Happy Anniversary, MedNeuro!
MedNeuro Berlin: Wie schön, dass du geboren bist!*

Yes, dear friends, the summer is winding down here in Berlin, and as we mourn its passing, we look to exciting things to come in the fall and winter. What better time to reflect on the past and future of Medical Neurosciences in Berlin? As you may know, it’s the program’s 15th birthday, and we’re celebrating with an entire issue dedicated to remembering the past, and looking forward to the future.

Start things off with the “official” story (page 3), followed by an insightful (and occasionally hilarious) take on the program from some of its founders (page 12-13). We’re also celebrating the recent accomplishments, big and small, of our MedNeuro family. On page 20, you can read about the students’ successes in educating the public about science over the past year, and we feature a MedNeuro alumnus’s sensational new start-up on page 16.

But this issue is not just about basking in the glory of past achievements (and questionable fashion choices, page 4), indeed, we’ve got our sights set on the next 15 years as well. Though occasionally, prospects may seem bleak (see an article about job prospects for new PhDs on page 4 or one on the consequences of one-sided funding of scientific projects in Africa on page 15), there’s a lot to look forward to as well. For example, the future of scientific publishing looks bright (page 17), and neuroscience as a whole is beginning to push the limits of what was once thought impossible (page 14). Do you think that the Human Brain Project will live up to its futuristic claims? See our response on page 6. Or maybe you would like to learn to predict the future scientifically? Consider a (totally real) PhD in Future Studies on page 8.

Whatever your take from our perspective on the past and future of neuroscience in Berlin, we hope that you enjoy this issue, and join us for some of the official celebrations later in the year (see Calendar, page 23).

Happy reading!

Ahmed Khalil and Constance Holman
Editors-in-Chief

*from the German birthday song of the same name.
Literally, “How wonderful that you were born!”

Contest

Like what you see? Interested in contributing? We are always looking for new authors and submission on anything related to the topic of neuroscience. Send us an article, some beautiful shots from your microscope, poems, short stories, critique, reviews – anything! The best contribution will be published and rewarded with the book The Future of the Brain: Essays by the World’s Leading Neuroscientists. Come on and write like there’s no tomorrow! Send your contribution to cns-newsletter@charite.de to win. Deadline for submission for the next issue is October 23rd, 2016.

This issue’s winner is Juliane Schiweck, who wrote a thoughtful and informative piece on the nuts and bolts of having a child in grad school (see page 10). Congratulations Juliane, and thank you very much for your article!
Medical Neurosciences In Berlin: An Abbreviated History

This issue centers on the celebration of 15 years of Medical Neurosciences in Berlin, as well as taking a critical look at neuroscience's past and future. So of course, things would not be complete without all of the real facts about the program. We sat down with Lutz Steiner, a seasoned veteran of the program office (see below), to find out how MedNeuro got where it is today.

To understand the motivation behind the program, one has to go back to the research climate in 2001. Germany (like much of the rest of the Western world) was in the midst of a biotechnology bubble. Students were enrolling in record numbers in neuroscience-based programs. However, universities had a major problem: after graduation, most left academia and went straight to industry. What's more, Germany had a serious “brain drain” issue, where highly educated young Germans left the country to pursue research in greener pastures elsewhere.

Modest Beginnings

At that time, schools in Germany were also transitioning from the traditional academic degree system (Diplom, Magister, etc.) to a three tier BSc-MSc-PhD format. In 2001, several universities (notably Göttingen and Bochum) were starting up international neuroscience programs. However, apart from a few Graduiertenkollegs (GRKs, which are research projects with a narrow focus and short duration), there were no comparable opportunities in Berlin. But at the Charité, scientists and administrators were getting together to change that. The most important figures in this process were the so-called “founding four”, Ulrich Dirnagl, Helmut Kettenmann, Uwe Heinemann and Robert Nitsch (see interview on pages 12 and 13). Together, they applied for – and successfully obtained – a major grant from the German Academic Exchange Service (DAAD), aimed at increasing opportunities for international students in Germany.

The beginning was modest – roughly 65,000 Euros spread over three years, and half an administrative position (filled by Lutz Steiner). But where to place the academic focus? Reasoning that the best way to recruit PhDs was getting people into contact with the Berlin neuroscience research community, the program first placed energy into creating a Master’s program. Thus, in the first year of MedNeuro, there were 15 MSc students, and one (very lonely) PhD.

Reaching Across Borders

For several years, (and with additional funding from DAAD and the EU), the program continued to grow, adding a few more students to the PhD group every year. However, in 2007, things dramatically changed with the arrival of NeuroCure, a multi-year and multi-million euro cluster of excellence funding scheme. This allowed the program to grow considerably, adding major scholarships as well as 4-5 new staff positions. This is where the current MedNeuro office staff (Benedikt, Petra and Ralf) came in. What’s more, the Berlin School of Mind and Brain, the Bernstein Graduate Program for Computational Neuroscience and the Helmholtz International Research School Molecular Neuroscience all date back to that time. While not directly sharing much of MedNeuro’s content, this development further cemented Berlin as a real center of neuroscience both in Germany and internationally.

Perhaps bolstered by this new wave of funding, people and ideas, in 2008, MedNeuro won a 20,000 Euro prize for being one of the top 10 international Master’s programs in Germany. The next year, the program participated in more international outreach by winning the “INTER” grant from the DFH (Deutsche-Französische Hochschule), allowing them to fund joint projects from German and French universities. Furthermore, 2008 marked the creation of the Charité Center for Stroke Research (CSB), another fruitful partnership that would see major exchange of people and ideas from the MedNeuro program. Another new aspect of the program, inclusion of students from the Erasmus Mundus program Neurasmus, began in 2011. With partners in Amsterdam, Bordeaux, Coimbra, Göttingen and Québec City, this EU-funded Master’s Course allowed further promotion of pan-European neuroscience research, as well as lots of new exciting cooperations and collaborations for MedNeuro students.

MedNeuro Today

In its current incarnation, the MedNeuro program has come a long way. From 16 students and a few thousand euros, the program has grown to have more than 100 funded participants, and an annual budget of hundreds of thousands of euros. But clearly, the story is not yet over. As many readers may be aware, 2015 marked the beginning of an exciting new initiative, the Einstein Centre for Neuroscience Research. This is one of the largest grants ever available to the program, and already, many are planning how to most fruitfully allocate the funds. There is talk of a new, exciting PhD program, as well as closer cooperation with the Charité’s Molecular Medicine program, as well as the Bernstein Centre for Computational Neuroscience. There are also discussions underway about creating a “fast-track” BSc-PhD program, though these ideas are still in their infancy. As always, the office is open to advice and input!

MedNeuro has a lot going for it – its umbrella-like structure and ability to use funding from a variety of sources means that collaboration and teamwork are effectively built into the program. However, this setup also comes with drawbacks. Students (especially in the PhD program) come from many different backgrounds, have diverse research interests, and are scattered all through the city. This means that it may be difficult to find a “common thread” that gives the program a real sense of community and draws people together. However, there has recently been a renewed focus in giving the PhD program a sense of identity, both by the addition of a new staff member responsible for the program (Julia/Veronika), and the planning of the first MedNeuro PhD retreat this September and the Alumni Reunion in October. We at the Newsletter are also doing our best!

In conclusion, the past 15 years have been highly eventful for the MedNeuro program. Given the exciting new events on the horizon, it seems likely that we can look forward to (at least) 15 more years of great neuroscience in Berlin!

Constance Holman
PhD Student, AG Schmitz
By this point, you likely know that the MedNeuro program was founded in 2001, but what else was going on that year? Here’s a quick primer on what the world was up to 15 years ago...

**World Events**
Starting with the obvious, 2001 marked the beginning of the war on terror, starting on September 11th, followed by the invasion of Afghanistan and the general paranoia linked to anthrax, and other attempted terrorist attacks like the shoe bomber. Other parts of the world also saw tragic events. A massive earthquake in Gujarat, India, killed an estimated 20,000 people, while in Ghana, 120 people died in a football stampede. Elsewhere, agriculture in Great Britain took a massive hit from the foot-and-mouth disease epidemic, crippling the industry for years to come.

However, there was also a lot of good news that year. In Ireland, the radical Irish Republican Army finally dismantled its arsenal, while the first legal gay marriage was celebrated in the Netherlands. The technology world also made great strides. Microsoft launched Windows XP (still being used in some Charité labs!), and Apple presented a small device known as iPod...

**Pop Culture**
Speaking of music, the biggest artists of 2001 were U2, Destiny’s Child (who split later that year), Britney Spears and Robbie Williams. It was a great year for the start of film franchises (Harry Potter, Lord of the Rings AND Ocean’s 11), but the Oscar, in fact, went to Gladiator. On the small screen (internet piracy was still in its infancy), audiences were enjoying the “heyday” of reality television as well as long-running sitcoms (Friends, etc).

Then, as now, everyone wanted to look their best. In 2001, this meant a lot of wrap-around sunglasses, chunky shoes, and sparkly, metallic fabrics. And hair? Think spiky gel styles and blonde “frosted tips”. Oof. Though it’s great that some things can persist for decades (like MedNeuro!), others are best left in the past!

Constance Holman
PhD Student, AG Schmitz

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**A Degree For Life**

**The Job Market for PhDs Past and Present**

**Perspectives for PhD Graduates**
The amount of PhD holders in Germany has greatly increased since the 1980s, producing more and more graduates than available positions in academia [1]. Since then, the surplus of PhD degrees on the market has presumably been the cause of changed job perspectives for graduates. In the past, the traditional PhD-postdoc-professor career seemed more predefined for young scientists. Nowadays, the PhD bears importance as a title that represents more than just scientific expertise and the key to becoming a professor.

