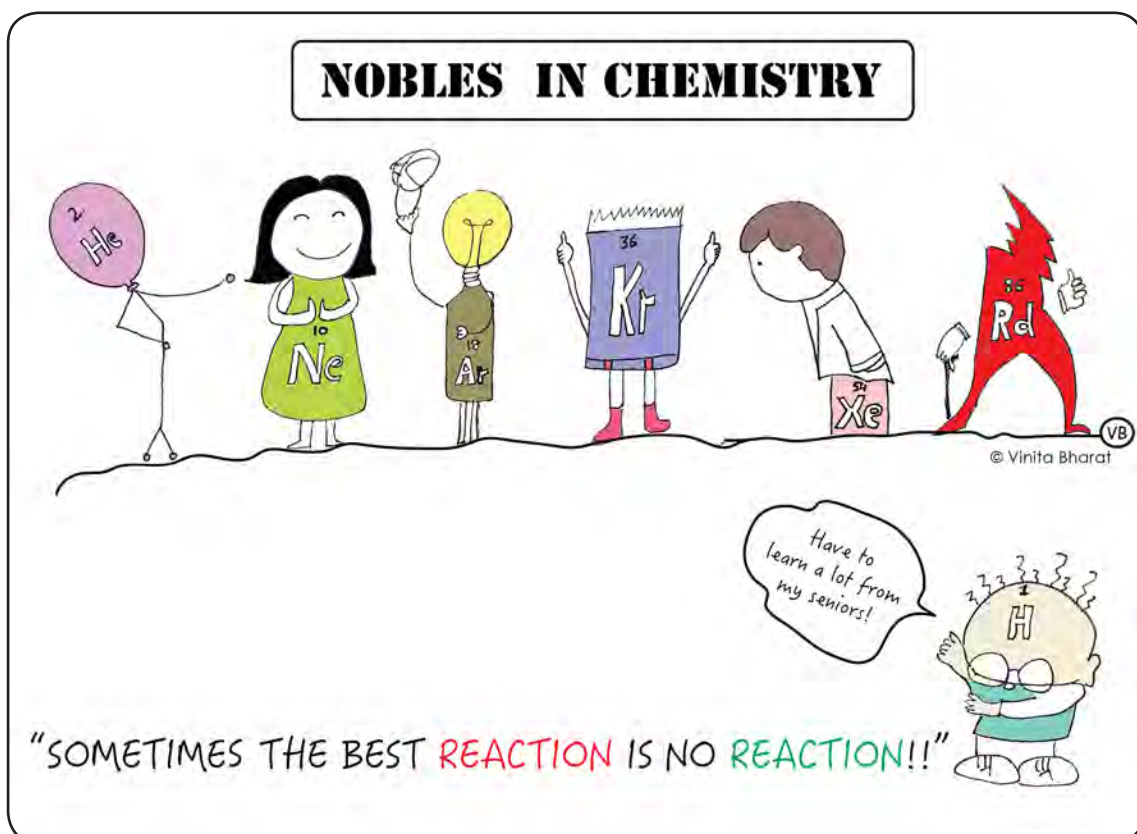
Thanks to the GGNB and the CRC, we had a fun and stimulating retreat and enjoyed five days away from the lab routine in the wonderful setting of the Austrian Alps. During this time, we had the chan-

ce to learn more about the research done by our fellow students, as well as to participate in exciting and fun activities. The retreats are a wonderful opportunity for the students to present their work, and we are quite sure that the feedback we got from peers and project leaders will help

us improve and think about our research from a different perspective. We see these retreats also as an opportunity to practice talks, network and get to know new people. We are looking forward to next year's retreat!



Panorama of the mountains in Pichl © Niklas Michel



Retreats of other GGNB programs

Compiled by Burak Bali



Group picture in Bad Salzdetfurth © GGNB Program Molecular Biology of Cells



Retreat in Halberstadt of the program Physics of Biological and Complex Systems © Joris van Dort



Group picture of the IMPRS Molecular Biology in Berlin © Steffen Burkhardt



Members of the Cells and Biomolecules program on a retreat in Volpriehausen © Karl Bertram



Members of the Genes and Development program on a retreat in Goslar © Shruti Chhetri



Students of the IMPRS Neurosciences program in Spiekeroog © Martin Göpfert

A new building for joint expertise

Diana Lázaro

A new building has recently been inaugurated in Göttingen for the development of novel approaches to several dementia diseases such as Alzheimer's disease. The unique U-shaped architectural concept joins the German Center for Neurodegenerative Diseases (DZNE) and the Center for Biostructural Imaging of Neurodegeneration (BIN), strengthening the international reputation of Göttingen in

the field of neurosciences. Common areas, laboratories, storage rooms, and seminar rooms connect the two parts of the building. No technology was duplicated, highlighting the interdisciplinary work and strong networking between the groups.

