DIVERSITY IN NEUROSCIENCE
Putting together this issue of the newsletter, we’ve been surrounded by a swirl of geopolitical controversy about religious, ethnic, and sexual minorities. As scientists, we’re often far removed from the headlines, yet still have to confront the reality that often, research is only accessible to a small group of people worldwide. Looking around at our MedNeuro cohort, it’s hard not to be inspired: we’re multinational, multilingual and incredibly diverse! Who better to start talking about making science more democratic and accessible?

This issue of the newsletter was originally meant to be part of International Women’s Day celebrations (March 8th), and as such, many articles revolve around the role of women in (neuro)science. As such, we check out just what’s up with the Leaky Pipeline (page 3) and take a closer look at the cold, hard facts on women in science (including specifically at the Charité, pages 10, 11 and 19). However, these data are complex, and not everyone agrees on what lies behind these trends (pages 6, 7 and 20).

However, we also realized that it’s equally important to acknowledge and celebrate the contributions of individuals from other types of minorities in science. Several articles are about individuals with physical disabilities and socio-economic disadvantages (pages 13 and 16), as well as those from different countries trying to make it in Germany (page 15). We also take a special look at scientists who identify as being on the autism spectrum (page 9), though some argue the label itself is harmful (page 16).

Finally, we have both exciting and sad news about the newsletter. First, our long-time editorial team member Claudia Willmes (née Bentz) has been busy putting up articles on our new website, cns-newsletter.blogspot.de. Check it out! This will be the final issue from our co-editor-in-chief, Ahmed Khalil. Ahmed will be stepping back to focus on finishing his PhD, and working toward a bright future in neuro/radiology. Stepping in to take his place is Helge Hasselmann from AG Otte/Paul. Welcome Helge, good luck Ahmed, and above all, happy reading!

Constance Holman and Ahmed Khalil
Editors-in-Chief

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, critiques, reviews – anything! The best contribution will be rewarded with the book Advice for a Young Investigator by Santiago Ramón y Cajal.

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 April 23rd, 2017.

This issue’s winner is Zara Khan, who wrote an inspiring piece about female scientists living with, and thriving despite, their disabilities. Congratulations, and thank you very much for your article!
Imagine the following scenario: you turn on the tap and very little water comes out. When checking your pipe, you realize it has plenty of holes and the water is dripping out before reaching the tap – it is wasted. It seems like academia has some holes just like that: if you imagine academia to represent the tap in this example – female scientists are the lost water drops!

Although nowadays it is generally accepted that intelligence and capability have nothing to do with gender, we, as society, still struggle to provide equal opportunities to men and women. This becomes quite obvious when we look at the so-called leaky pipeline, a phenomenon that describes how women progressively drop out and become underrepresented in the course of a typical academic career – like drops out of a leaky pipe.

How Much is Spilling Out?
If you are at least a bit like myself, you look around and think: ‘where is this inequality? I don't see it! More than half of my colleagues are women!’ So here's the evidence for vertical segregation, that is the higher and more important a position, the less represented women are.

Fortunately, there seems to be no gender gap until university level [1] – a big progress compared to the 19th century, where only 21% of university students were female [2]. In 2013, the proportion of female students (55%) and graduates (59%) at the first level of academic education even exceeded that of male students [3]. However, in the same study, women represented only 45% of grade C academic staff (the first position for which a newly qualified PhD graduate would normally be recruited), 37% of grade B (associate professors) and 21% of grade A academic staff (professors/principal investigators).

What’s Making Those Holes?
These statistics make you wonder: if access to education and the likelihood of successful graduation is equal for both genders, why are women far behind when it comes to taking up leading positions?

One answer may lie in the existence of a bias when examining the performance of female scientists. For example, according to one study, women needed 2.4 times as many merits compared to their male counterparts to achieve the same evaluation in peer reviews [4]. Other studies found that marriage, childbearing, and caregiving are major factors that push women out of the scientific pipeline. It seems that in academia, starting a family negatively affects women’s, but not men’s, careers [5]. For instance, a study from 2009 found that women in science who are married and have children are 35% less likely than married men with children to enter a tenure-track position after receiving a PhD [6].

We need to question and change the factors that contribute to the situation where society fails to provide equal opportunities for men and women.

FAMILY FORMATION IMPAIRS WOMEN’S BUT NOT MEN’S CAREERS

Patch the Pipeline
The good news is that, thanks to extensive statistics like the 'She Figures', there is clear evidence that a gender gap exists in top positions and that attempts are being made to counteract it. For instance, the Deutsche Forschungsgemeinschaft, a central organization for the promotion of science in Germany, has made it a central task that non-university research institutions must commit themselves to promoting equal rights for women and men in all areas of work, including the improvement of compatibility of career and family life in research and science [7].

The European Commission also actively works on structural changes in its member states, summarized in a report from 2011, in which they identify problems contributing to the gender gap and possible solutions. One problem the report identified is a lack of awareness of how systems can be discriminatory, even if the employers have the best of intentions. For example, employers may be aware of the existence of a gender pay gap, but may not realize that they themselves contribute to it [4].