Outside of academia, a PhD title, regardless of the field it is in, is worshipped as a sign of highly valuable personal skills such as motivation, responsibility, perseverance and ambition. These traits are extremely important for leading positions in any profession [1].

Thus, scientists holding a PhD are appreciated in research and development in industry, in consulting, in patent law, scientific writing, sales and much more [2].

**The Changing Face of Grad School**
In the last few decades, the quality of PhD education has improved. Graduate schools were founded to turn the classical student-professor relationship to a more structured and interdisciplinary system. This helped shorten the graduation time and increase the quality of the degree [3]. Nonetheless, the prospects of long-term employment in academia remain poor in Germany [4].

One advance was the introduction of the junior professor position with tenure track option in 2002, representing an alternative to the classic Habilitation [5]. More recently, in 2015, a draft bill was passed to prevent short-term contracts in academia [6]. Despite these steps, Germany still lacks promising career prospects for PhD graduates in academia. There is clearly much room for improvement.


Constance Holman
PhD Student, AG Schmitz

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Pina Knauff
PhD Student, AG Wulczyn

*The PhD Factory* by Pina Knauff
Interview with Ferah Yildirim, MedNeuro Alumna and Assistant Professor at Charité

As one of the very first graduates of the Medical Neurosciences program, and the first alumna to join the MedNeuro academic committee, what do you think has been most improved over the years?

We were the first batch, so a lot of the fine tuning was done on us. Things were established better over time mainly because this program is very different from the German system and medical school. It’s now more structured, and students receive more guidance. For example, it’s easier now to get a lab rotation, because faculty members now know about this program and the quality of the enrolled students.

To you, what are the pillars of our program?

The major pillar of this program is the medical environment that surrounds it. Translational science is key. Also the block system of lectures helps students coming from very different backgrounds to adapt to such an environment and enter the field of medical neurosciences.

What was your personal motivation that pushed you to break into this field in the first place?

Originally, I never thought of coming to Germany because I did not speak German, but when I knew that this program could accept me as an English speaker, I was thrilled. When I was pursuing my Bachelor’s at Istanbul University, I was thinking of either genetics or neuroscience.

Tell us about your own research. Is it also translational?

I started with epigenetics all the way back with a lab rotation as an MSc student, studying the role of epigenetic mechanisms in stroke in relation to regulation of gene expression. We are now using genome wide techniques to study the role of epigenetic mechanisms to use them as therapeutic targets in neuropsychiatric disease. We are also following the cancer epigenetics research field closely, which is way ahead of us in using epigenetic drugs in the clinic. Currently, we are testing epigenome-targeting candidates in our cell culture model and in mice, hoping to finally translate our findings to benefit of patients as our ultimate goal. We are testing therapeutic targets on Huntington disease models, and preparing to expand our efforts into different neurodegenerative disorders like frontotemporal dementia.

What is the advice that you would give to new and current students that you wish someone would have told you?

I think the most important thing in science is that students should be really interested in the topic they are working on, and be enthusiastic about it. If you do not know what you want to do, then try to pursue very different lab rotations to find out what you like the most. If you are not interested in the topic, but decide to pursue it anyway for whatever reason, you will face a lot of disappointments. Only when you are enthusiastic about what you do will you be able to be patient tackling the problems, and enjoying your achievements.

Would you like to say anything about the MedNeuro 15th anniversary and alumni reunion?

Yes, this is exciting and unbelievable at the same time! I will be there, and hope to meet some of my former classmates as well as current students.

Ashraf Abdo
MSc Student, MedNeuro

This article has been edited for length and clarity.
The Human Brain Project: 
From Excitement to Disappointment to Reality

More than two years ago, in the June 2014 issue of this newsletter, I reported on the colossal endeavor that is the Human Brain Project (HBP). From the start, the initiative was heavily criticized as being both underfunded and overambitious. Now, three years down the road, we are taking another look at the mammoth project and its progress.

More Data is Not Enough
According to many scientists, the HBP’s philosophy is, and has always been, all wrong. At the 2014 Berlin School of Mind and Brain Conference, Nobel Prize laureate Sydney Brenner warned that just focusing on generating large amounts of very expensive data is not how progress in science is made. Last year, renowned neuroscientist Miguel Nicolelis told the CNS that the HBP “... was a big mistake that ended up being watered down to a massive IT project.” Both these scientists make an excellent point, that it’s not more data alone that will help us solve the brain. We still need good old-fashioned creativity and human ingenuity.

A Bumpy Ride
In 2014, a group of neuroscientists staged a revolt, raising major concerns about the HBP and the way it was being managed [1]. They threatened to boycott the initiative (by no longer applying for funding related to the project) unless those issues were addressed. To make matters worse, Switzerland voted in 2014 to limit migration from the European Union, putting the position of Geneva as HBP headquarters at jeopardy and complicating the logistics of the entire project.

Last year, a massive restructuring of the HBP finally took place. The entire board of directors was replaced, including Henry Markram, the man who in 2009 stood in front of the world and boldly announced that simulating the entire human brain would be possible within a decade.

Shortly after, the project’s funding was extended by the European Commission. They now have 89 million euros to spend until 2018 [2], although this is still a fraction of the project’s overall budget of one billion euros.

Strategy Change
As a consequence of the heavy criticism and restructuring, the HBP has undergone a substantial shift in focus. It now aims to build a framework to allow the brain to be properly understood in the future. Those involved in the project realized that they greatly over-estimated the readiness and availability (in terms of computing power and complexity) of tools to help us understand how our brains work. Of course, even after developing the proper tools, it will still take a lot of time and effort to collect and scrutinize the data before we can reach meaningful conclusions. These later stages of the scientific process, however, now fall far outside the scope of the HBP.

The new strategy has been seen by some as a diluted, less applicable version of the project. But I think it’s a good thing that the HBP eventually came to terms with the fact that it was aiming too high, trying to do too much with too little money and time. It is commendable that even such a massive project can learn from its mistakes and adapt.

And it seems to be working. The HBP recently released a set of tools, organized into six platforms, for use by researchers outside the initiative [3]. These consist of prototype software used to do everything from collecting, storing, and organizing different types of research data to simulating neural circuits.

Not All Big Projects Are Doomed
It’s not fair to say that the HBP was doomed to failure from the beginning because of its sheer scale. Conceived in the mid-1980’s and set off more than two decades later, the Large Hadron Collider is another project with an extremely ambitious goal, to find the subatomic particle that gives all matter in the universe its mass. Such a promise must have seemed preposterously unrealistic to some people decades ago, but the LHC has since made enormous progress in that direction.

And it’s not just physicists who have had success with such projects. The Human Genome Project started in 1990 and by 2003 had successfully mapped out the entire genome. Although director Francis Collins’ prophecy at the start of the project that “In the next five to seven years, we should identify the genetic susceptibility factors for virtually all common diseases...” [4] has yet to be fulfilled, there’s no denying that the mapping of the genome has yielded great scientific [5] and economic benefits [6].

In fact, even in neuroscience, large projects such as the US’s multi-billion dollar BRAIN initiative have done very well [7]. Maybe this year will be a turning point for the HBP and it will be able to truly revolutionize neuroscience by 2020. The new Director General, geneticist Philippe Gillet, seems to think so. He recently claimed that “It will no longer just be a project, it will be something more ambitious.” Although I’m not quite sure if ambition is what was missing in the first place.

[1] http://go.nature.com/1noiimX
[5] http://go.nature.com/2aABtRe
[6] http://go.nature.com/2asriNn

Ahmed Khalil
PhD Student, AG Fiebach
Limits for Neuroscience? Neuroethics in 2002 and Today

In 2002, when the MedNeuro program first saw the light of day, a new term appeared in the world of neuroscience - neuroethics. Not only did this make it to the cover of The Economist [1, 2], it was also the basis for the first conference in this new field.

At that time, The Economist claimed that in the past, researchers and the public had mistakenly ignored the importance of ethics for neuroscience while over-focusing on genetics. The article suggested that if the public worried about genetic cloning in human embryos, they should fear the interference with human brains by, e.g., pharmaceuticals even more [1].

However, in parallel in May 2002, the conference “Neuroethics: Mapping the Field” was held in San Francisco and brought together neuroscientists, bioethicists and law professors to discuss the rising ethical and legal concerns following recent advances in drug development and technology [3]. In the opening speech of this conference, William Safire, chairman of the Dana Foundation and The New York Times columnist, defined neuroethics as “the examination of what is right and wrong, good and bad, about the treatment, perfection, or unwelcome invasion, and worrisome manipulation of the human brain...” [3]. In his view, the ethics of neuroscience must be treated in a special way as the brain stands out compared to other organs. The brain defines our self, our consciousness and personality, making us unique.

(Mis)using Cognition-Enhancing Drugs

The field of neuroethics deals with several issues, including the use of pharmacological enhancement, interventions by brain stimulation or neurosurgery, brain imaging as well as the definition of consciousness and clinical death. A famous example of pharmacological enhancement is the use of methylphenidate, better known by its trade name Ritalin, which in the year 2000 was considered one of the most widely used recreational drugs on American college campuses [4]. Besides young adults using it to improve their scholarly performance, parents and teachers welcomed the possibility of attentive and calm students in the classrooms.

Martha J. Farah expressed her concern about this, claiming that there was probably a good reason why our brains had certain limitations and suggesting that prolonged treatment with such drugs, resulting in constant full-power brain actions, could end with early cognitive decline [5]. She also worried that artificial improvement of performance could lower the value of achieving goals or that performance enhancement could become a privilege of the rich, exacerbating social inequality.

Fifteen years later, the issue of cognition enhancement is still heavily debated. An article powerfully entitled “Smart drugs: A dose of intelligence” recently published in Nature [6] reports that the use of Ritalin or amphetamines to enhance cognitive performance is still accepted despite ethical concerns, since the long-term effects on healthy individuals are unforeseeable. Actually, recent research on rats indicates that Ritalin might be pretty bad for developing brains. Some institutions, such as Duke University in North Carolina, now consider “brain-boosting” by pharmaceuticals as cheating in their honor code.