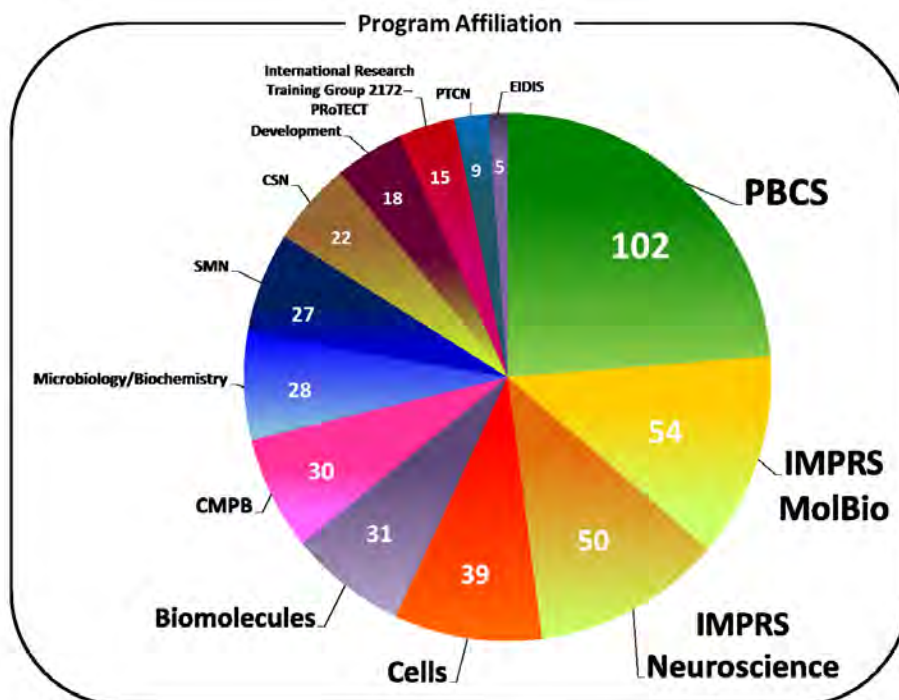
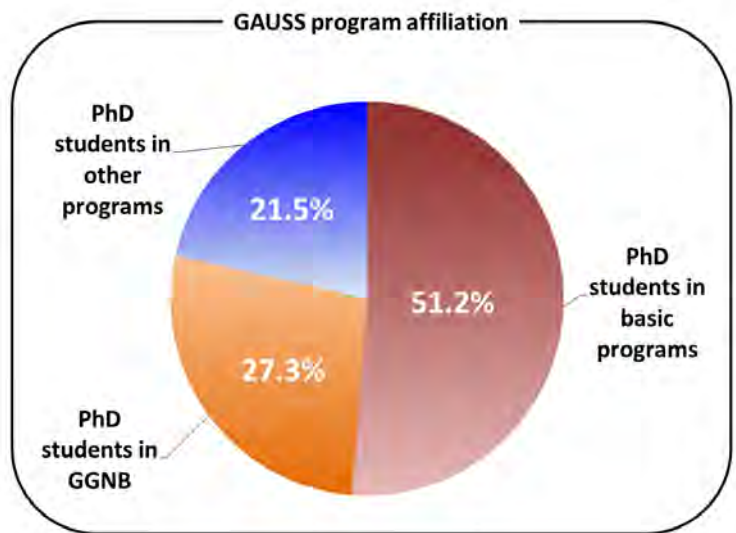
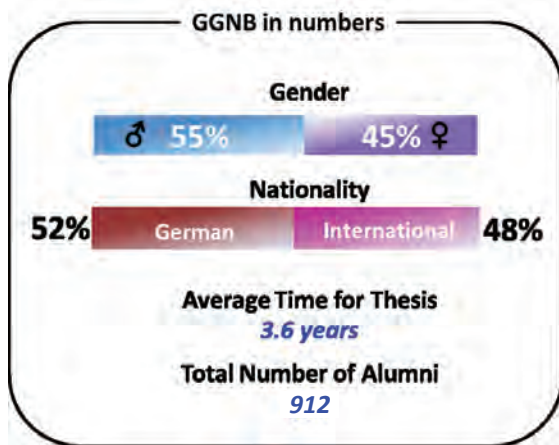
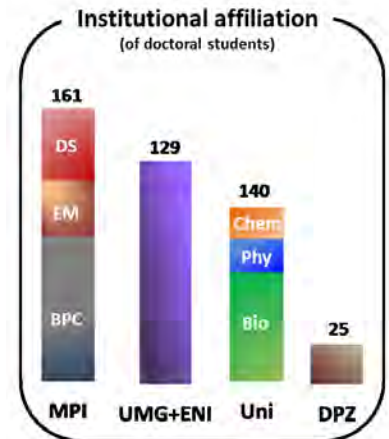
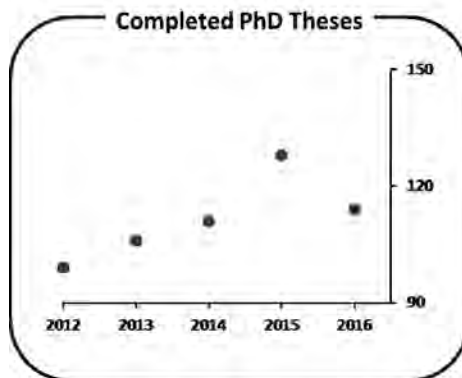
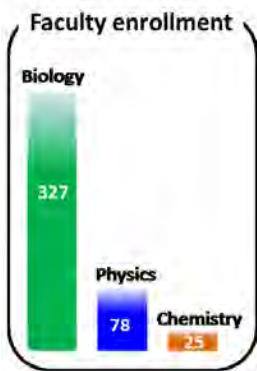
The DZNE (member of the Helmholtz Association) will be focusing on epigenetic aspects of the disease, and how genetic predispositions influence the risk of develo-

ping Alzheimer's disease. The BIN (an institution of the University Medical Center, UMG) will deal with imaging of biochemical and cellular processes involved in neurodegenerative diseases. The collaboration between these two institutes will ensure a rapid transfer of results from fundamental to clinical research.



Opening ceremony with (from left to right) Prof. Ulrike Beisiegel (President of the University of Göttingen), Prof. Pierluigi Nicotera (Scientific Director and Chief Executive Officer DZNE), Prof. Heyo Kroemer (Speaker of the Executive Board of UMG), Prof. André Fischer (Speaker of the DZNE Göttingen), Gabriele Heinen-Kljajić (Minister of Science, Lower Saxony), Prof. Silvio Rizzoli (Chief Executive Officer BIN), Dr. Martin Siess (Managing Director of UMG), Dr. Sebastian Freytag (Managing Director of UMG). © Stefan Weller/UMG

GGNB in numbers



Göttingen: a melting pot where the world meets to follow their passion

Shruti Chhetri



Picture collage represents various research institute associated with GGNB © GGNB

Göttingen

Most people think of Göttingen as the city of Carl Friedrich Gauss, the Gänselesel, and the University. For me, Göttingen is a sacred place for science. It contains a diversity that covers a wide range of academic and research areas not every city is known to hold. Proximity to the many research centers associated with the University, each of which has its own unique history, of-

fers a diverse population that can inspire many aspiring scientists like me. After living in different continents and cities, for me Göttingen is a city that has allowed me to experience the student life I had never lived before.

With more than 40 Nobel laureates who have lived, studied, researched, and taught in Göttingen, I didn't realize how different the many affiliated research institutes and their research areas are until I joined the MPI-BPC for my PhD. Besides institutions like the Max Planck Institutes, DZNE, ENI, DPZ and UMG, there are various other institutes within the University itself of which not everyone is aware. To name a few: Alb-

recht-von-Haller-Institute for Plant Sciences, Georg-Elias-Müller Institute for Psychology, Institute of Microbiology and Genetics, and Johann-Friedrich-Blumenbach Institute for Zoology and Anthropology. These institutes are defined not by their names but by their respective world-renowned investigators, their areas of expertise, and their cutting edge research. Many of these professors are associated with the GGNB, providing a perfect opportunity for the thriving scientist within each of us to be guided, taught, and inspired. For many of us this can be a great opportunity to choose from a wide range of faculties. With the inventions, opportunities, collaborations, and training programs offered by partnered

Göttingen

institutes and the GGNB being the platform to inspire young scientists, it is possible to foresee one of us as a Nobel Laureate one day, making history for the benefit of mankind.