Unfortunately, there is no easy solution and we cannot call a handyman (or -woman) to patch the leaky pipeline. However, what we can do is raise awareness and do our bit to make sure we do not waste potential. There is no trade-off for gender and excellence!


Juliane Schiweck
PhD Student, AG Eickholt

www.medical-neurosciences.de
Girls’ Day – Future Prospects for Girls

On Girls’ Day, female students from grades 5 to 10 can get an insight into vocational fields that girls seldom consider as careers. Primarily technical enterprises, companies with technical departments and technical training facilities, universities, and research centers organize an open day for girls.

On average, girls have better grades than boys [1]. Still, in scientific or technical study programs and professions such as engineering or computer sciences, females represent the minority. Girls’ Day encourages schools, media and employers to change their common attitudes towards vocational orientation.

In 2001, the first Girls’ Day was initiated by the German Federal Ministry for Education and Research and the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth. The idea came from the American “Take Our Daughters To Work Day”, in which since 1993 schoolgirls in the US visit the workplace of their parents or acquaintances for a day.

Girls’ Day Is Effective

Since then, Girls’ Day has become the largest career orientation project for female students. In 2016, nearly 9,600 institutions offered about 100,000 places for female students.

The vocational choices of girls are influenced in a very positive way. For companies, Girls’ Day has evolved as an important instrument of their recruitment policy. In recent years, there has been a significant increase in female professionals in technical fields. Now, the growth in employment of women is stronger than that of men in almost all scientific and technical professions.

Want some solid numbers? 40% of the girls would like to do an internship or get training in one of the participating companies. 33% of the participating organizations get applications for internships from women who participated in Girls’ Day as a student. One in every five participating organizations ends up employing female candidates [2]!

International Girls’ Day

Meanwhile, Girls’ Day takes place in more than twenty different countries, among them many in Europe, but also Japan and South Korea, and more recently Ethiopia and Egypt.

For more information, visit www.girls-day.de


Claudia Willmes
PhD Student AG Eickholt / AG Schmitz

Boys’ Day: New Horizons for Young Men in Germany

It’s a well-known fact that women are underrepresented in many STEM professions, but it turns out that societal expectations can go both ways: while a girl may shy away from a technical career because it is not perceived as “feminine” enough, boys may avoid many jobs traditionally held by women for fear of not seeming “manly”. Enter Boys’ Day, a German initiative that aims to introduce boys from grade 5 to 10 to skilled professions less commonly practiced by men.

One Small Step for Boy-kind...

Did you know that more than half of all male teenagers choose to pursue less than 20 careers [1]? Interestingly, these careers skew heavily toward technical work, such as being a car mechanic, and almost none have a social, caring-oriented focus. In a country with an aging population such as Germany, this is a serious problem. When entering the Boys’ Day program, boys can choose from a list of 30 different professions to try out. Some of these “rare” professions for young men are also linked to (neuro)science. For example, boys can try out being a biologist, psychologist, nurse, or health researcher.

Future Payoff?

Since the program started in 2011, more than 194,000 boys have taken part in the program in Germany [1]. As the program is younger than Girls’ Day, it’s still hard to tell whether the impact will be as great. However, judging by success stories on the website [1], many young men have found their way into non-traditional careers that they turn out to love.

Working in life sciences means a challenging, but ultimately rewarding life. No-one should have to miss out on the opportunity to do science because of tradition or societal expectations! Boys’ Day serves as an important reminder that building a diverse scientific community means confronting our expectations about both men and women.

Boys’ Day takes place this year at the same time as Girls’ Day, on April 27th.

For more information, please visit www.boys-day.de


Constance Holman
PhD Student, AG Schmitz
Proof of Competence: Recognition of Refugees’ Qualifications in Germany

Many of us have done it before - packed up our lives into boxes and suitcases. Perhaps we even made a carefully thought-out checklist. What do we need to be able to start over someplace new? Passport, birth certificate, vaccination cards, high school and university diplomas. Everything neatly tucked into plastic folders. Leaving your life behind is always hard, but preparation softens the blow.

Very few refugees get that opportunity. They are often forced to leave even the most basic documentation behind. And when they arrive where they intend to rebuild their lives, they need proof that they’re good at something that can make them a living. Almost a third of refugees in Germany have some kind of formal qualification, including vocational training and university degrees [1].

The issue is particularly relevant for Germany, not just because it took in a record number of refugees recently, but because the country is in dire need of workers [2]. With an aging population and one of the world’s lowest birthrates, expediting the recognition of foreigners’ qualifications has been seen as an opportunity. According to a report, 78% of applicants received full recognition of their qualifications in 2016 [3].

It turns out the key to making it work is to instill some flexibility into the process. In Germany, individualized evaluation schemes (“skills analyses”) are put in motion when documents are missing. These include face-to-face meetings with advisors and trial working periods, organized through the federal government’s “Integration through Qualification” network [4]. Other resources include an online tool (and a smartphone app), available in eight languages, that allows people to search for information about qualification recognition [5].