Zapping our Brains from the Comfort of Home

When it comes to neurological enhancements by electrical brain stimulation, back in 2002 the ethical concerns appeared not as prominent compared to pharmaceutical brain boosters, despite the technology being rather old. Interestingly, the scientific and public interest in enhancing cognitive functions, especially by transcranial direct current stimulation (tDCS), has dramatically grown in the past few years according to increasing numbers of publications in scientific journals as well as articles in the mainstream media [7].

Recently, a special issue of Nature on cognitive health reported that today there is an alarming trend of using homemade tDSC devices or ready-to-use devices that are available online [8]. Although this promising technology provides hope for treatments of neurological disorders, like the pharmaceutical enhancers, the long-term effects on healthy individuals are not yet known. We therefore need to review the ethical issues on brain stimulation and establish regulations for the future.

Growing knowledge and progressive development of technologies have continuously fed the ethical debate between scientists and the public over the past fifteen years. Everyone working in neuroscience should feel responsible to include morals and ethics in their activities to maintain the reputation that our fascinating field deserves.


Eileen Schormann
PhD student, AG Krüger

The Future Is Now... And It Grants PhDs

Tell me, what will the weather be like tomorrow? Do you think your next experiment will go well? How will food supply chain systems influence South American elections 20 years from now? The future can be both tangible and remarkably remote. Trying to predict it may at times seem hopeless, yet at other times, may be as simple as sticking your head out the window and deciding to take an umbrella to work.

Future Studies: The Academic Discipline of Today?
To many, a “professional futurist” may conjure the image of someone in a tin foil hat reading a lot of science fiction, and in fact, the discipline does have its roots in literature. For many, the birth of futurism came with Samuel Madden’s Memoirs of the 20th Century (written 1733), which tried to predict geopolitical trends, but had little to say about development of science or technology [1]. H.G. Wells took another (and doubtlessly flashier) approach by imagining a world in which aliens, gadgets, and time travel defined human possibilities. Real 20th century problems, like the possibility of thermonuclear war, or the benefits of a planned economy also helped boost the discipline, as did the rise of advanced computing/simulation.

Today, Future Studies is a full-fledged academic discipline, available for study (including PhDs) around the world. Some schools focus on sub-specialties, such as predicting business trends at the Turku School of Economics [2], while others take a more general approach. Their main concern may be summarized by “three Ps and a W”: futures that are possible, probable or preferable, plus so-called “wildcard” futures [3]. At face value, the whole concept of futurism seems a little wacky, but the more you think about it, the more it seems to make sense. More traditional fields such as history and sociology attempt to reverse engineer complex systems (i.e. society and culture) to make sense of what has happened. Why not try the whole thing the other way around?

Not Just Science Fiction
It may be true that futurism tries to make sense of a great deal of non-static, complexly interrelated factors, but it can be broken down into more tangible components. This is done every day not just by professional futuroists, but by people in more mundane professions such as stock traders, meteorologists, and insurance assessors. One common predictive method in all of these disciplines is predictive modeling, or building a simulation to describe possible outcomes given possible constraints. Systems engineering, too, builds projects around estimations of future states, for example, building a “smart” supply chain that can respond to up-to-the-minute demands.

Other methods employed by futuroists have been adopted from the social sciences. For example, social network analysis uses the nature of connections within a community to predict how that community will respond to changes in the environment [4]. It was originally used in anthropology and sociology but is becoming more and more common in other “futuristic” fields like epidemiology and marketing. Another example is the Delphi Method, which uses structured interviews and feedback to combine and extrapolate from the opinions of experts [5].

Yet for every interdisciplinary success, there are methods that appear to be very puzzling, at least to an outsider. For example, most people are familiar with trend analysis, which identifies factors that strongly influence the present, and uses them to project future scenarios. However, future studies also employ Emerging Issues Analysis [6], which does the exact opposite: identifying unimportant forces or events in the present, and predicting what could happen if they were to become important in the future. There are also a host of other methods based on “visioning” and “future biographies” which are significantly heavier on imagination than math or statistics. But if they end up being accurate (see, for example, H.G. Wells’ accurate predictions about modern warfare [7]), are they any less valid?

Think Like a Futurist
Would it surprise you to learn that you are likely also a futurist? While your day-to-day may not involve planning for the rise and fall of geopolitical powers, most readers of this newsletter make their living by making and testing predictions. In the form of scientific hypotheses. After all, having semi-reasonable expectations about your experiment means that you will most likely make efficient use of your time and resources in the lab. The role of prediction in biomedicine has been extensive studied, and is beginning to be rolled out in concrete practice. Less is known about how skillfully biologists can tell the future (see Box 1).

Thinking about the future, especially in an academic context, can have profound implications for the way we envision and plan for the consequences of our actions. But one side effect is that it also calls practitioners to question their assumptions about the present. If you fervently believe that, say, a certain candidate winning the American election would result in disastrous foreign policy decisions, what does that say about foreign policy at present? Or the electoral system that would get them there in the first place? At the end of the day, predicting the future calls for a profound understanding of the present. Whether or not you choose to make future studies a full-time occupation, that should be a universal priority.


Constance Holman
PhD Student, AG Schmitz

How well can you predict the future in your own lab? A Charité-McGill University bioethics study is trying to find out! We are looking for participants (students, technicians, or PIs) to make a short prediction about an experiment they are conducting. Participation is short (2x20 min interviews), simple and fun. Please contact constance.holman@gmail.com for more information.
This year we celebrate the 15th year of the Medical Neurosciences program at the Charité. During these years many promising young researchers were trained for the forefront of neuroscience research. As time passes by many things were discovered and improved to give today's researchers the best tools to unravel our brain's secrets.

Zooming In
A series of developments in the microscopy field over the last few years is now allowing us to image beyond the famous Abbé limit (describing the resolution limit of light microscopes), down to nanometer scales, without using electron microscopy. In 2014 physicist Stefan Hell was awarded the Nobel Prize for his development of STimulated Emission Depletion, or 'STED', microscopy. This fluorescence imaging approach works by using two lasers: an excitation spot and a depleting donut-shaped second laser around it [1]. As the ring shape de-excites the fluorescent dye the remaining signal is dramatically smaller, allowing for a resolution of up to 2.4 nm [2]. Technically, STED does not really overcome but cheats Abbé’s law... but I guess the famous physicist probably would not have minded.

Another approach brought into standard application during the last few years is STochastic Optical Reconstruction Microscopy, or ‘STORM’. Broadly speaking, it works by taking multiple images and stochastically reconstructing the exact position of a particle within a Gaussian distribution of signal. STORM imaging has revealed a previously unknown and rather unexpected ring pattern of the cytoskeleton protein actin along axons [3]!

Improvements in regular confocal microscopy have been made on the other side of the objective as well. Recombinant nanobodies are heavy-chain-only immunoglobulins originally derived from sharks and members of the camel family. Even when coupled to fluorescent proteins or dyes, nanobodies are particularly small, allowing a less dispersed signal around the actual antigen caused by the classical primary and secondary antibody approach. Thanks to their small size, binding of a nanobody does not even interfere with target protein function, which makes them an ideal tool for live cell analysis [4].

Re-Thinking the Genome
After their discovery in plants in the 1990s, small interfering RNAs (siRNA), and later single hairpin RNAs (shRNA) rapidly became a standard tool to facilitate targeted gene knockdown and analyze protein function [5]. Despite the high degree of specificity of siRNA there is always a certain chance of off-target effects. A very recent discovery has led to the founding of several biotech start-ups and a very interesting patent lawsuit [6]: CrispR/Cas9. Emanuelle Charpentier, now head of the Max Planck Institute for Infection Biology, together with colleague Jennifer Doudna identified the targeting mechanism of this bacterial defense system against phage particles just 4 years ago [7]. Since then the method has been optimized for use in mammalian cells and revolutionized the generation of transgenic animals [8].

Speaking of genetic manipulation, we should not forget the achievements in the new field of optogenetics. With the initial discovery of the light-inducible sodium-pump KR2 a magnificent new tool was found for manipulating the signaling properties of neurons. Researchers could apply this principle to other pumps and receptors, which makes these light-sensitive proteins an excellent tool for all types of researchers, not just electrophysiologists [9].

Translational Potential: Looking Ahead In The Lab
In addition to the already well established techniques that will eventually find application in the clinics, many developments within the next years will likely improve bench-to-bedside translation. There are already single case studies applying viral gene transfer or CrispR/Cas-9 to patients in order to repair genetic defects that cause incurable neurological diseases [10]. Another example of novel developments aimed at clinical application are various forms of nano-scale particles. Nanoparticles have already been developed to target specific tumor cells in order to deliver chemotherapeutic drugs [11], a method also currently under investigation for various types of brain tumors and ischemia.

Once upon a time polymerase chain reactions were performed manually in a series of water baths. Nowadays, automated assays and robotic facilities allow outsourcing of experimental work. Could the future of bench life really include fully automated assays programmed remotely via cloud services [13]? Progress has of course not been restricted to the wet lab. In line with Moore's law, computational power has doubled every two years [12], which has enabled massive acquisition, processing and analysis of immense data sets in various fields (such as raw imaging data, genomics, proteomics, and electrophysiological traces). The immense computing capacity of single computers, computer clusters or multi-core supercomputers allow for novel analysis algorithms and simulations of hitherto unseen complexity [14].

Did we miss any particular techniques or methods you would like to endorse? What do you think has revolutionized your field of research during the last 15 years, or will break through in the near future? Drop us a line at cns-newsletter@charite.de!