It is like riding a bike

Maryna Psol



© Maryna Psol

Life is more difficult when one does not have a bicycle in Göttingen. Commuting to lab takes longer and shopping bags are heavier when you are on foot. But what about someone who has never learned to ride a bike?

While Germany belongs to the countries with the most households owning a bicycle (around 80%), the worldwide average is only at 42%¹. Many international students and scientists did not have the chance to learn this skill during their childhood. And for adults, it is not an easy task.

Therefore, the University of Göttingen together with

volunteers of ADFC Göttingen 2 organize a course every semester in which small groups of students can learn to ride a bike step-by-step. In six training sessions, participants gain confidence rolling on two wheels, receive information on traffic rules, where to buy a good bike and how to maintain it. According to the organizers, the success rate is close to 100% for regular attendees. If you wish to learn how to ride a bike, watch out for the announcement for the next course at the university's "blackboards" and enjoy this healthy, cheap and environmentally friendly means of transportation while being part of the Göttingen cycling community.

1 Oke, O. et al. (2015). Tracking global bicycle ownership patterns. *Journal of Transport and Health*, 2(4), 490–501.

2 Allgemeine Deutsche Fahrrad-Club Kreisverband Göttingen e.V. <http://www.adfc-goettingen.de/>

Foyer International - A space to connect

Leonie Schüler

If you are an international student or scholar at Göttingen University you have probably been to the Foyer International – or at least very close to it – even if you have never heard of it before. It is the name of a room centrally located on the international office's ground floor at Von-Siebold-Straße 2 close to the university's sport facilities and right opposite to the new DZNE building. But the Foyer International is more than just a room. It is a community organized by the incoming office with the purpose of creating a space for international and German students and scholars to interact, form friendships, learn from each other and with each other – a space to connect. All too often, I hear international students and scholars say that they are experiencing difficulties with approaching their German co-students and colleagues. Or I talk to my German friends and find out that they would love to interact with internationals but are too shy to approach them. Not only is this lack of contact a personal loss for both sides, but in my opinion, it is also a wasted opportunity to foster intercultural learning and understanding as a gateway for a more peaceful and united future.

Thus, our team of five students called “Team Foyer International” assists the coordinator Patrick Lajoie in planning and implementing a diverse program each semester to offer the platform for interaction that is

missing in the aforementioned situation. We experience daily how engaging in common activities helps to tear down barriers and when you walk into the Foyer, you will as well. Depending on the day of the week, you will find a different group of people, speaking a different language and engaging in a different activity. We cooperate with the ZESS and other institutions to offer different language and culture workshops,



The team of the Foyer International © Foyer International

a dance-performance workshop and an English movie night from Tuesday through Friday night every week of the semester. Some people are interested in so many different languages and cultures that you will literally see them there every night of the week. So, there is at least some constant amidst the hodgepodge. For many people, Monday nights are the highlights of our weekly program. Next to our popular cultural evenings, which usually

attract over 100 visitors thus being our biggest events at the Foyer, we offer a diversity of activities such as cooking nights, crafting sessions, talks, karaoke-, comedy- and quiz-nights and a seasonal party once each semester. For instance, we hosted an African Summer Party. We consider it our duty and privilege to keep our Monday night events diverse, fun and relevant which is why we always love when past attendees

approach us with their own ideas.

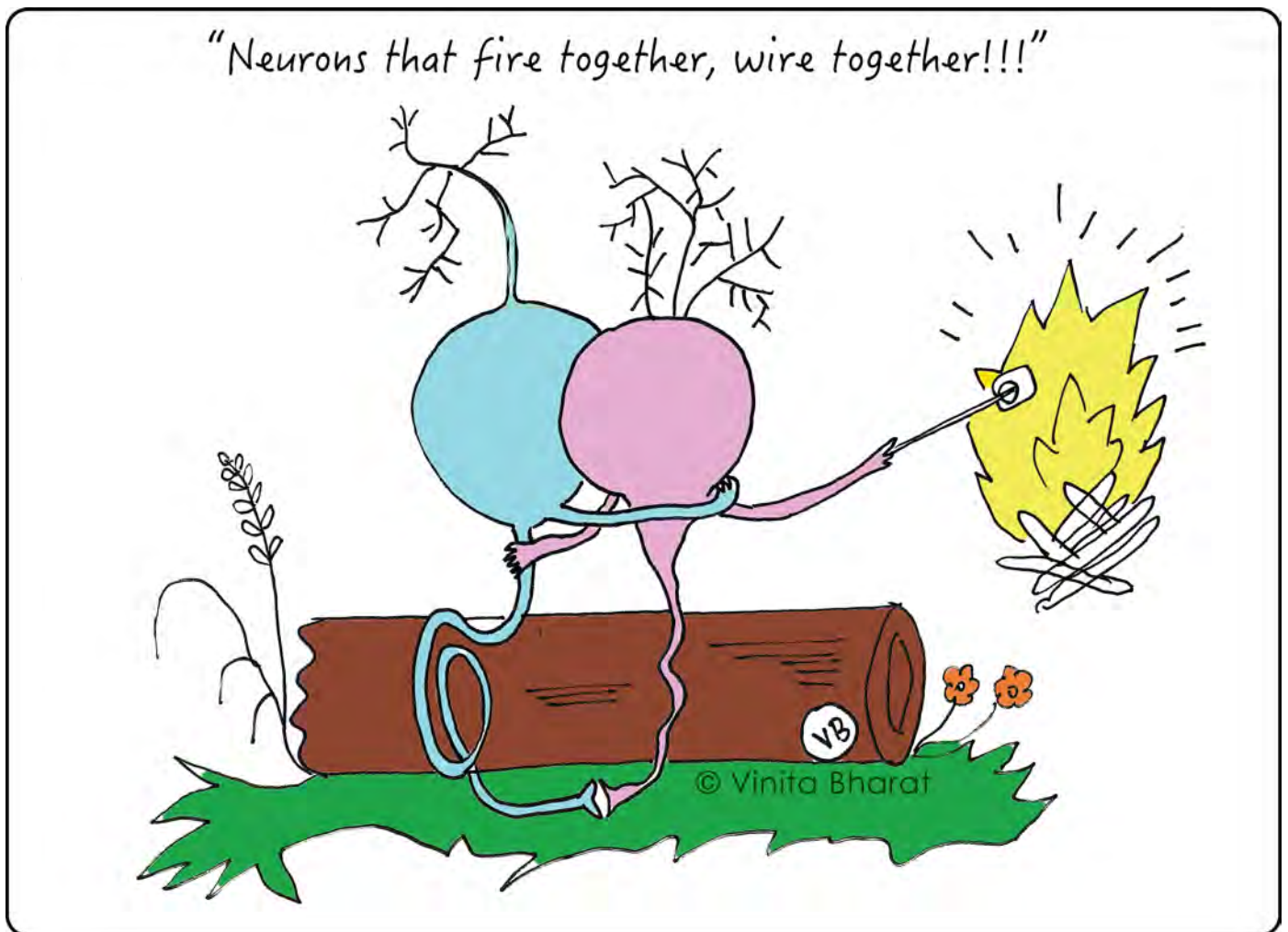
Personally, I have been working in the Team Foyer International since 2014. After my own study abroad experience in Colorado at the end of my bachelor's degree, I applied for the job mainly in order to remain a part of the community of international students. Having profited immensely from the international community abroad, I wanted to do my part in en-