“Regulated” professions such as doctors, lawyers, and teachers are harder to have recognized without formal proof of education, training, and relevant competences. Procedures for these professions are stringent and vary widely from state to state, with authorities emphasizing the need for more standardization.


Ahmed Khalil
PhD Student, AG Fiebach

Female Voices of the Charité Research Community

What does it mean to be a female scientist at the Charité? We set out to interview researchers at all career stages, learning about their challenges, hopes, and unfiltered thoughts on being a woman in science. As you will see, not everyone shares the same opinion or experiences...

Master student, 24 years old

Do you feel treated equally to your male peers?
I feel treated equally- I do not have any trouble with gender inequality.

Do you perceive gender-equality in a different way in Germany, compared to your home country?
Gender equality is more common here in Germany than in my home country. Especially after the latest political developments at home, where the government just decided for woman and their bodies. That is a lack of freedom in a way, which is also inequality.

What needs to be improved?
There is always room for improvement, though the situation is already quiet good. The problem for many women in science is that they cannot come back to work easily when they had a child. They do not know how to be in both roles at the same time, and only chose one path. It would be good if co-workers, bosses, and companies would help them more to come back to work and at the same time to be a mother to the children. I think that my generation has to understand that we still have to fight for some rights. We shouldn't just adapt. As I said, the situation is already very good, but there are still things to improve. I think that the younger generation is the one that should do it!

What is your fear / hope?
My fear is that I will burn out too quickly. Women still have to fight for their positions in science and I feel that can be very exhausting in a way. I would rather like to use the energy to do science instead of fighting for my rights.

PhD Student, 28 years old

Do you feel that you are treated equally?
During my studies I had an encounter with a sexist professor that made inappropriate remarks. That was the first time that I realized that women are still not treated the same way as men. At the moment I have the impression – and this might be just my feeling – that I am looked at differently than a male person would be in my position. I am about to finish my PhD and I think that prospective companies and bosses are hesitant to hire me, because I might drop out soon due to pregnancy.

What needs to be improved?
We need to figure out how to patch the “leaky pipeline” and help more women get access to leadership positions. It is especially critical to provide a surrounding for young woman where they have the certainty that they do not have to choose between family or career. It would help very much if the government would support research institutes more, so that the group leaders can give better contracts to their female PhDs and young postdocs that do not depend so much on getting publications. It's simply detrimental to having a family and pursuing a career; it's hard to get a grant if you did not publish for a year or so, because you were busy with your baby.

What is your fear / hope?
At the moment I feel under pressure to make the right choices so I can both pursue a scientific career and start a family. I hope to secure a job outside academia that offers me a contract that lasts longer than the average position in academia.

Postdoc who left academia, 38, married, kids

What did you struggle most with, as woman in academia?
I actually never had to struggle with being a woman in academia as I always had supportive and fair supervisor and peers.

Why did you leave academia?
Because I learned that I am not made for an academic career and that I have other priorities in my life.

What needs to be improved?
The whole scientific evaluation system. It is detrimental for good, wide-ranging science to evaluate researchers only by the journals they have published in.

What is your advice to an aspiring female neuroscientist?
You should find out and decide for yourself what is most important for you and then go for it. Try to find good mentors, not necessarily limiting yourself to women or individuals from your field, and ask constantly for advice. I also believe that excellent neuroscience can't be done part-time.
Professor, mid 40s, married, kids

**Do you have a female scientist role model?**
No, most woman in history of science which are famous were somehow cheated by their male counterparts.

**Do you feel that you are treated equally?**
Now: Mostly. Earlier: No. With my colleagues at the moment, there is equality but there are also circles that I chose not to participate in, as they are not equal.

**What did you struggle most with as a woman in academia?**
Probably the perception from the male counterparts is one of the problems. In Germany women still have the less well-paid jobs. And of course children: As soon as you enter child-bearing age, even if you have no children, it sort of sends a signal to everyone. If you have a child it automatically gets interpreted that you have a second job now, therefore you can’t be 100% a scientist. Men can be fathers without as many problems as woman being mothers.

**What needs to be improved?**
There have been a couple of things moving in the right direction. But they haven’t gone far enough. There are some grants for woman to come back to work (though I heard now that the one at the MDC has stopped...). They used to give you two years after maternity leave - not enough time at all! The DFG gives you a couple of years grace for every child you have, but again they do not go far enough. It is not just the time that you are pregnant which you need. A child does occupy a lot of your time until it is three or so. The thought that a mother is not productive is actually completely wrong! You actually get more productive. You are less productive during pregnancy and in the first year, but after that you become so good at organizing and multitasking! Once the kids go to school, you are up early – you will always be one of the early birds. And you do not mess around. You have aims. You do not go for your second cup of coffee, you actually do not have a coffee at all. You eat while you work, and you really are much more goal-oriented than others.

**What is your advice to an aspiring female neuroscientist?**
If you want to have a family, make sure you have a very understanding partner who will do at least 50% of the childcare. It is not possible without a good partnership. It gets really hard in a situation with two people with careers that are equally important. That would be my biggest advice: make sure that your partnership is up to the challenge.