[8] Singh, Schimenti and Bolcun-Filas, 2015, Genetics
[9] Banghart et al., 2004, Nat Neurosci
[10] Savi and Schwank, 2016 Transl Res

Bettina Schmerl
PhD student, AG Shoichet
ParentHooD: From Bench To Crib Side

Combining career and family is a problem most of us will encounter during our lives - and you will have to deal with questions ranging from parental leave to finding a day-care center. However, it is not always easy to find the right moment for having children in a scientific career. During your post-doc? During your PhD?

Always Bad Timing?

From an economical and organizational perspective, having a child while you are employed is always a burden to the employer: they lose an employee during parental leave, meaning they need to look for a replacement or pause the project for some time. However, we should understand that employers are fine with fulfilling these duties and providing support to the parents-to-be - after all people are people and not merely employees. Having a child is a very individual decision and if you decide to do it during your PhD or post-doc, it will always come with a lot of problems: From a work point of view, there will never be a perfect moment.

The Challenges

When having a child as a PhD student, you are up for several challenges - one of them being your terms of employment. Usually, PhD students are paid either with a scholarship or a part-time contract. If you have a part-time contract, the same rules apply to you as to any employee. Your situation is regulated by law in that you will be eligible for parental leave, allowance and child benefits [1]. Your contract will be extended by the amount of time of maternal or paternal leave.

In case of a scholarship, the situation is much more complicated. Since you are not regularly employed and don't pay taxes, you are not entitled to have parental leave and will receive only the minimum amount of parental allowance, which sums up to 300 euros per month [2]. With a contract, the parental allowance equals 65-67% of your pre-leave income [1]. If you have a scholarship, it depends very much on your institute whether or not and for how long your scholarship can be extended [2]. In this sense, having a scholarship during your PhD rather seems like a stumbling block when trying to reconcile career and family.

Where To Get Information

Once you decide to have a child, your first challenge will be to obtain information regarding your situation. Especially - but not only - as an international PhD student, the process of becoming a parent in terms of knowing your rights and obligations in the workplace, as well as the financial benefits you can receive, can be confusing to say the least.

It is essential to talk to your supervisor in order to plan the subsequent steps of your PhD, but many times your supervisor might not have all the information you need. This is pretty unfortunate, since it would be fairly easy for the central institutions of the universities to provide such crucial information to the supervisors, be it an information brochure or a seminar!

However, you can get some advice at the Familienbüro of your institution, which deals with combining carrier and family [3]. Unfortunately, the relevant information available on the internet is almost exclusively in German, making it very difficult for international students. If you decide to have a child during the PhD and you are part of a PhD program, the Familienbüro is one of the first places you should turn to. If you are part of the Medical Neurosciences Program, you can get help at the program office. There, they offer support and information, especially for international students who do not speak German and need help with administrative issues.

Back To Work?

Once your kiddo is born, parents will have to think about getting back to work. Parental leave can be split between the two parents, so that each is absent at work for the least amount of time possible and gets to spend time with the child as well [4].

When both parents decide to return to work, new problems arise, like finding a day-care center. This can be challenging and at times, you have to wait for over a year to get a spot. Fortunately, being employed at a big institution like the Charité has certain benefits. The Charité cooperates with day-care centers in Berlin and, in most cases, it will be possible for you to get a spot for your baby reasonably fast.

In a nutshell, having a baby during your PhD is difficult, mostly because it depends on how supportive and understanding your supervisor is. Uncertainties concerning financial aspects and the regulations of your contract also make things worse. If you are a PhD student with a scholarship, the situation is far from ideal.

It is necessary that universities start taking responsibility for their employees - especially the ones without a contract. However, having a child is an individual decision and if you decide it is the right moment for you, don't be afraid to speak up for yourself.


Source: Juliane Schiweck

Juliane Schiweck
PhD Student, AG Eickholt
It was 1:15 AM, Monday April 18th, 1955 at Princeton Hospital in New Jersey, where Einstein muttered a few words with a quavering voice, took his last breath and passed away. Unfortunately, his nurse did not speak German, and thus his last words were gone forever.

Dr. Thomas Harvey, the pathologist responsible for determining the cause of death, was interested in the brain that worked out the theory of relativity, and couldn’t wait to remove the precious contents of Albert Einstein’s skull! Dr Harvey convinced Hans Albert, Einstein’s second child, to give him permission to study his father’s brain [1]. The next day, Einstein’s body was cremated and his brain, unlike his reputation, was left forgotten for decades.

Twenty-three years later, a young journalist, Steven Levy, was keen to find out what had happened to Einstein’s brain. His research eventually brought him to Dr Harvey’s office, where inquired about the study that never came out. Left without a convincing response, Levy eventually was going to settling for a few pictures of the brain, but had not expected what would happen next: Dr Harvey stood up and took out his beer cooler. There it was lying in front of him, Einstein’s brain… stored in several glass jars labelled “Costa Cider”.

The Mystery of Einstein's Brain
During the ensuing 61 years, Einstein’s brainy remnants were the famous objects of scientific scrutiny. Researchers found that Einstein's brain had unusual sulci in the parietal lobe, an area which has been associated with reasoning, troubleshooting and mathematical abilities [2]. Only one investigation weighed his brain, totaling 1230 grams at the age of 76 when he passed away. Since the brain has usually lost around 9% of its adolescent weight by that time, they predicted it was around 1350 gram in his younger years, which is less than the average of comparable groups [3].

The most interesting study, however, was published in 2013 [4]. A group of researchers studied the neuroanatomy of Einstein’s entire cerebral cortex by examining fourteen newly discovered photos. They found that Einstein had considerably larger prefrontal cortices than the general population, which could partially explain his cognitive brilliance. Near the central sulcus, he had an enlarged representation of his left hand, even though he was right-handed. However, considering that Einstein was an accomplished violinist, this was not really that unusual. They also found that Einstein had a thicker corpus callosum than most men of a similar age. Some parts of this large bundle of fibres was even thicker in Einstein’s brain than what is usually found in younger men, implying better information transfer between the two hemispheres.

For other investigations, Einstein’s brain was sectioned in 240 blocks, with one section from every block being stained and studied. Brodmann area 39, which is involved in language, had an unusually high number of glial cells compared to neurons [4], which may have helped support more efficient synaptic transmission.

Even though Einstein’s brain has been available to science for years now, we still do not know why he was one of the brightest folks in the history of the mankind. But what possibilities could await the neuroscience community with the brains of other (living) geniuses (e.g., Stephen Hawking)? Would he ever consent to its study, knowing the absurd journey Einstein’s brain has had?

Do you want to see Einstein? Here’s how!
- The Mütter Museum in Philadelphia, USA: Brain slices, and jars containing portions of Einstein’s brain.
- The Welcome Collection Exhibition, London UK. More slices, with tissue stained Cresyl violet.

How the Smartest Brain Landed in a Beer Cooler
Interview With MedNeuro's Founding Fathers

Fifteen years ago, the MedNeuro program was founded based on the hard work of a quartet of scientists in Berlin: Helmut Kettenmann, Robert Nitsch, Ulrich Dirnagl and Uwe Heinemann - or, as we like to call them, "the founding four". I sat down with the latter two to get a behind-the-scenes look at the program's founding, development, and outlook for the future.

How did you end up in Berlin?

UH: Part of my family came from Berlin. At the end of the war, my family members were distributed all over the world, but Berlin was remembered of as a kind of sacred town. When I finished my postdoc (after studying medicine), I moved from Munich to Cologne, where I became a professor. There was one short year in Würzburg, and then I got a job offer in Berlin in the beginning of the 90s. It was of course clear that I had to go!

UD: I simply followed my mentor Karl Einhäupl, who at that time was Oberarzt in the neurology department in Munich. There were some intermediate steps, two years in the US, back to Munich... but I took the chance to follow him to Berlin, where he became head of the neurology department and offered me the opportunity to run a laboratory.

How and why was the Medical Neurosciences program founded?

UD: From 1993 to the founding of MedNeuro, there was a continuous growth of the neuroscience community that involved some so-called Sonderforschungsbereiche (SFB), Graduiertenkolleg and other activities. But we all found that we were missing a specific educational program for the type of neuroscience we were doing. There was a very good collaboration going on between basic researchers and clinicians, which we felt was a special niche. But we only had the option for young people to study medicine or biology.

UH: We also wanted to attract students from abroad. Another selling point was the number of research institutions in Berlin like the Max Delbrück Center, the Max-Planck-Institute and the Leibniz Gemeinschaft institutes. It became more and more difficult to get good supervision. Some professors had to supervise up to fifty PhDs per year! To ease this process, we introduced the MedNeuro program. With all the external faculty we were successful in getting an internationally recognized PhD, which is unusual for a medical school. And we also introduced the MD/PhD title, which meant that the graduates could be more successful in the US.

What was the process of founding the program?

UD: The spirit of all the things I was involved in was "let's do it". If I had known how complicated it was, I would probably not have taken part. The only person with more experience was Uwe. But most of us were rather naïve - we learned by doing. Plus, this was at a time when things were even more flexible than they are now, because no one knew how things were supposed to work. Prof. Dudenhauen, the dean of the Charité at the time, didn't know what a PhD was and why the Charité should have a separate program. So this can be a disadvantage but also an advantage because people think you are crazy and just let you do your thing.

UH: I was the most experienced in all these sorts of things, indeed, and I worked at that time extremely hard. I had already introduced an extra medical degree when I was at the University of Cologne - the Dr rer. medic. At the time I was Vice-Dean of teaching at Charité and I had already experience of reorganizing the medical and dental curricula to align with the West German system. So at that time I was enormously involved in organization of teaching, dealing with all necessary regulations, and getting in contact with the political instances.

I guess it didn't all go smoothly ... What was the biggest obstacle in the process of founding MedNeuro?