sure that incoming international students and scholars in Göttingen have a similar experience, especially in terms of feeling welcome and getting in contact with local peers. One of my favorite events I hosted was a “Harry Potter in an international perspective” night at English Workshop where I could share my passion with an international group. I feel privileged to contribute my

own ideas and interests to the program, experience a variety of cultures and, above all, encounter such inspiring individuals from close by and far away.

Everybody affiliated with the University can attend our program for free and without prior registration. No matter your age, gender, religion, position or language skills – everybody with an open mind is

welcome! You simply join our Facebook group “Foyer International Göttingen”, visit our homepage <http://www.uni-goettingen.de/en/foyer-international/2554.html>, send us an e-mail at foyer.international@uni-goettingen.de or simply walk in any week-night during the semester between 6pm and 10pm to say hello in person!



Thrills of building a young university

Somdatta Karak

Azim Premji Foundation is known for its work in India's education for more than a decade now. In its pursuit to create a just, humane, equitable and sustainable society by driving changes in education sector, Azim Premji University (APU), a not-for-profit organization, was founded in 2010, in Bangalore, India.

Sravanti Uppaluri, a GGNB alumna (2007-11), became a part of this initiative in 2016 when she joined APU as an Assistant Professor. Sravanti completed her PhD in the group of Dr. Thomas Pfohl at the MPI for Dynamics and Self-Organization. Then, for three years she was a postdoctoral fellow at Princeton University. But afterwards, followed by her wish to make a difference on India's education system, Sravanti accepted an offer of the APU to work with the undergraduates of a liberal studies program, with majors in the humanities, economics, physics, and biology.

She believes that after spending numerous years among scientists (even at home, belonging to a family of scientists) this opened up opportunities to learn more about films, politics, sustainability, etc.

Joining APU also brought her share of the excitement

of building a new institute and not just a lab. It thrills her to be part of a young organization, knowing that her efforts will go a long way in shaping the student's future.

She does not have a mandate of a particular kind of research. Furthermore, she has had the liberty of initiating projects on curious and interesting questions that come up during discussions with her students and peers. For example, she now works on planarians though she hardly knew about them before. And all of this comes with the support of internal grants at APU and encouragement to apply for external grants as well.

Not that this doesn't come with its share of challenges. A new institute often doesn't have a system in place. The infrastructure at the institute is being built from scratch, and the young faculty members are a part of it. Doing academic research with undergraduates is slower than with PhD students or postdocs, given the amount of time investment in teaching them concepts and techniques. And donning the



Sravanti during her postdoc days in the USA © Sravanti Uppaluri

teacher's hat also requires a bunch of different skills to be honed. While Sravanti thinks that flexibility has been her most important virtue, she is equally thankful to her young colleagues and the university for their support and understanding helping her to cope with the scientific or emotional challenges that arise. And with the new campus of APU getting ready, she can soon host postdocs in her lab as well.

In addition, being a part of a not-for-profit organization with a lot of financial independence helps Sravanti to focus on her impact on education without the shadow of a financial motive. She opines that as long as educational institutes are not-for-profit, there is immense scope for private educational organizations to shape the changes in the education sector in India.

Alumni

Alumni

Postdoc with ocean view

Simone Mayer

After graduating from the International Max Planck Research School Molecular Biology PhD program in 2014, I decided to pursue my postdoctoral research in the US, at the University of California, San Francisco (UCSF). Now, it has been two years since the move across the Atlantic – looking back, it has been a truly fast-paced and exciting time.

My German colleagues often ask me what it is like to live in the US in the current political climate. I have to say that I was surprised to experience how quickly the changes in policy directly impacted me and people in my surroundings. In the lab, many discussions circle around the impact that the change in administration may have on the NIH budget and how this might affect the projects we are currently working on. Additionally, in stem cell research, we are wondering if this change for a more conservative government could even affect the types of experiments we might be able to do. Since all of this is highly un-

predictable, it has added an additional layer of uncertainty to the already risky scientific endeavor. Besides, we are, of course, concerned about the changes in immigration policy, gender equality etc. However, being based in the Bay Area, I have to say that to date I have not met anyone who openly supports the new administration and my friends and colleagues are all as concerned as I about the recent developments. We probably live in a bubble, but at least it is reassuring to know that one is not alone with ones concerns about the current political climate.

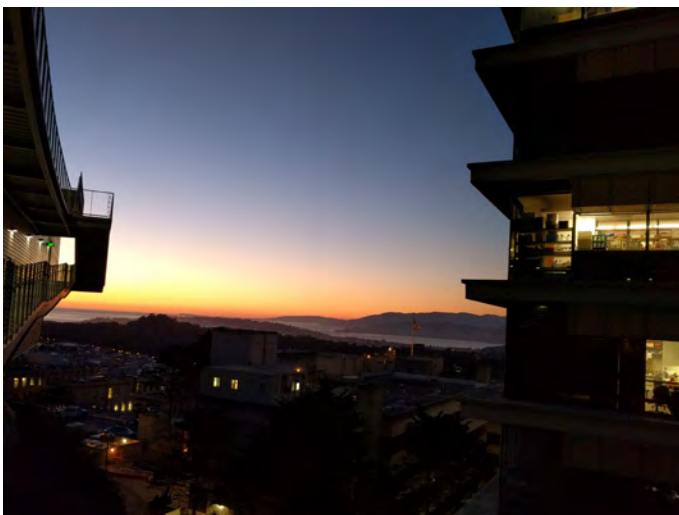
This leads me to another topic – life in the Bay Area. It seems to be quite a unique place, unlike anywhere else in the US. This densely populated spot around the San Francisco Bay is home to about 8 million people and has its very own subculture. With the tech boom in Silicon Valley, a lot of young professionals have come to the area and are rapidly changing the demographics. As scientists, we are in an

interesting position in the societal changes – we are in the same age group as many of the young professionals and it is great to live in a place that caters to your age group. At the same time, the influx of high-income profes-

sionals has led to a housing crisis in the city, with a homelessness problem and evictions of long-term San Franciscans that cannot afford to live in the city anymore. The high prices for housing put postdocs and graduate students in a tough position because our salaries are not matching the increased costs of living here. Many of my colleagues have moved several times during their postdocs because of these developments.