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Postdoc, mid 40s, partner, daughter

**Do you have a female scientist role model?**
Not really, because I do not differentiate between man and woman with respect to intellectual capabilities. And I never had the opportunity to talk to a female professor in this private way how she managed to get there and what she thinks is necessary and one has to leave aside to get there.

**Do you feel that you are treated equally?**
When I was younger I thought that yes, we are treated equally. But looking back now there are some occasions where I think that is just wrong. My PhD was rather equal even though my supervisor was a bit more outspoken with his male students. During one of my postdocs I had one supervisor who was borderline sexist. Later on, I also had female bosses, who were far more research-focused and gender-neutral. One was a mother and the other wasn’t, but both welcomed women who decided to start a family. The most sexist man I encountered was when I applied for a postdoc and he asked me if I wanted to start a family and and so on. I reconsidered and retracted my application. However, there are also female professors who have an issue with female postdocs. It always boils down to whether you want to have a family or not. This is the most important fact in regard to gender equality: it is the woman who bears the child. It is almost a biological disadvantage. We have to welcome women who want to start a family. I always found it very strange that many bosses do not welcome children.

**What did you struggle most with as a woman in academia?**
I guess it gets more difficult the more you advance in your career. It is really difficult to have a break from academia for several month to raise your child - like I did when I became a mum. You are out of the job, out of contact with your colleagues, and out of the progress that happens in the lab. Despite being on maternity leave, the women need to come to the lab every now and then to keep up to date because science will not wait. This is hugely important.

**What needs to be improved?**
Both sides have to improve. Young people have to honestly ask themselves, "What is my capacity and strength?"? The earlier you start thinking where you want to go in life, the better. Also, it is absolutely necessary that young people get more advice from experienced researchers.

What needs to change is the attitude of how we look at young mothers: For example, I remember an Icelandic politician who was in front of a congress with her baby, and breastfeeding while giving an important speech. I think this is so cool - they do not make a fuss about it at all. Another thing: This building (CCO) is great, but it does not even have a room where a pregnant of breastfeeding mother can go to and rest for a moment. There is not even a kindergarten here. The Charité is just starting to build one. Organizations like Charité need to make childcare easier for parents who want to return to their jobs.

**Your advice for a female scientist?**
Go for it! It's tough, it's rough, and it's a fight every day. The best one can do is find colleagues who you can rely on, and who you can collaborate with. Ask yourself "Where do I want to go?", "What kind of restrictions can I live with?". Tell people like your boss what you are willing to deal with and what you are not. Be more self-assured. Women are equally smart as men, but they tend to be more insecure and humble in the way they interact. This is not the right attitude. Tell yourself every day that you are smart.

These interviews have been edited lightly for quality and content.

Claudia Willmes
PhD Student AG Eickholt / AG Schmitz

www.medical-neurosciences.de
The Big STEM Theory: How People with Autism Struggle and Thrive in Science

You might know Sheldon Cooper, one of the main characters of the *The Big Bang Theory*, a TV series about four physicists and their struggle with normal life. Being socially awkward and geeky, he fits well into the typical image most have of a scientist. Some claim that Sheldon shows - in a mild form - typical signs of autism spectrum disorder (ASD) [1]. ASD encompasses a group of developmental disorders that can manifest with a broad range of symptoms, but typically problems with communication and social interactions - especially reading facial expression and body language - difficulties taking someone else's perspective, a strong need for strict routines and highly focused interests [2].

Sheldon corresponds perfectly to the geeky scientist cliché we all know so well. But where does that cliché even come from? Is it a coincidence that Sheldon chose to be a scientist?

Science: a Niche for People on the Autistic Spectrum?

Let's face it. Working as a scientist allows - if you are so inclined - avoiding a lot of social interaction. Working long hours by yourself, being highly focused on a specific question, dealing with numbers, details and facts, using modern (indirect) means of communication, and sticking to routines. People with ASD might feel at ease in this environment and even thrive without the difficulties they encounter in social interactions, being less distracted and more concentrated on their actual talents.

While it would be wrong to say that all geeks have autism, studies show that autistic traits are, in fact, more represented in the so-called STEM jobs: science, technology, engineering and mathematics [3]. Steve Silberman, an American journalist and award-winning author, also noticed this phenomenon. He observed that the prevalence of children with ASD of employers from the Silicon Valley, an area rich in technology, IT and science, seemed higher than usual [4]. His thoughts about a possible correlation between parents working in STEM jobs and children with ASD made him write the fabulous book *Neurotribes*. In this journey through the history of autism, he describes its discovery and how it manifests, and is dealt with in society now and then. The book makes a strong case for the diversity of our society and “how to think smarter about people who think differently” [4], because they enrich our lives.

Ingenious People with Autism

There have been speculations, based on historic reports, that many persons on the forefront of science, math, music and art had autistic traits. Among them: Einstein, Mozart, Cavendish, Tesla, Edison and Michelangelo [5]. One more recent example of a well-known scientist with autism is Temple Grandin, professor of animal science at the University of Orlando and author of several books. Not having been able to speak until the age of four, she could only unfold her talents (including her outstanding visual imagery) with the help of a mentor. Today, she campaigns for a better appreciation of the talents of people with ASD, regarding them as essential for society. "If you totally got rid of autism, you’d have nobody to fix your computer in the future", she jokes [6].