UD: One obstacle was having the teaching in English - some members in the faculty thought that all teaching should be in German. Another obstacle was one person in the administration for higher education; she was totally unable to understand what we wanted. I think I spent 76 hours on the telephone with her. Other than that, we didn't have too many difficulties.

UH: There were minor things, but in general I think it was pretty smooth sailing. Most people were either neutral or positive. The program was kind of a first. The most complex issue is - and this is still haunting us - the question of how teaching in the program can count for faculty teaching obligations. Our faculty is working sort of pro bono. They do it because they want to get in contact with good students, but it doesn't count towards their official Charité teaching load obligations. The only solution is to convince the senate to recognize MedNeuro as part of the Charité's responsibility. Although we are a very motivated and dedicated faculty, it's always the question of how the Charité will get the money.

UD: There is actually a new conflict concerning the master's program. There are two types of master's: for a consecutive master's you need a bachelor and you enter the program without any additional intermediate practical experience. In contrast, the non-consecutive master's is usually entered after a couple of years of work to get skills training. The latter type is not covered by the German idea that you don't have to pay for education. For the past three years, the faculty wants us to be a non-consecutive master's with students paying tuition. So far we have paid all the costs from grants such as NeuroCure and for the next years we can mostly spare the students the costs. But we are trying to get the faculty into negotiations with political funding sources to recognize MedNeuro as a consecutive (and free) program.
How did the program change over the years?

UD: First of all, it has grown, not only in terms of students (especially PhDs) but also in terms of professionalism. In the beginning, it was very unprofessional - we were such an enthusiastic group of nerds. Over the years, we have streamlined the program, and included things we didn’t think about in the beginning. Obviously the research environment (in terms of potential projects) has also changed. The faculty has tremendously increased, offering a lot more opportunities. The program itself is partially responsible: as MedNeuro was novel, we could brag about it when we wanted an SFB grant. The other thing is that having these new initiatives with new professors provided fertile ground for having new interesting courses, electives and theses. So it is a kind of self-strengthening process.

UH: Since the beginning of the program, there has been more electronic teaching, which was not possible when we started out 20 years ago. Also, there is more professionalism in the system. I think very highly of Benedikt Salmen, who is all the time observing what others do and is very well structured. He believes very much in transparency and reliability. And the examinations are also more professional than they were in the past. What is still not clear is that the rotations should be really in three different labs. Some students tend to be adopted by one lab or only choose labs which are closely related. But I find it very important to not only learn different techniques, but also see different lab attitudes and look beyond one’s comfort zone. A good scientist is a person who has their own personal interest. But it needs training to be courageous enough to follow your own ideas, develop your own management style and learn how to run a lab. I want to give that experience to students, which is part of doing these rotations.

Would you apply to MedNeuro if you were a student again?

UD: That is a tough one, but I probably would still go with medicine. That’s not because I don’t like MedNeuro, but the reason why I went with medicine back then is that I had an interest in biology, chemistry and physics; and medicine is a super combination of all these things. Plus, I did not exactly know where I was heading – whether I wanted to be a clinician or a researcher. Today, everything is more specialized, which is a problem in a way. This is why I would still opt for medicine, because with MedNeuro I’d be already too constrained to explore interactions with patients. But obviously this is all very theoretical and I would not put too much weight on it because in life there is always serendipity.

UH: I wanted to become a psychiatrist, which required a medical education. So in that sense, I would still study medicine. When I realized that my concept of psychiatry was slightly off, I wanted to become a scientist. When I did my MD work and later my postdoc, I realized that I was not trained well enough for what I wanted to do. What I lacked was a broad education in methods. Luckily, I learned many methods and approaches to science from very early on by interacting with some very good people in the same institute, the same lab actually, where Bernd Sackman and Erwin Neher studied. However, the pathophysiology approach was not so common at the time. If I hadn’t gotten a place in medicine and MedNeuro had existed, I would have jumped on it.

What would be your advice for a MedNeuro student?

UD: Oh, that is a real tough one, and actually I have to say that I am privileged and lucky to be where I am now. If I were a student now, I would be really worried. One general critique of the current education system is that we are producing too many PhDs and we are pretending they can all find jobs. The pressure is so high to have a spectacular PhD, publications and other stuff... That’s very unhealthy. It wasn’t like this when I was a student. And we know that many of our students will never work in medical neurosciences, but we are not preparing them for this. Maybe this is my advice: don’t worry too much, don’t take too much advice from guys like me – just do what you would like to do. Sometimes we are tempted to do strategic stuff like taking extra courses, but you should minimize that and listen to your gut feelings; do what you really burn for. If you are unsure, pretend that there are no limitations. Ask yourself what you would do, if money were no issue. Often, it turns out that it is not the money or the circumstances that restrict you, but rather your own ideas and finding the right people. So maybe one more piece of advice is to not think too much about restrictions, but rather pretend that there are none. This is applicable for projects and also for a career.

UH: “What is a good scientist?” I was once asked by one of my teachers. So I said a good scientist has to know his heart, have reliable data, and he or she must follow a more or less original question. My supervisor then said “yes, this is a good postdoc, but what is a good scientist?” So here is what we came up with: a good scientist is a person who contributes to the development of his or her field, who has respect for what others do, and is courageous - all in addition to the properties of a good postdoc. I acted in a lot of reviewing positions and I think reviewing is sometimes really difficult. If somebody has the same findings as you, and you get his or her paper to review, you have to be honest, treat the paper with respect and not delay it. Of course, temptations are there all the time, but you should not follow them. But most importantly, know what you want to find out and be courageous. There were so many times during my career when people told me “this will not work”, but we tried it and it did. When you accomplish this, your career is made! And of course, networking is important too...

Claudia Willmes
AG Eickholt/Schmitz

Contents have been edited for length and clarity.
Cyborgs, Brain Highways, and Memory Erasure: The Future of Neuroscience

“If our brains were simple enough for us to understand them, we’d be so simple that we couldn’t.” (Ian Stewart)

Imagine how amazing it would be to move things around, or turn on lights only with our minds? Or if we could download our memories on a disk and retrieve them later? Sounds like something out of ancient sci-fi movies, right? But these things might not be that far from reality!

In the last few decades, neuroscience has made considerable strides in unraveling the mysteries of the human brain. With advances in the field of genetics and physics, such as human genome sequencing, optogenetics, and high resolution microscopy, scientists can now manipulate specific areas within the brain and see how they affect behavior. Large-scale projects have been initiated such as the US BRAIN initiative, bringing together scientists from all over the world with the aim of developing next-generation tools to explore how neural connections lead to thoughts, emotions or movements. Here’s a list of ongoing projects which could profoundly improve our understanding of the brain:

Connectomics

Mapping the whole human brain will be one of the biggest scientific challenges of the 21st century. The Connectome project was launched in 2005 with the aim of determining a comprehensive map of each individual neuronal connection of the 300 million neurons in a mouse brain – or what is referred to as the ‘wiring diagram’ - and ultimately map the 10 billion connections in the human brain. In the years to come, the circuitry of the whole brain will be known, and this can help us to answer how brain circuitry changes during development, aging, disease or with experience. Maybe one day we could leave behind our connectome with our memories and experiences [1]!

Blue Brain Project

Another ambitious project, The Blue Brain project, was initiated in 2005 with the goal of simulating the whole human brain. Scientists at EPFL, Switzerland, have already made progress in modeling micro columns of the mouse brain to answer how a network of neurons processes sensory information. The computer model uses an overwhelming amount of information on the type of neurons, their electrical properties, shapes and connectivity to simulate thousands of neurons, allowing scientists to understand how the brain processes information and how brain waves are generated [2].

Brain-Machine Interface

Many of us might remember the kick-start of the football world cup in Brazil by a paraplegic man using a mind-controlled prosthetic leg. This was made possible because of advances in Brain-Machine interface (BMI) technology by scientists at Duke University. BMI technology provides a direct electronic interface and can convey messages and commands directly from the human brain to a computer. The electrical activity of the conscious brain is monitored using electroencephalogram (EEG) signals, with detected patterns being digitalised and sent to a computer, or in the case of neuropsychosthetics, to the control unit of a robotic arm or leg. Scientists have made progress in developing neuropsychosthetics for paralyzed patients, enabling them to grasp things, even with up to six degrees of freedom [3]. So there is certainly hope ahead for paralyzed patients to walk, and to perform day-to-day activities.

Deep Brain Stimulation

Since 1987, Deep brain stimulation (DBS) has become the widely recommended treatment option for movement and neuropsychiatric disorders such as Parkinson’s disease, chronic pain, major depression and obsessive compulsive disorders. DBS involves the implantation of a medical device called a neurostimulator, which sends electrical impulses through implanted electrodes, to specific targets in the brain. This treatment has been proven effective in some patients but it also causes some neuropsychiatric side effects such as hallucinations, euphoria, cognitive dysfunction or depression. Clinical and technological advances in DBS need to be evolved in order to offer better quality of life for patients with debilitating disorders in the years to come [4].

Future possibilities

The future of neuroscience looks exciting and promising [5]. A few years ago, scientists at MIT successfully implanted false memories in mice by just reacting the cell assembly for the memory of foot shocks [6]. The prospect of erasing bad memories or implanting memories in cases of post traumatic stress disorders represents an exciting possibility for humans. Recently, scientists managed to transmit a message into the mind of a colleague 5,000 miles away using brain waves [7]. Maybe there comes a day in future where we can telepathically send emails!

We have only reached the tip of the iceberg of unlocking the clockwork of the brain. This is evident from the fact that we have not yet been able to fully understand the simple 302 neuron-circuitry of C. elegans. Fundamental questions such as how we perceive with our senses, how we navigate through the world or bigger questions such as how do our thought processes work or what makes us conscious beings have been unanswered. The sheer complexity of the human brain will keep the neuroscientists around the world busy for the next decades for sure.