However, the proximity to the tech and biotech industry is exciting for research. There are a lot of collaborations with the companies based in the area and we have direct access to the newest technologies, often even before their commercial release. The general spirit of the community is one of “anything is possible” and innovative and often collaborative projects are the result. This is enhanced by private investment in science, most recently for example through the Chan-Zuckerberg Biohub, a research center that brings together biomedical scientists from University of California, Berkeley, UCSF and Stanford University.

Personally, it has been great to live in this iconic city. I have enjoyed getting to know the great outdoors in the area and exploring mountains, Redwood forest and the beach. When I walk to the lab in the morning and enjoy a view of the Pacific and the Golden Gate Bridge, it still feels quite surreal.



Sunset at the lab (UCSF Parnassus Campus) © Simone Mayer

From academia to consulting

Maryna Psol

Have you ever considered pursuing a career as a management consultant? Annette Denker, an alumna of 2011 (Silvio Rizzoli group), talks about her experience as a consultant with McKinsey & Company and gives advice to prospective job applicants.

Could you describe your typical working day or week at McKinsey? What are your major responsibilities?

The cool thing about working as a consultant is that I don't have „typical“ days or tasks. I accompany other people in a company during their typical tasks to understand what challenges they are facing, I meet with clients and with my team, and I analyze data and prepare presentations. As in a PhD project, I have my own work stream(s) which I am responsible for.

What is more standardized is my work schedule: I travel to the client site Monday morning, stay there until Thursday evening and travel back home. Fridays, I spend in the home office.

Which of your skills have helped you in your transition from academia to management consulting?

In some ways, it is not so different from the PhD work. You have your own project you have to organize, which is something we all learn during our scientific work. Another rather obvious aspect is analysis and gathering information from a

large amount of data quickly. Presentation, interpersonal skills and being able to structure complex problems are also very important.

Did you need an additional degree (e.g. MBA) for your current position?

No, but McKinsey offers a Mini-MBA for consultants with no economic background, which was very helpful and interesting.

How to balance work and personal life while working at McKinsey?

Of course, that is a little bit of a challenge, although I wouldn't necessarily say that I work much more hours than I did in science, but the job is in a certain way more intense because of the tight deadlines. I do manage to do sports nearly every day during the week (admittedly at the expense of sleep). In contrast to science, weekends are mostly free, which allows me to spend time with my boyfriend and my family. In summary, I find the work-life balance part not as bad, however, all the travelling can be a bit stressful.



© Annette Denker

What do you enjoy the most about your job?

I love to have a job where I have an impact! It is amazing to come up with ideas and solutions and see them being implemented. In many ways, my job is about making the lives of people easier on the big or small scale and I truly enjoy that.

What would you recommend to current PhD students who are interested in working as a consultant?

I would advise that you apply to one of the many recruiting events which McKinsey and other consulting firms offer. There you will have the opportunity to meet other consultants, some of which

have a scientific background, learn about the way of working and try to solve some case studies to under-

stand how problems are approached within the context of a consulting team. If you want, you might then

consider doing an internship for a few months to learn whether this job would be interesting for you.

From science to social challenges

Somdatta Karak

After I defended my PhD, I constantly thought how to use my analytical skills to solve the long-standing and complicated problems of the education system in India and contribute towards better science education in the country. However, I felt inadequate to tackle such challenges without having experienced the grassroots. I was confident that I could analyze the data that the governments might have available, but I could not be sure how those were obtained or what are their physical meanings. I deeply felt the need to work with organizations where I can see the system bottom up.

In my hope to understand the societal challenge of equitable education to all children in India, I chose to apply for the Teach for India (TFI) fellowship. It is a two years commitment that allows you to be a full-time teacher at a low-income community school, where your responsibilities include both teaching a class and developing strong relations with the school system. This provides a platform to understand what it takes to work towards excellent education - in terms of the right infrastructure, need of teacher training, strong school leaders as well as a clear analysis of the success of some government policies and of the limitations in the implementation of others.

It has been one of the most challenging roles I have ever had. I was a regular teacher, working with up to 60 students on some days and minimal infrastructure on hand. Sometimes, when no classroom was available, I have taught in school corridors, while trying to give my best. Besides, I was collecting data from every single class to discuss with peers and supervisors from TFI.

My students completely took over my thoughts and I was one of many TFI fellows to whom that happened. They were not just a part of my professional life. Our personal lives became intermingled. When at home, I was spending time with their parents on the telephone discussing problems and trying to find solutions. I took every single opportunity that I felt might help sort my students' needs. That also meant establishing additional collaborations with other organizations. For example, Homi Bhabha Centre for Science Education helped to integrate experiential learning modules for my students. Our school semester breaks called

for opportunities to go for night sky watching with amateur astronomers from the city.

These two years have certainly brought me immense satisfaction. It enabled me to develop empathy for pupils, parents and the school staff, and to meet amazing people from



Somdatta with her school students in Mumbai © Somdatta Karak

various organizations, all trying hard to solve the puzzle of educational inequity. But most importantly, my experiences showed me why science education is especially difficult in a country where we are grappling with providing literacy in languages and math. It is now in this direction that I would like to continue to work to enable a more accessible science education in the country. The journey has only begun in experimenting with different media to make this possible!

Final year of PhD: a combination of thesis and grant writing

Anupam Raina

Almudena Ponce Salvatierra is a postdoctoral fellow in EMBL, Grenoble. She did her PhD thesis on the crystal structure of DNA catalysts under the supervision of Prof. Höbartner and Dr. Pena at the MPI-bpc.

In your opinion, what are the advantages in your current position?

The biggest advantage is the infrastructure we have on-site and the opportunities for daily scientific discussion. Training sessions are organized regularly for the different instrumentation. We have plenty of high profile scientists visiting the campus to give seminars, an international environment and very nice weather!

What do you think helped you the most throughout your PhD to achieve your current position?

I applied to four different Postdoctoral fellowships during my last year of PhD, partly while writing the thesis. It was fundamental to receive the support I got from my former supervisors and from my current advisor. However, it is crucial to be well-organized.

What is the most rewarding experience in your current position?