ASD is peculiar because of the wide range of manifestations. On the one hand, some people with ASD are unable to speak, while on the other hand, there are those that are highly functional. Hans Asperger, the first person to describe this disorder, named his patients ‘little professors’, as they were intensely absorbed by their special interests [7]. Over 46% of children with ASD have an IQ above average [8], but still many fail to integrate in the job market due to their social impairments. Now, some companies have discovered their potential: Microsoft, SAP [9] or AUTICON in Berlin, specifically employ people with ASD because of their special skills, such as pattern recognition - a trait highly valuable for quality management [10]. This way of thinking - focusing on the strength rather than the weakness - offers people with autism an opportunity to apply their abilities to their fullest extent.

Diversity Makes the Deal

A team works in the most innovative way when composed of members from different backgrounds. So let's embrace diversity as a potential for all of us. ASD is today often regarded as a disability, associated with impaired abilities. Under the right conditions, however, a so-called weakness can turn into a strength: To be different can be an advantage. Especially nowadays, in times of fear of so-called ‘alienation’, where the rights of women and minorities are being threatened all around, we should stand in line with people like Grandin and Silberman and celebrate diversity. Our whole world is growing more complex - let's open our minds to the diversity it has to offer us.

[9] http://huff.to/1H1GdoD
Transforming Perspectives: Transgender Neuroscientists on Gender Discrimination

The word “transgender” was on the world's lips most recently because of the January 2017 issue of National Geographic [1]. This highly controversial issue focused on gender identity, and is the latest in a line of long overdue public acknowledgements of the transgender community. Why we only got to this point now possibly has something to do with the small proportion of transgender people in the general population: They are a minority even in the LGB+ community (3.5%) [3]. Going by math alone, the likelihood of meeting a transgender person is very low [4], and it is even less likely to meet transgender (neuro)s cientists.

However, none of these figures mean that it is a group whose particular challenges should be overlooked, and science is not an flawless environment in this respect. Just three years back, an editor from female to male at the age of forty, which is to say, in the middle of his career. It might therefore seem odd that he is not most famous for transgender activism, but more for being an outspoken defender of female scientists' rights. He has described numerous situations in which his transition allowed him to witness gender-based discrimination in science.

His first experiences of discrimination came as a student at MIT, when he was still presenting as female. Reportedly, a professor would not believe “Barbara” had solved a challenging math problem, claiming it must have been the work of an imagined boyfriend. Then, just like many other women, Barres overheard various instances of men claiming that the cognitive abilities of women were less suitable for a scientific career [6]. However, he says that the realization of the levels of discrimination faced by women only crystallized after he transitioned. A particularly notable episode featured a fellow neuroscience researcher, who, unaware of Barres’ transition, remarked that “Ben gave a great seminar today, but then again, his work is much better than his sister’s” [7].

Barres’ realization of the different treatment that women and men are subjected to professionally is by no means an exception, but rather a reality for trans men from all walks of life. Often, they report being perceived as having better leadership qualities after their transition, whereas before, they were labelled as “bossy”. They say that their ideas are more easily accepted, and they have more of a chance to actually present said ideas without being interrupted [8]. A male-to-female transition seems to have the reverse effect: competency is suddenly questioned. Joan Roughgarden, a transgenic Stanford biologist, explains that “men are assumed to be competent until proven otherwise, whereas a woman is assumed to be incompetent until she proves otherwise” [9].

Incompetent Until Proven Otherwise
It turns out that transgender scientists have a unique perspective on the social inequalities in the field. How can we put this pluralism of perspective to good use? One can draw inspiration from the actions of Ben Barres. Probably his most notable act was publicly challenging former Harvard University president Larry Summers on his claims that women have less “innate aptitude” for succeeding in science than men. In a commentary published in the journal Nature [10], Barres provides compelling evidence that the glass ceiling in science is not a product of genetic difference, but of discrimination. In addition to this, he is invested in science student mentoring [11], in eliminating bias from grant application procedures [12], and often gives talks on these topics.

Of course, not many of us are in a position to credibly dissipate the prejudice of people in high positions or actively support young researchers in their careers. However, that is not to say we can just look away from gender discrimination. Simple things that we can do include speaking up when we see discrimination happen, trying to mentor young people considering a scientific career, and, last but not least, trying to establish connections between people who need mentoring and people, like Ben Barres, who are in a position to give guidance. And it need not necessarily be a trans mentor for a trans student – an open mind for the challenges trans scientists face and a focus on the scientific merit have great positive impact [13].

[1] http://on.natgeo.com/2hT8tXm
[10] http://go.nature.com/1GKiRD7
[12] http://stan.md/1oEz5Hp
Women’s Participation in Science: Crunching the Numbers

Before attempting to solve anything, as scientists, we know that we ought to first map out the extent of the problem. In this article, let’s take a look at gender disparities in terms of some of the most crucial outputs reflecting (and ultimately dictating) a scientist’s success. Here, I focus on some of the metrics that probably cumulatively contribute to the gender bias in attainment of faculty and tenure-track positions and general career progression.