From Horse to Human: What's the Deal with Ketamine?

Depression is an ever-pressing issue for clinicians and society as a whole. In line with the framework of this issue, this article briefly summarizes one of the most important developments of treatment options of the past 15 years.

The past 15 decades have been characterized by the dominance of selective serotonin-reuptake inhibitors (SSRIs). Yet, these antidepressants are far from optimal: Indeed, as many as one in three patients does not respond to exhaustive treatment, high-dose SSRIs treatment. SSRIs also carry unpleasant side effects that reduce treatment adherence.

Unbeknownst to many, some major psychiatric drugs have been discovered by serendipity: There is probably no better case in point than the “horse tranquilizer” ketamine. Appreciated for its benefits in pediatric or veterinary surgery, its rapid (within 24 hours) and appreciable antidepressant effects were noted initially in the 1990s, and have since been replicated even in patients with a long history of not responding to standard treatment [1].

What’s more, these effects seem to persist for several days after receiving ketamine.

Is All That Glitters Gold?

However, even this rose has its thorns: Ketamine is usually administered through the veins, which greatly limits widespread use. Interestingly, a recent proof-of-concept study demonstrated that application through the nose had comparable efficacy and improved tolerability [2]. Indeed, tolerability is the next big issue with “Special K” because psychosis-like episodes and cardiovascular symptoms are quite common after its administration. While these adverse reactions generally resolve quite quickly, they greatly limit the pool of patients who can benefit from the treatment.

So what is the distillate of the past 15 years of research into pharmacotherapy in the context of psychiatry? Well, not too much, unfortunately: We have been lacking a fundamental breakthrough. There have been no novel compounds with a clear edge over conventional treatments used to treat psychiatric ailments. While ketamine certainly is promising, such serendipitous discoveries should not dissuade neuroscientists from more hypothesis-driven, etiological research.

[1] Lee et al., Gen Hosp Psychiatry, 2015

The Future of Science: What’s in it for Africa?

Is it naive to assume that Africa, a heavily disease- and poverty-burdened continent, could have the human and financial resources to contribute to cutting-edge research and technology now and in the future? It is well known that the African continent has been plagued by communicable and non-communicable infectious diseases on a broad scale as well as other medical issues [1]. In addition, scarcity of academic leadership, adequate facilities and intellectual as well as technical infrastructure adds insult to injury: Africa accounts for 15% of the global population and 25% of the global disease burden, but only contributes about 2% of the world’s research output [2].

More and more, it is becoming evident that African scientists have to set their research agenda according to current and relevant African issues [3]. Embracing the habit of posing ‘West-ernized’ questions that have been determined by funding linked to external research, solutions for specific, isolated issues need to be developed [3]. More embedded research solutions are needed for the creation of a widespread and strong research base, on which the future of research can flourish and which will create more opportunities for young future scientists to support economic growth [4].

Moving Forward in 2016

To drive Africa’s research agenda, leading scientists are supported through new, exclusively Africa-oriented research initiatives by AESA (Alliance for Accelerating Excellence in Science in Africa) [5]. AESA is the African Union’s blueprint for developing science through programs such as DEL-TAS (Developing Excellence in Leadership, Training and Science), that are designed to counteract the ‘brain-drain’ effect [2].

Reinforcement of strong research culture (organization), centering research on priority health needs (priorities), strengthening national systems for health research (capacity), encouraging good practice in research (standards) and reinforcing the relationship between health research and health (translation) are the key aspects to initiate an action potential through “the nerve of the world that has been deadened for centuries to the vibrations of African genius” [6].


Meron Maricos
PhD Student, AG Kettenmann

Helge Hasselmann
PhD Student, AG Otte
As Witty as a Lynx: When Neuroscience meets Handicraft

Delivering the message that the brain is perhaps the most fascinating thing in existence should be easy, but here at the CNS Newsletter, we know that it’s not. In fact, no TED Talk or 500-word article could ever do the brain’s remarkable properties justice. And that’s not just because of its complexity – in some ways the brain is marvelously simple.

That’s the idea behind MedNeuro MSc alumnus (and current PhD student at the Bernstein Center for Computational Neuroscience) Timo Schmidt’s start-up, Schlauluchs, a play on the German word Schlaufuchs (literally, smart fox). By switching a single letter – the ‘f’ with an ‘l’ – you turn the Fuchs (fox) into a Luchs (lynx). Such linguistic nuances elegantly illustrate some of the principles of how our brain deals with language and embody the company’s unique approach to communicating science to the public.

The company was founded in 2015 by Timo, who does neuroimaging research, and musicologist Martina Graf. Under the slogan “Neuroscience meets Handicraft”, their products aim to convey how our brains often flip our understanding and perception of the world upside down.

What’s for Breakfast?
Schlauluchs’s products can literally be used every day. These cutting boards, known as Brettchen in German, not only teach you basic neuroscience concepts, they also support small, family-run businesses. The products are forged by hand in a small family-run carpentry workshop in the Teutoburg forest in North Rhine-Westphalia, with the wood coming from local trees.

They make for a great breakfast platter, and one design even conveniently has a built-in egg holder (the eye of a rabbit/duck). It comes in two more designs at the moment (penguin/bunny and my personal favorite, parrot/cat), with more on the docket.

For a personalized gift, the boards can be engraved on-demand. Each cutting board comes with a booklet that explains in plain language some of the fundamental principles of the brain and how these lead to perceptual illusions.

Awed by Ambiguity
Even to a trained neuroscientist who knows how and why (to some extent) bistable perception works, the ambiguous shapes can still take your breath away. Timo and Martina have shown their products to people of all ages and the reactions are universal. They hold up the wooden boards in awe, flipping them around and around, scrutinizing the shapes as they try to decipher what they’re seeing and why.

Martina and Timo also regularly challenge groups of primary school children to color the shapes so that you can see both forms. The result? An impressive display of the kids’ creativity, with gloriously colored animal hybrids that somehow seem oddly coherent (see Schlauluchs’ Facebook page). At the end, the kids leave with a completely new take on reality and what it means to make the world around them. Some, hopefully, even being inspired to learn more about the brain.

Balancing Academia and Entrepreneurship
Long days in the lab, piled up coursework, half-finished manuscripts and running your own company? How does that even work? Timo admits it can be a hassle navigating the bureaucracy – one has to plow through mounds of paperwork to register a company. But he also emphasizes that this shouldn’t discourage people, because there’s lots of support out there.

The Free University provides students and employees with help when starting their own business through their Profund Innovation service facility [1]. They put budding entrepreneurs affiliated with the university in contact with potential funders and even provide them with office space (free of charge) for up to a year. The Charité’s Technology Transfer Office provides similar support to people with healthcare-related business ideas or inventions [2]. Together, both these institutions also offer a dedicated educational program providing students with the skills and knowledge necessary to become a successful entrepreneur [3].

In its first year the company has received some much-deserved attention. It was featured in the prominent newspaper Berliner Morgenpost [4] and their products were showcased at the Lange Nacht der Wissenschaften and Brain Awareness Week 2016.

To Timo and Martina, fame is by no means the goal. But the attention does reflect that Schlauluchs’s concept – empowering people to appreciate and think about the world around them – is working. To deliver that message, the duo started with something very dear to our hearts – breakfast. And we’re ready for seconds.

Keep it up Timo and Martina, the MedNeuro family is proud of you!


Ahmed Khalil
PhD Student, AG Fiebach

Find more on: www.schlauluchs.de
Consensual Communication: The Future of Scientific Publishing

It is probably obvious to many of us that the current system of scientific publication has to change. If not, then let me explain. Imagine the following situation: Researchers funded by the government and public toil away for several months on a project, they write their results to share it with the public, and then spend even more time going through the peer-review process to publish their work in a ‘prestigious’ journal. But then, they have to pay a hefty fee in order to re-access their own work or that of their colleagues, and the publicly-funded findings are kept behind a paywall. In what kind of world do you think the following system would make sense? Apparently, the one we currently live in. As scientists, we do not have to imagine this because it nicely sums up the current publication system of scientific research.

While the capitalist attitude of the current system is a big problem, it is by no means the only problem. In a system where grants are decided by how many publications one has in a ‘high impact’ journal (owned by the big publication houses like Wiley, Nature Publishing Groups etc.), everybody wants to be on a paper regardless of their actual contribution. In 2015, the best journal in physics Physical Review Letters set a new record by publishing an article with 5154 authors [1]!!! Not cool!

Along with lengthening authors’ lists, the concept of shared authorships also seems to be gaining popularity. Not only do we find articles with up to three shared first authors, you also have shared senior authorships. In addition, in order to enter the publication game, one actually has to have a positive result. The positive publication bias is a major contributing factor as to why some claim that most research findings may, in fact, be false [2]. Got it? Something has to change!

**Open Access to the Rescue?**
The concept of open access publication that started with the Public Library of Science (PLoS) in 2000 rapidly gains popularity. Open access journals require authors to pay a publication fee when they submit their manuscript (typically several hundred Euros), but the content is then freely available for everyone to use. Journals like PLoS One and the Frontiers family, while expensive for the institution at the time of submission, encourage the publication of methodologically sound and rigorous research, regardless of the outcome. This reduces the publication bias by a tiny extent. However, open access publication is not without its dark side. There are a large number of fake predatory journals, and the knowledge that institutions still pay subscription fees as well as an open-access publication fee (i.e. "double dipping") limits the enthusiasm of researchers to submit their work to these journals [3]. Perhaps for these reasons, open access still only accounts for 20% of all scientific journals [4].

So while open access does change the system by removing the paywall for accessing research articles, it does not get rid of the fact that we still pay journals for publishing our work after getting it reviewed by peers who get no tangible credit for it. It also does not solve authorship arguments. To tackle the first problem an increasing awareness or interest in web-based platforms that are run by scientists like the arXiv for physical sciences and bioRxiv for biological sciences would certainly help. To address the second issue, a radical but still effective idea would be to get rid of authors completely and to use project names instead.