It is similar to what I enjoyed the most also during my time in Göttingen at the MPI. I enjoy the

group meetings, discussing science with colleagues and attending scientific and social events at the campus. I like very much that the main focus here is structural biology. For instance, I was very happy recently, since I completed my electron microscopy training!

How do your tasks and responsibilities differ as a postdoc compared to a PhD student?

Being a postdoc is more about being independent. During my PhD whenever I felt insecure I was glad to receive directions and hints from my supervisors on how to do things. Discussions happened very often. Now, that I have become more critical and more confident, even when I do experiments that are new to me, I enjoy this feeling of „being more on my own“.

How was your journey in terms of publishing your paper in Nature during your PhD, and what did you learn from it?

It started with a draft :) How original, right? I learned how to choose words carefully, how to formulate my results in a way that they can be easily understood, and not to take things for granted. Your findings may be interesting, and of



© Estelle Marchal

course, you are familiar with your own results but the challenge comes when you need to explain why these results are so exciting and to make other people interested in them. The input from my PhD supervisors, their suggestions and criticism made me appreciate how little things can make a big difference. This boosted my self-confidence. I still clearly remember how happy I was, when I got to know that the manuscript was sent for review, and later when it was accepted!

Doctor daddy

Erika Avendaño-Guzmán

How to manage to be a scientist and a parent? And what if you are also a medical resident at the same time? After completing his PhD project in 2012 under the supervision of Prof. Walter Stühmer, Alonso Barrantes Freer has worked as a researcher and a medical doctor at the Department of Neuropathology of the University Medical Center Göttingen (UMG). He shared with us his insights on being a father and developing a career.

Alonso, how do you equilibrate your family and career?

This is a very good question because being a parent, doing research and working in diagnostics, are all by themselves full-time jobs and the days do not become any longer when you decide to start a family. Therefore, I try to keep focus on the things I am doing at the moment so that the time with my family and at work is all quality time. I guess I have become much more pragmatic and efficient with the use of my time.

Since you are married to a scientist, what role does science play in your family nucleus?

The quality of always inquiring and trying to understand more about the topics we are interested in is probably one of the reasons we got married in the first place. Since both of us enjoy science very much, we often talk about new discoveries and our own research.



Alonso and his family: Sünke and little Nikolas © Alonso Barrantes

I guess having a scientific training makes you approach life in a particular way.

How do you combine the lab and the clinics?

Working as a resident at the Neuropathology Department of the UMG offered me an excellent opportunity to combine research and diagnostics since we are constantly exposed to cellular and tissue-related changes of different CNS diseases. This gives us a great insight to evaluate the complexity confronted when we work with animal models of such diseases. Therefore, the link between diagnostics and lab work is in our case very straightforward. I also have the advantage that I get a lot of support from the department to conduct my research projects.

What do you enjoy most about your job?

I really enjoy the combination of scientific and diagnostic work. I also like the exposure to many different techniques and topics that go beyond my main research focus. In the Neuropathology Department, we are confronted with a wide variety of diseases that include neoplastic, inflammatory, autoimmune, infectious and even genetic disorders. I find this broad view of the CNS truly fascinating.

What would you tell the new generation of PhD students?

Be passionate about what you do and enjoy the projects you are working on. However, keep in mind that finding a job in science after a PhD is not easy. So, set your long-term goals early and evaluate critically future perspectives.

Science communication focus

Michael Berger

In 2017, the scientific community had to face several threats by world-wide developments. Heavy budget cuts, political prosecution of scientists or closing of universities are just tip-of-the-iceberg examples. Also within Germany the trust in science seems to dwindle. The “Wissenschaftsbarometer 2016”, a representative survey about the attitude of the society towards science, revealed that almost 40% of the population believes that we trust too much in science and too little in our emotions. When it

comes to controversial topics, such as GMOs, alternative medicine or animal research, scientists struggle to conduct a fact-based, non-emotional discussion.

Many scientists worldwide spoke up against such developments and advocated for decision-making processes based on facts and research. On Earth Day, 22 April 2017, the largest pro-science demonstration ever took place in over 600 cities: the March for Science. Hundreds of thousands of people worldwide and tens of thousands in Germany took to the streets to raise their flag for science. Of course, Göttingen, a city with the motto “Die Stadt, die Wissen schafft” (The city that creates knowledge), was part of it. With 2,500 participants, roughly two percent of the city’s population, it was one of the largest demonstrations in the recent past. The friendly and colorful march started at the Gänseliesel and moved down the „Weender Straße“ to the Platz der Göttinger Sieben“ on the



University campus. The final event consisted of speeches from the university’s president Ulrike Beisiegel, Lower-Saxony’s minister for science and culture, Gabriele Heinen-Kljajić, the exiled Turkish scientist Pinar Senoguz, the priest Ludger Gaillard and the managing director of the 2nd Institute of Physics Arnulf Quadt.

While an astonishing number of scientists worldwide followed the call to the March for Science, some critical remarks came from the scientific community as well, saying that science should not be politicized and an event such as the March for Science favors the perception that science would be a partisan issue rather than an open and independent service for the whole society. While science needs to be independent and above all party lines, it is difficult to detach it from politics. One reason is that funding and regulations are dependent



© Lisa Quelle

on political decisions. But more importantly, as a service for the society, science can only be meaningful

when accepted by the society. Consequently, scientists need to engage with the public one way or another.

Therefore, we dedicate the following pages to “Science Communication”.

Communicating science - but how?

In times when even political leadership claims that there are “alternatives” to facts, I realized that how I see research and its impact on the community is not self-evident. And I felt the urge to add something to the discussion about communicating scientific findings. I believe that researchers have to make it clearer what we can learn from their results and how we can use them in the future to make better decisions. But as everything in the world, science is not black or white, and we as scientists are confronted with the question of how we explain and justify our work to our family, friends, and the public.

Every time when I'm back in my small, picturesque home town, where the next big city and university are miles away, also science seems to be far away. It is still sometimes hard for me to explain my job, my project and the daily lab work, which is indeed very abstract for most people.

But at some point, I realized that my friends and family are interested and that I just have to take a bit of effort to explain it understandably. My friends were taken by my passion for biology and the small contribution I am hopefully able to add to our understanding of evolution. And back in Göttingen, I started taking my ‘non-science’ friends with me to the lab when they

were visiting me. I showed them the fascinating world that is usually not visible to somebody who is not working in biological sciences. And not a single one of them has yet left the lab without being fascinated by having a look through the microscope.