**Overall Participation in Research**

According to UNESCO, 28% of researchers and 43% of PhD students in science and engineering are female [1]. But there’s a lot of variability between countries – for example, in many of the former Soviet bloc states, as well as Malaysia and the Philippines, the number of women researchers equals or exceeds male researchers in the natural sciences. Gender parity is also present in many countries in Latin America and the Caribbean (Bolivia, Venezuela, Argentina, and Paraguay have more female than male researchers). Women are generally well represented in the medical sciences, but very poorly represented in engineering.

**Publication Authorship**

Publications are scientific currency. Whether a researcher is looking for a new job, or a department is seeking more funding, the number and quality of publications is very often the difference between success and failure [2].

In total, fewer than 30% of authors of scientific papers (in any authorship position) are women. In neuroscience, only about a third of authors of papers in “high-impact” journals are women. A few countries are doing admirably though: women make up more than 50% of authors in Finland, Poland, and Argentina who publish in top neuroscience journals.

An analysis of the JSTOR corpus in 2013 found that more and more women are publishing as first authors, from about 9% in the 1960’s to 31% nowadays, possibly reflecting the increasing proportion of female graduate students [3]. But in the same timeframe, the proportion of last authorships (in biomedical research, a prestigious position reserved for “senior authors”, usually group leaders) by women has increased by just 8%.

Women are particularly underrepresented as last authors in cell and molecular biology, a field where authorship position matters a great deal [4]. In six leading medical journals, however, senior authorship by females rose sharply from 3.7% to 19.3% from 1970 to 2004 [5]. This underrepresentation might reflect less access to research resources by women, who are more likely to work in low-resource institutions and spend more time teaching than men, than discrimination by journals [6].

A somewhat alarming finding, however, is that female PhD students are less likely to be listed as authors than their male counterparts for the same effort. A recent study followed 336 biology PhD students from 53 institutions throughout the first four years of their programs [7]. They found that, compared to females, males were 15% more likely to author a journal article for every 100 hours they spent on “research tasks”.

**Conference Participation**

This one is closely related to publication output. There’s very little data out there on gender balance in conference participation in general (posters, oral presentations), but arguably what really counts in terms of career progression are invited talks. These boost a scientist’s visibility and support their establishment as a successful researcher.

Jonathan Eisen, a microbiologist at UC Davis, has a collection of self-compiled statistics on different conferences and meetings in his field [8]. His results are far from reassuring – many conferences have no female invited speakers, and the ratios in the others are far from balanced (Professor Eisen often declines invitations from conferences with a marked lack of diversity). In an analysis of participation by gender at emergency medicine conferences, 30% of the speakers were women [9]. A similar figure was found in the language neurobiology field [10].

**Peer Review**

Being invited to review manuscripts for a journal indicates that your colleagues recognize and appreciate your work. Regular exposure to manuscripts and gaining experience in critically evaluating other’s work also likely benefits one’s own research, ultimately fuelling career progress.

Even when taking into account the unbalanced gender ratios in science, women take less part in peer review than men. In an analysis of the 20 journals of the American Geophysical Union (AGU), 20% of reviewers were female, substantially less than the proportion of female first authors in the field (27%) [11]. The explanation wasn’t
that editors sought out more senior researchers (who are mostly men), because the low peer review participation was evident across age groups. The study also found that women received fewer invitations by editors and declined them more often than men. In contrast, female editors of the journal Functional Ecology recommended more often female reviewers, who were more likely to agree to review a manuscript than male reviewers [12].

Research Grants and Scientific Awards
In the UK [13] and the US [14], women and men are equally successful in acquiring funding for biomedical research. However, even when accounting for experience, female applicants were awarded almost 45,000 GBP less funding than male applicants from the Wellcome Trust between 2000 and 2008 [15]. Similar results were found in an analysis of infectious disease research funding awarded from private and public sources between 1997 and 2010 [16]. Women received 54,000 GBP less funding than men, with no improvement over the past 14 years.

Male applicants for personal grants in the Netherlands had a 20% higher success rate and were perceived as more competent than female colleagues despite similar appraisals of proposal quality [17]. The only field where female success rates were higher than male’s was medical science.

Unfortunately, these discrepancies are not being remedied by the increasing participation of women in science - men continue to receive more than their expected share of scientific prizes (the so-called “Matilda effect”). Between 2000 and 2010, men were eight times more likely to win a scientific award in the physical sciences, mathematics, and biomedicine than women [18]. The same study found that, even when adjusting for the representation of the genders in the pool of nominees for a particular award, men were twice as likely to win than women.

Progress for Science, Through Science
By and large, women are grossly underrepresented in science and they receive less recognition for their work than their male colleagues, a classic vicious cycle. Investigating these gender discrepancies and finding potential solutions should be made a priority. But first we need to recognize that the issue’s complexity warrants the same systematic and rigorous approach that we dedicate to our work as scientists. Striving for equality for the sake of fairness, while extremely important, is only one part of the story. The status quo is such a waste of precious potential - just think about how much more could be done if gender equality in science were a reality.