The journal Cortex has recently introduced a new concept where researchers have the option of pre-registering their experiment with the methods and intended analyses written down - this way, publication is guaranteed regardless of whether the outcome is positive or negative [5]. Such a system ensures that experiments are methodologically sound and one can distinguish planned from exploratory analyses. However, for the future, an improvement to this system could be the encouragement of collaborations once the pre-print is approved, to overcome the common problem of small sample sizes and to solicit funding from agencies with a detailed plan. Further, uploading of data, analyses and preprints as well as post-publication discussion should be encouraged, and reviews and reviewers should be made public. Some of these steps are already being followed.

**Journals Today Gone Tomorrow**
Manuscripts can today also be reviewed by third party reviewers through services like Rubriq or have an open review process like PubPeer. And while the brand name of a journal and its impact factor tends to speak for its quality, article level metrics started by PLoS or alternative metrics like the Altmetric score are slowly gaining popularity [6]. These changes point to a publishing model based on the article rather than journal. So is the traditional science journal slowly disappearing? If science is about finding the truth, then open science, more transparency and collaborations should be encouraged, not journal impact factors. The future of scientific publishing, which has already undergone a revolution thanks to the internet, should continue to evolve in the direction of free, open platforms. Although well underway, we certainly need more to re-mold the current system where journal names still serve as a proxy for quality of the paper.

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**References**

[1] http://go.nature.com/1B208zb

Apoorva Rajiv Madipakkam
PhD Student, AG Sterzer
A Journey to ENCODS 2016!
A Conference Organized By and For PhDs

From June 28th to July 3rd 2016, many interesting speakers and neuroscience leaders attended the European Neuroscience Conference by Doctoral Students 2016 (ENCODS) that took place in Helsingør, Denmark and was already the third edition of this young conference. Previously it had taken place in Bordeaux, France in 2013, and in Sesimbra, Portugal in 2015. It is organized by and for doctoral students in all fields of neuroscience and from all over the world (out of around 100 participants, 35 nationalities and 46 universities were represented). The meeting offers numerous benefits for young scientists, as it provides a friendly, interactive and intimate environment that enables students to exchange ideas about their research and network in an easier way than at other major scientific conferences.

Beautiful Denmark
The picturesque location was a charming, romantic hotel right by the Baltic seaside in the port town of Helsingør, about 45km away from Copenhagen. The rooms were tastefully decorated and each one was shared by two participants who initially did not know each other, strategically placed by the organizers to encourage social interactions from the very beginning. The program was well-organized to make use of the available time and consisted of a combination of keynote lectures, students’ talks, workshops and diverse social activities. There was just no time to feel bored.

Plenty of Fascinating Science
The keynote lectures were given by renowned scientists, such as Dr. Randall Platt, who shared with us how he developed the Cas9 mouse during his PhD at MIT; Dr. Tania Rinaldi Barkat, who gave us insight about her research in understanding the development and function of the auditory cortex; and Prof. Poul Nissen, who talked about his boundless knowledge of the structures and mechanisms of membrane transporters in the brain. All the same, the time for students’ talks was not overlooked and ranged from alcohol addiction to rhythmicity of medial septal neurons and neuroimaging of cognitive reserve. Typical poster sessions were substituted by “speed dating lunches”, during which participants had the opportunity to share knowledge and converse about their posters informally over lunch. A number of workshops were also offered, covering topics such as motivation and self-management, presentation skills, the publishing process (see page 17) and scientific creativity.

Board Games, Banquets, and Castles
In the evenings, after gourmet dinners, we were entertained with some nicely organized social activities. On the first evening, a scientific version of the board game Clue was on the menu, during which teams had to find out who the Murderer of an unfortunate scientist was, what type of weapon had been used and in which part of the lab the crime had been committed. In order to answer these questions, the different teams had to collect a maximum of points and clues by answering some tricky questions, writing a song and solving a puzzle. The second evening was a real surprise: a guided night tour of the Kronborg Castle, which is Denmark’s most famous castle, where the play Hamlet by Shakespeare was set. The Renaissance castle was built by the Danish King Eric VII in 1420 and used to be Denmark’s most powerful castle, as it controlled the entrance way to the Baltic Sea and collected toll from the many ships navigating through it. The castle’s ballrooms were some of the greatest in Europe at the time and Frederik II, together with his young wife, would hold huge banquets during which each guest would be served 24 dishes! The third and last evening was not as hedonistic as the times of the Kings of Kronborg, but still pretty enjoyable as it started with a gala dinner set around large round dining tables, softly covered with pristine white tablecloths. This was followed by a dancing “White & Black” Ball, accompanied by salsa and 90’s hits.

Not To Be Missed
Those three days were definitely a blast, as they were not only an enrichment at the scientific, but also at the human and personal levels. They helped me open my mind and widen my knowledge about neuroscience’s unfamiliar domains. The workshops helped me train my communication skills and gave me insight about what it is like to work as an editor for a scientific journal (see page 19). Plus, I had the chance to meet extraordinary fellow PhD students that turned into international friendships! Hence, I highly recommend that all the MedNeuro PhD students take part in next year’s ENCODS, which will be held in Alicante, Spain ... or in 2018 right here in Berlin!

Valérie Boujon
PhD Student, AG Endres
The ENCODS 2016 program contained inspiring keynote lectures from various neuroscience fields, interesting talks by PhD students, lunch poster sessions, various workshops to choose from and offered, last but not least, a great opportunity to meet fellow students from 35 different countries.

Publishing in a Top Journal
An especially interesting part of the program was the workshop “The Publishing Process” held by Alexander Arguello, Associate Editor of Nature Neuroscience. He gave us a professional insight into the processes of publishing and editing and was ready to discuss associated problems. He opened the workshop with a brief history of scientific publication and then explained the editing process at Nature Neuroscience, which is coordinated by eight editors. They receive and evaluate altogether about 250 papers per month and decide on rejection or review - at the end of this process, approximately 10% of the submitted articles are accepted. Besides considering the interest of the article for the typical reader of the journal, the assessment is mainly based on the abstract, focusing on clarity, novelty, scientific benefit and a plausible concept of the study.

Considerable focus is also placed on graphs and pictures, which should clearly convey the message of the paper without needing the actual text - nice images are always a plus! In the end, each editor alone, sometimes after consultation with his or her colleagues, has the final say on whether a paper goes into review or is sent back to the author. We concluded this part of the workshop by evaluating various abstracts that had actually once been to Nature Neuroscience for their chance to be published. This was not always easy to do at first glance!

Do We Still Need Printed Journals?
During the course of the workshop, we also discussed the problems and advantages of printed journals versus open access options. As more and more papers are published every year, it is hard and time-consuming to decide which articles are worth reading, especially if they are outside one’s own research focus. Printed journals can serve as a “filter” and provide a selection of important articles. However, as they are intended to reach a broader audience (and pursue financial interests), they tend to follow certain trends, as is currently happening with the Zika virus or CRISPR. Moreover, especially widely read journals such as Nature do not always succeed in identifying revolutionary, paradigm-shifting ideas. In fact, those are often published in smaller journals - so don’t feel bad if your paper doesn’t make it into Nature!

The majority of the workshop participants were in favor of open access publishing, as it seems to make scientific results more transparent and can provide a platform for constructive discussion. Nonetheless, there is a certain danger of false data interpretation that might lead to a misunderstanding of scientific results by non-experts. A solution to this problem might be a database only open to experts from a particular field of science.

Scientific Journal Editor As a Job Option
For those who are still undecided whether or not to stay in research after finishing their PhD, it might be worthwhile to know that being an editor in a scientific journal is actually a realistic job option. The work as an editor at Nature Neuroscience consists not only of the above mentioned tasks, but also of travelling to various conferences to keep up with the latest developments in science. So, if you are looking for a job without all the worries about grants, funding and temporary contracts this might be a career option for you. Just go to the website of your favourite journal to check for open positions!

Anna Pfeffer
PhD Student, AG Steiner

Neurotechniques Journal Club

- You want to be up-to-date about new trends in neuroscience?
- You want to discuss cutting edge science?

Then join us when the Neurotechniques Journal Club resumes this semester!

It is intended for all young scientists, master’s and PhD students who are interested in widening their horizons and extending their knowledge in the field of neuroscience.

- For more information please visit: http://bit.ly/2bQ99eU
- Regular attendance will be rewarded with 1 ECTS Point.
- For the exact time and location join the mailing list @ http://bit.ly/2bmelpy
Shaping Tomorrow’s Scientists

It’s been a busy year for Berlin’s young neuroscientists. In keeping with the program’s dedication to public science engagement, MedNeuro students participated in several initiatives aimed at conveying science to young people in and around Berlin this year. Here, we bring you the highlights of some of these events.

Tag der Wissenschaft in Luckenwalde

For the past few years, the MedNeuro program has been taking part in the annual Tag der Wissenschaft (Science Day) at the Friedrich-Gymnasium in Luckenwalde (about 80 km south of Berlin). This year, Mariana Cerdeira and I attended the event, which took place in February. It spanned a whole day where high school students could listen to talks by scientists, participate in experiments, and learn about science careers.

Mari spoke about daily life in a neuroscience laboratory and gave the students an introduction to stroke models of study. My talk was split between speaking about my own career path, the similarities and differences between working in clinical medicine and biomedical research, and the basics of magnetic resonance imaging and its use in medical practice.

Several of the students seemed intrigued by a career in science and asked about the employment prospects, day-to-day challenges, and perks of being a scientist. I was also glad that they were interested in practical issues that the media has helped to bring to the public’s attention recently, such as how to recognize when someone is having a stroke and what to do.