Here in Göttingen, a city with the motto ‘Die Stadt die Wissen schafft’ (‘The city that creates knowledge’), researchers are in the privileged situation that communicating science is heavily supported. During the ‘Nacht der Wissenschaft’ researchers presented their work to more than 25,000 people in January this year, including a non-scientific as well as a scientific audience.

The University of Göttingen is currently setting up the ‘Forum Wissen’, a future knowledge museum. The aim is to provide what is sometimes missing in bio- and life sciences: The connection of scientists creating the knowledge with the public as a direct consumer. Exhibitions like on/off, which took place early this year in the course of the development of the ‘Forum Wissen’, try to bridge this gap.

Apart from such great events, the presentation of scientific results is mostly not very intuitive. Many people are not used to dealing with statistical values and scientific concepts which seem so obvious to us.

Elisa Buchberger

We have to explain results in a way that the public can understand and relate to it. One way to overcome the obstacle of boring and geeky science communication is to combine it with comedy. Science Slams provide a stage for young scientists to explain their work in a short and creative way. If you are passionate about your research, then go for the next Science Slam which will take place on 3 October 2017 here in Göttingen!

Science communication often aims to show people how fascinating and truly interesting research can be. This is extremely useful to raise awareness for science because only then we can explain its impact, starting from basic and ending with applied research.

But often, talking about science is not easy at all. Namely when emotionally and ethically controversial topics like animal research are brought up. But especially in this case, we as PhD students, who have direct access to fact-based information, should seize for the opportunity to take an active role in educating the public. The German Primate Center (DPZ) for example is offering guided tours and events to be transparent about their research, thereby enabling open discussion with the public.

Apart from letting my friends have a look through our lab's microscopes, I decided that I want to learn how to write about what I have to say. And for me the *GGNB Times* proved to be a very good start. But especially now that we are able to reach a huge mass with just one click, it has become easy to tell the world about our research and show that it matters in so many different ways. It may be a blog, a Facebook page, Twitter or traditional newspapers - there exist numerous opportunities to connect with the scientific and non-scientific community alike.

But there are so many more ways of communicating scientific results – in fact this is a whole profession and nobody demands that we have to do the job on our own. But I think that we as PhD students have to take some responsibility and let the rest of the world be part of what we discover. It may not convince everyone, but it is important to keep the discussion going. And some people will listen, watch and be fascinated by what we have to tell them. And this is in most cases not time-consuming. It just takes a bit of awareness and you to find out in which way you can contribute to science communication! After all – we as scientists may also learn

something about our research by having a look outside of the box and see it from a different perspective.

For the ones who are eager to learn more about how science communication works, the GGNB is offering related courses. “Introduction to Ethics in Life Sciences” teaches you how to engage in ethical discussions. The course “Introduction for Public Relations for Young Scientists” covers the reasons for communication, media and science communication and gives you an overview about recent changes in technology and media. And of course, you are always welcome to participate in *GGNB Times*!

A whole thesis in three minutes

Georg Hafner



The participants of the Three-minute thesis competition in Göttingen © Jan Gero-Alexander Hannemann

Can you still remember the baffled look of your parents when you tried to explain them your thesis work for the first time? Were you able to engage your non-science

friends in a lively discussion about your research or did they change the topic quicker than Chuck Norris strikes a punch? Explaining the topic of your thesis to a lay audi-

ence or even to somebody outside of your field is all but easy. What if you had just three minutes to do that?

The idea of a Three-minute thesis competition was invented at the University of Queensland. With the aid of just one PowerPoint slide, PhD students have to explain their research to a non-specialist audience in the time it takes to boil a breakfast egg. In 2017, the Coimbra Group, an organization dedicated to forge closer ties among European universities, took on this idea and organized an international competition. Twenty universities participated and submitted the video of their internal champion. Those videotaped presentations were subject to rating again and only the three best students were selected for the final round to compete during the Coimbra Group General Assembly at the University of Edinburgh.

The University of Göttingen was one of the twenty to host a Three-minute thesis competition. Eight participants took on the challenge to present their research to an audience of Göttingen students in three minutes and created an entertaining and informative evening. The per se dynamic setting of short presentations was reinforced by the rich variety of topics. They covered neurological diseases, snake bites, data analysis in cancer research, Indian women, pipe smoking and impact of radiation on art. All presentations were published on YouTube as well.

A jury composed of four professors from different fields selected the winning performance, not an easy task as all presentations were memorable. In the end, the winner was Tanvi Butola, a GGNB student from the Institute for Auditory

Neuroscience. She talked about how proteins at the synapse of

neurons regulate the release of neurotransmitter. Her analogy of instruments playing a symphony and synaptic proteins orchestrating the function of the brain together with her vivid style of speaking convinced the jury.

“I received a mail from the International Office in Göttingen in which they asked for participation in a Three-minute thesis competition. I really liked this fast-paced format. It is like science on a conveyer belt and you can pick out your favorite piece to look at it closer,” explained Tanvi to *GGNB Times*. Tanvi’s piece was rated among the top three most intriguing in the video competition. Thus, she was invited to Edinburgh for the final. “I had my 30-minute-long, actual defense just a month before the event in Edinburgh and was in the process of writing a manuscript. So, I was very deep in the matter. In the process of preparing for the competition, I had to look at my work from a more simplified viewpoint. This allowed me to see my results in a much broader context and find more meaning in my research.”

The other two finalists were from the University of Padova and Uni-



Ambassadors of Göttingen: Tanvi Butola (middle) with the vice president for international affairs Prof. Dr. Hiltraud Capser-Hehne (right) and head of the regional department for Europe Dr. Esther von Richthofen (left) in Edinburgh. © Tanvi Butola

versity of Edinburgh. Their talks were about the use of nuclear fusion as a source of energy and the effect of bilingualism on cognitive health. More than a hundred representatives from all the Coimbra Group Universities listened to the talks and gave their votes. Tanvi was awarded the second place, the talk about nuclear fusion came on top. “I enjoy speaking about science to the general public and think that this concept is a great way to make science communication more popular. It allows people to grasp the concepts and ideas of research projects very fast.”

A call for evidence-based discussions

Michael Berger

Think about how much time you have already invested in research: the time you spent in the laboratory, the number of papers you read, the conferences you attended, the years you studied at the university. But while science became familiar to you, it is something exotic to the rest of the world. With this in mind, it is not too surprising that there are people apparently in opposition to rational scientific evidence. Various groups “disagree” with evidence-based medicine, believe vaccination is dangerous and global warming is made-up. Scientists have a hard time countering such argumentation, especially whenever evidence and facts are either ignored or put aside as a “different opinion”. But how do we convince the society that evidence-based research, rather than pure beliefs, should be the motor of decisions? While I cannot fully answer this question, I can share my experience in one field where anti-scientific argumentation is powerful and popular: animal research.