References
[2] van Dijk et al., Current Biology, 2014
[14] Hosek et al., National Science Foundation, 2005
[16] Head et al., BMJ Open 2013
Can't Stop, Won't Stop
Four Inspiring Female Scientists With Disabilities

“I choose not to place ‘DIS’ in my ability.”
Robert M. Hensel

Many among us are familiar with eminent male scientists like Einstein, Newton or Hawking, who dealt with physical or mental disabilities at some point in their lives. However, only few female scientists with disabilities are publicly known or get the recognition they deserve [1]. Disabilities are notoriously hard to define and measure, making this under-recognition even worse for those afflicted. As a case in point, until only a few decades ago, people with dyslexia were branded as "stupid" because they could not read properly. We have looked into the lives of some of the most inspiring female scientists from different areas of science, who became their own role models, defied stereotypes and continue to inspire all of us with their grit, grace and love for science – despite happening to have a disability.

Dr. Helen Taussig
Widely known as the founder of pediatric cardiology, Dr. Helen Taussig (1898-1986) had to cope with multiple challenges during her childhood as well as medical career. Her hearing was severely impaired after a childhood illness, and she suffered from dyslexia, a learning disability that affects reading. On top of that, she faced gender discrimination while studying medicine at Johns Hopkins University [1]. Despite these adversities, Dr. Taussig remained steadfast and used touch instead of a stethoscope for diagnosis after losing her hearing. She was a pioneer in discovering the cause of the "Tetralogy of Fallot", also known as blue baby syndrome, a birth defect of the heart characterized by lack of blood flow to the lungs. Dr. Taussig worked with two of her colleagues at the Johns Hopkins Hospital on a technique that has since saved thousands of infant lives and attracted patients and physicians to her alma mater. Together with Alfred Blalock, her 1945 paper about initial operations carried out on blue babies had a high impact on the medical community. She was awarded numerous honors in recognition of her services in medicine [2] and continued her research until she passed away at age 87 [1].

Dr. Margaret Nosek
You would think that severe physical disability will keep a person from being socially active, but that is not the case for Dr. Margaret Nosek. She holds a PhD in rehabilitation, in addition to a Master of Arts in music. She has been an ardent supporter and activist for the disability rights movement and currently works as an assistant professor at the University of Michigan in the US since 2005 [6]. Furthermore, she spearheads the Center of Research on Women with Disabilities (CROWD). This center researches different aspects of the lives of women with disabilities, such as health, sexuality, independent living, and access to health care. She serves as a professor at the Physical Medicine and Rehabilitation department at Baylor College of Medicine in Houston, Texas. Aside from that, she also has published numerous articles on men and women with disabilities [3].

Dr. Judith Badner
Imagine having achondroplastic dwarfism - a sporadic mutation that causes short stature - and then going and acquiring not one, but two degrees in science. Dr. Badner did exactly that and holds an MD and a PhD in psychology. During her childhood, she frequently had to stay away from school because of problems with her leg. However, she stood resolutely in the face of her physical disability and never let it hold her back from pursuing her interest in medicine. She currently works as an assistant professor at the University of Chicago and is particularly interested in research in psychiatric disorders like bipolar disorder and schizophrenia. She also believes that "a lot of people have no idea what it is like to have a disability or how you can work with it or work around it" [4]. This is, of course, true and makes these scientists even more unique because they never gave up or succumbed to self-pity and discouragement.

Dr. Karin Muraszko
Growing up with spina bifida, a neural tube defect that prevents closing of the backbone and membranes around the spinal cord, meant lots of visits to the doctor at an early age and working your way around with a weaker leg. However, none of this deterred Dr. Muraszko from getting into pediatric neurosurgery. In fact, she highly enjoys her job at the hospital and teaching residents at the University of Michigan. She is also passionate about Project Shunt, which involves providing medical assistance in neurological problems faced by Guatemalan children from low-income families. Together with a group of doctors, she has been visiting Guatemala for several years [4]. She is the first and the only female chair of the department of neurosurgery at the University of Michigan in the US since 2005 [6].

In an interview with CNN, Dr. Muraszko made an interesting remark. "People often ask me which has been harder: being a neurosurgeon woman or having a disability as a surgeon. Being a woman is more difficult." [6]

These and many other wonderful female scientists out there in the world who gracefully deal with their work and private lives serve as a reminder to all of us not to give in to excuses. So long as women are interested, motivated, passionately curious and willing to work for it, they will always find a niche in science.

Barrier-Free Science: Designing a Smarter Lab?

Low wages, strange hours, the pressure to publish or perish... There are many barriers that prevent people from pursuing careers in science, and one can hardly blame them. However, there are some types of barriers that should never prevent a person from being a scientist. This article will discuss legal and design-based strategies that help make traditional laboratory environments accessible for everyone.

In Germany, many people will be familiar with the term “Barrierefrei”, which refers to the design of spaces to accommodate individuals with physical or intellectual disabilities. This policy is enshrined in German federal law for all workplaces, with other special laws concerning areas such as air travel or public transit [1]. The most obvious examples are the availability of wheelchair ramps or elevators for those with mobility issues, but the law actually extends to a lot more subtle adjustments. For example, there is a special emphasis on communications design, for example, labels that contain large print or Braille for the visually impaired [1].