Brain Awareness Week

This year’s Brain Awareness Week (BAW), a worldwide campaign led by the Dana Foundation, was a resounding success. The Bernstein Center for Computational Neuroscience, the Berlin School of Mind and Brain, and MedNeuro organized over a dozen events between the 14th and 18th of March.

The program included a viewing of Pixar’s film Inside Out for primary school children. Depicting the delightful adventures of tiny anthropomorphized emotions inside an eleven-year old girl’s brain, the movie was followed by a Q&A with Professor Isabel Dziobek from the Humboldt University’s Institute for Psychology.

Five PhD students (Henriette Edemann Callesen, Mariana Cerdeira, Judith Houtman, Lucille Alonso, and Katharina Ohrnberger) also took part in talks with 11th graders at the Berlin Metropolitan School.

Aiming to explain the important role that mathematics has to play in neuroscience research, Dr. Michael Scholz of the Technical University of Berlin gave a workshop on “Computing Neurons”. The participants were given a basic introduction to the brain and its function, followed by principles of mathematical modelling of neurons - in the end, they could try their hand at modelling neuronal circuits on a computer.

For anyone who’s been following the news and has wondered to what extent humans and great apes can verbally communicate, the BAW addressed this, too. In a workshop at the Humboldt Graduate School, Dr. Richard Moore from the Berlin School of Mind and Brain discussed the science behind such publicity stunts as Koko the gorilla addressing a United Nations summit in Paris about climate change.

Long Night of Science

The “cleverest night of the year”, as it’s also known, took place on June 11th. All of Berlin’s major neuroscience institutes took part in organizing a series of lectures, discussions, and demonstrations for the public.

At the Max Delbrück Center (MDC), the night was long and full of knowledge. Besides their usual tour of the MDC laboratories, there were over 80 different events on offer in Campus Buch. Serenaded by some smooth jazz, four researchers presented their work to the public at Café Scientifique. There was also plenty to do for kids, who could participate in a series of small experiments, collect stamps and receive a “researcher’s certificate” at the end.

It was a record-breaking year at the Berlin School of Mind and Brain this year. More than 1,500 people of all ages joined this year’s Long Night of Science events, which included memory experiments highlighting the critical role of the hippocampus, a Science Slam, and a talk on how our brains react to food and drugs.
A lecture about what goes on in the brain when it’s exposed to food or drugs, by Lisa Kramarenko and Maia Salholz-Hillel of the Berlin School of Mind and Brain. Source: Laura Viehues.

MedNeuro PhD student and CNS editorial board member Mariana Cerdeira speaking to high school students at the Berlin Metropolitan School during the Brain Awareness Week 2016. Source: Mariana Cerdeira.

Primary school children learning about the structure of the brain at Die Gelbe Villa, an educational center for youth in Kreuzberg. Part of the Brain Awareness Week 2016. Source: Inken Dose.

Students of the Berlin School of Mind and Brain testing how well a group of volunteers can recognize people’s emotions at the Lange Nacht der Wissenschaften 2016. More than 1500 people participated in events organized by the school this year. Source: Inken Dose.

A workshop on eye-tracking at the Brain Awareness Week 2016, taking place at the Bernstein Center for Computational Neuroscience. Source: Margret Franke.

Ahmed Khalil
PhD Student, AG Fiebach
Detecting the Faintest Light

A study published in Nature Communications this July suggests that humans are capable of sensing single photons. “The most amazing thing is that it’s not like seeing light. It’s almost a feeling, at the threshold of imagination,” says Alipasha Vaziri in an interview with Nature. The physicist at the Rockefeller University in New York City, who led the work, tried out the experience himself. For the study, which took place in Vienna, three participants were recruited. The subjects had to sit for 40 minutes in total darkness with the head kept in position by a bite bar and a headrest in front of a quantum light source that generates single-photon states of light. They were then subjected to sounds sometimes accompanied by emission of a photon and had to respond if they thought they saw a light. During the study the participants underwent 6-8 training sessions and up to 20 data acquisition sessions of about 2 hours each. At least the time spent in the dark was not wasted: the researchers calculated that the participants detected the single-photon incidents with a probability significantly above chance!

Source: http://go.nature.com/29TJ8dp
http://go.nature.com/29OsAxB

Retrieving Your Oldest Memories

While memories formed in adulthood can be remembered for years, early-life events usually cannot be recalled, but still influence our behavior later in life. Researchers at New York University and Icahn School of Medicine at Mount Sinai have identified a mechanism in the hippocampus by which these infant memories are recalled. In their study, the researchers implied an inhibitory avoidance memory in young rats by administering footshocks. The young rats rapidly lost the memory of this event, but a later reminder (another footshock after several days) reinstated the context-specific memory.

On a molecular basis, the formation and storage of this latent memory occurs through mechanisms typical of critical periods for development, including the expression switch of the NMDA receptor subunits from 2B to 2A, which is dependent on brain-derived neurotrophic factor (BDNF) and metabotropic glutamate receptor 5 (mGluR5). Activating BDNF or mGluR5 after training rescues the infantile amnesia.

Thus, early episodic memories are not lost but remain stored long-term. These data might help to explain how experience deprivation in early development impacts learning abilities throughout life.

Source: http://go.nature.com/2an31XF

Treating Lung Cancer With CRISPR/Cas

Scientists at Sichuan University’s West China Hospital in Chengdu are about to start a clinical trial involving the CRISPR/Cas technique to treat lung cancer patients. For this new form of treatment, oncologist Lu You’s team will extract and perform gene-editing on T-cells from patients. They hope to knock-out the gene for PD-1, which normally checks the cell’s capacity to launch an immune response, to prevent it from attacking healthy cells. Having multiplied the edited cells, they will be reintroduced into the patient’s bloodstream, so they can reach and attack the cancer.

Of course it is not as easy as it sounds: it is known that CRISPR can result in gene edits at wrong places in the cell. Thus, to ensure that the correct gene is knocked out, the engineered cells will be checked prior to injecting the patients. Furthermore, as the technique targets T-cells, which mediate various immune responses, the approach might induce an excessive autoimmune response. However, the scientific community and patients are hopeful. Many patients are currently resistant to common medications targeting lung cancer.

A similar cancer treatment with CRISPR/Cas is likely to be tested in the US at the end of this year.

Source: http://go.nature.com/29RYNnK

Restoring Sight To the Blind Using Optogenetics

Optogenetics is about to step out of the lab and into our lives. The startup company RetroSense Therapeutics is launching a clinical phase I study in the attempt to cure retinitis pigmentosa, a form of blindness caused by loss of photoreceptors.

The new therapy is based on the photosensitivity gene channelrhodopsin-2. The aim is to create new photosensors in retinal cells and restore vision in retinal degenerative conditions. Previous studies have demonstrated the ability of channelrhodopsin-2 to restore light perception and vision in animals with blindness due to loss of photoreceptors. RetroSense’s approach is a virus injection into the eye to deliver the gene encoding channelrhodopsin-2 to cells in the retina of the eye. When expressed, the channelrhodopsin-2 protein can depolarize in response to light, thus generating a signal that is transmitted to the brain.

Source: http://retrosense.com
http://bit.ly/2am4DOg

Claudia Willmes
PhD Student AG Eickholt / AG Schmitz
Setting the Sails: Graduation
On October 7th, the senior students will present their master’s thesis projects as talks as well as posters. At 3 PM, the kick-off of the celebrations will begin, followed by a reception and welcome party for the new students. This evening will be a bittersweet event of letting go and looking to the future. Venue: Festsaal, Humboldt Graduate School.

Sailing the Duna: 5th Neurasmus Annual Meeting
Organized by Laval University’s neuroscience coordinator, Katalin Toth, the 5th Neurasmus Annual Meeting shook Budapest from July 11 to 14. Kicking off with the master’s thesis presentations, we had our first dinner at the Castle District (Várkerület), providing a culture-rich environment mixed with tasty food.

Following this exciting day, the students and the board discussed topics about the program, including how to improve it and the future of Neurasmus. While the students attended the Neurasa Career Workshop for professional career coaching, the Board of Education further discussed strategic developments in line with the new Neurasmus grant application (which has since been approved).

Day three solely focused on scientific workshops, “How to be a PI one day?” as well as “Why do we need basic research?”. After dinner, an improvised karaoke session took place inside the restaurant. Even the restaurant’s staff seemed excited and joined the festivities.

After sitting almost three days in a row, a sightseeing tour guided us through the city and its main attractions, including the memorial site of the Hungarian Uprising in 1956. Like karaoke, a boat ride has now become a Neurasmus Annual Meeting tradition – this year, the graduation ceremony took place on a boat on our last day in Budapest. The Board of Education unanimously voted graduating student Pilar Elhamoury’s presentation the best. Rumor has it that the students celebrated until early morning.

Picking Up: 22 New MSc Students and 6 PhD Students
Twenty new first-year students (6 of them Neurasmus) and two second-year Neurasmus students from all around the world will join our MedNeuro family this year. While the senior students take the newbies out for a campus walk, the office will hassle with administrative issues and give them an introduction to the program. After taking a breather, everyone will join the graduation ceremony, kicked off by the evaluating student Pilar Elhamoury’s presentation.

Reeling In: Alumni Meeting and PhD Retreat
During the first weekend of September, the first-ever MedNeuro PhD Retreat will take place in Schloss Wahlsdorf, 90 km south of Berlin. We look forward to reporting about it in our next issue of the Newsletter! The MedNeuro graduate program turns 15 years this year! This would not have been possible without you, the MedNeuro alumnus! We would like to use this occasion to thank you and to invite all of you to our alumni event. Join in, meet each other (again), and celebrate with us between Friday, October 7 and Saturday, October 8, 2016 in Berlin. Program: http://bit.ly/2aOXV5w. Venue: Festsaal, Humboldt Graduate School.

Upcoming Events

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