Animal research is an ethical dilemma. Is the use of animals for research purposes justifiable? This is a rather difficult question. Animal research is a core part of biomedical research and it has led and still leads to many medical breakthroughs for humans (and animals!). Taking all breakthroughs into account does not necessarily justify the continued use of animals for research, however, this is highly dependent on one’s ethical viewpoint. The law currently allows the use of animals

for research purposes, but only if: a) there is a clear benefit for humans and/or animals, b) no alternative methods are available, c) only the minimal number of animals needed are used, and d) the animals are treated with care.

As science progresses, the ethical dilemma between animal use and medical progress needs to be cons-

idered or is even counterproductive. If you ask them: “Why do people conduct animal research?”, those organizations either tell you that scientists make a profit or that they are sadists.

From a scientific point of view, the arguments against animal research are very often ridiculous, if not dangerous. One argument, for



Understanding Animal Research © www.understandinganimalresearch.org.uk

tantly discussed within a fact-based discussion by advocates of both sides. The advocates for animals in our society are animal rights, or animal protection groups. But if you have a look at their websites, or attend their events, you will realize that most of them barely speak of ethics. In fact, they try to convince people that animal research has nothing to do with medical progress

example, is that 95% of animal research is useless. This claim is based on studies showing that around 95% of clinical drug tests fail (in humans) despite the fact that all of these drugs passed animal testing. What is not explained is the difference between clinical trials and toxicity testing. Statutory preclinical animal testing is toxicity testing, while the high failure rate in

clinical trials mainly results from efficacy testing and not toxicity. Animal rights organizations demand an end to all animal testing, including preclinical toxicity testing. Thus, humans would be the first complete organism to which a novel drug would be introduced. The result of such an endeavor would definitely not be an increase in success rates of clinical trials. Other arguments against animal research are superficial, like “We do not need animal research, since we have alternatives: in-vitro methods, MRI and computer simulations”. An explanation about the diversity and limitations of scientific methods is missing. Alongside, videos and images, shown out of context, are playing with the emotions and do not add sound arguments to the discussion.

The problem we are facing here is that such arguments are simple and appear to make sense if you have absolutely no background knowledge. Additionally, they relieve society from its ethical responsi-

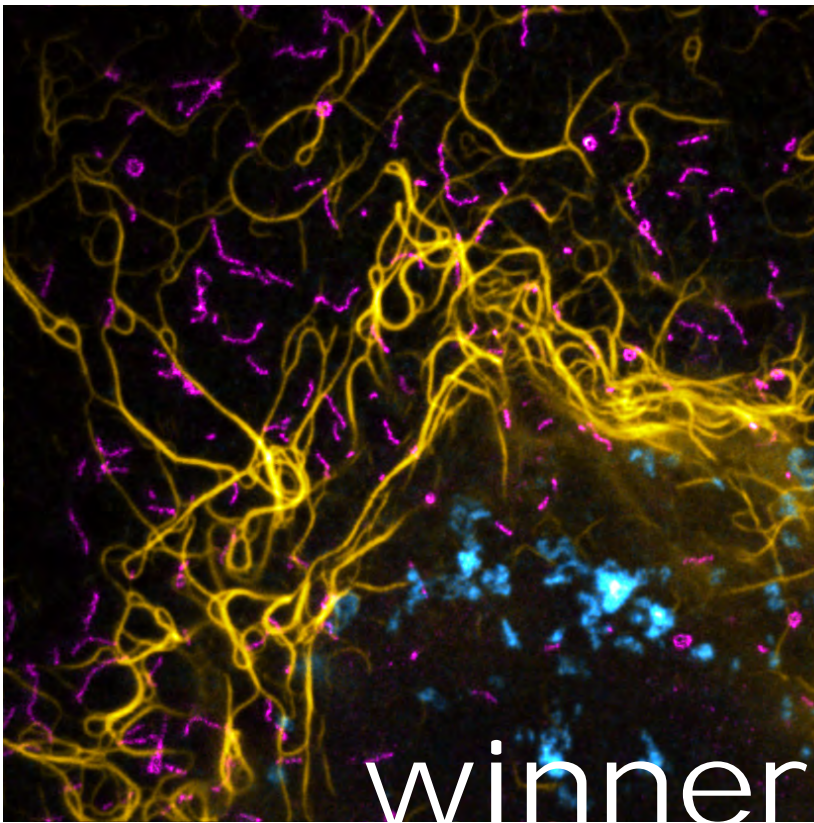
bility, which in turn distracts from the real discussion.

Luckily, from my experience, many people are willing to listen once you invest time to discuss with them. I believe that much of the opposition against animal research originates from misinformation and not from a strict ethical standpoint against all kinds of animal use. As scientists, we can talk to people and explain our viewpoint, leading public discussion to a more evidence-based debate.

However, keep in mind that a discussion requires the public to be accurately informed. Reports about scientific studies in public media often aim to fascinate people rather than inform them. Driven by press releases from research institutions, these articles paint glossy images of scientific advances and a bright future. What is missing too often are the reasons why a certain technology or medical treatment is not yet available and will not be for the next decade. It is not surprising that

scientists are hesitant to pinpoint the limitations of their own work but it is necessary in order to have an informed discussion. For animal research, we are already paying the price. Glossy stories about the miracles science is capable of make it difficult to understand why it is not yet possible to replace animal research.

Seeing all the misinformation in the media, I decided to become actively involved. I joined an organization of students and young scientists with the aim to contribute to the discussion about animal research and provide a scientist's perspective. Pro-Test Deutschland tries to inform the public via an online blog, social media, newspaper articles, information booths, school visits, talks and public events. As a member, I have had the opportunity to engage in all those activities. But more importantly, I am part of a community that is genuinely interested in an honest and factual discussion about animal research.



Maria Loidolt: Vimentin, a component of the cell's cytoskeleton, is surrounding the cell nucleus and extending towards the cell edges. Under the space of the cell nucleus, stacks of the Golgi apparatus, where proteins are processed and sorted for transport within the cell, can be seen. Further out, many elongated peroxisomes, which help to break down toxic components, are distributed.

The winner received
a Nikon Coolpix
W100 kindly
donated by Nikon



Rainer J. Engelken (Cover): The picture shows two Poincaré sections through the state space of a chaotic neural circuit. They visualize how the complex phase space structure depends on biophysical features of neuron models.



Photo contest



Marina Blenski (Backcover): The highly fluorescent dye Rhodamine 6G emits different colored fluorescence under UV irradiation depending on the used solvent.

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