Open and Inclusive Design

Much of the philosophy of building in this way comes from the Universal Design movement, first described by the architect Ronald R. Mace in the 1960s. This movement, and the closely related Design for All, promotes the creation of spaces that are usable for as many individuals as possible, irrespective of their age or ability [2]. Despite this one-size-fits-all principle, special thought is also put into creating designs for adaptive/assistive technology that is also aesthetically pleasing, flexible in use, and that has a high error tolerance.

How can we imagine a lab environment that embraces universal design? For Bradley Duerstock, director of the Institute of Accessible Science, biomedical engineer and wheelchair user, it’s all about flexibility and communication. For “hands-on” experience in a lab, it’s critical to have a PI who is willing to engage with their student or employee with a disability and understand their needs [3]. Some fixes may be relatively simple, for example, using different high-contrast dye and special lighting to help an individual with a vision impairment perform and analyze Western Blots. Duerstock himself invented one of the first microscopes that allows the user to operate all controls through a computer interface rather than manipulating small knobs.

However, some aspects of the lab environment are more difficult to change. While legislation mandates that workspaces need to comply with all employees’ needs, it can still be difficult to find funding to cover these costs [3,4,6]. Can a lab be retrofitted with new lab benches or lowered sinks? What about more basic safety concerns, such as accessibility of fire extinguishers or eye wash stations? How about a fire alarm that incorporates visual, as well as auditory cues? Unfortunately, the Universally Designed lab still seems to be far away.

Challenges and Progress

A quick look at my own workspace, the brand new and tremendously expensive [5] Charité Cross Over building reveals a number of shortcomings limiting the labs’ use for individuals with disabilities. Between electrical and gas outlets at ceiling level, heavy doors with impractical handles and a literal barrier that one has to climb over to enter the animal facility, it is clear that accessibility was not the architects’ first priority.

It is well documented that individuals with disabilities are less likely to be employed than their non-disabled counterparts, but it seems that some progress in STEM professions is being made. For example, a 2014 report from King’s College London found that the number of undergraduates in STEM with a self-reported disability has increased by 70% since 2010 [6]. The report credits this increase to programs that provide government funding to help students gain access to support such as assistive technology and sign language interpreters. Money works, but gains for graduate students and full-time STEM professionals in the report were far more modest. How much can be credited to a time lag, and how much to the sometimes inflexible nature of hands-on lab research?

Thinking Barrierefrei

We cannot renovate and retrofit the entire Charité overnight, but the first step to building a barrierefrei scientific community is simple awareness of the space around us. Next time you go about your daily work in the lab, think about how the design of your tools and space influences the way that you do science. What sorts of barriers, both tangible and intangible could conceivably exist, and what can you do about them? Use your scientific imagination and do some problem-solving. Design matters, especially for purposes of inclusion and diversity.

Want to find out more about specific policies in place at Charité, or how you can get involved in re-thinking scientific spaces? Be sure to check out the Office for Individuals with Disabilities (Gesamtschwerverhindertenvertretung) [7]!


The 'Other' Science: Is There Sex Bias in Research?

Despite the fact that half of the population consists of women, female subjects have been systematically underrepresented in basic, preclinical and clinical research. Sex represents one of the most well-conserved differences in biology [1]; yet the assumption that findings from one sex can be extrapolated to the other has prevailed during decades of biomedical research. But how did that happen? Simone de Beauvoir is famous for her take on the origin of this neglect: "humanity is male and man defines woman not in herself but as relative to him... He is the subject – she is the Other". However, the two main reasons why women have not been considered subjects of study have stem from both good intentions and practical considerations.

Good Intentions: A Tale of Protectionism

After the medical catastrophes of diethylstilbestrol (DES) and thalidomide, the U.S. Food and Drug Administration (FDA) published a guideline in 1977 that demanded the exclusion of women from phase II and III clinical trials. DES was a synthetic estrogen used in the 50s to prevent abortion in pregnant women. It took some decades to recognize that the daughters of those women had an increased risk of vaginal cancer. In addition, the more than 10,000 babies born with limb defects from mothers who had taken the morning sickness drug thalidomide prompted the exclusion of women with child bearing potential from clinical trials. The National Institutes of Health (NIH) attempted to reverse these unbalanced circumstances in 1986 and 1993 by stating that "the NIH must ensure that women and members of minorities and their subpopulations are included in all human subject research" [2]. It was also not until that year that the FDA prohibition was reversed [3]. Europe has followed the steps of the FDA and NIH. The current EU Regulation states that "the subjects participating in a clinical trial should represent the population groups that are likely to use the medicinal product investigated in the clinical trial" [4]. Nevertheless, the inclusion of female subjects in clinical research has been steadily slow. For example, women account for more than 50% of the population affected by cardiovascular disease, still only make up 34% in related studies [5].

Practical Considerations: A Tale of Female Complexity

Female hormones served as another pretext to exclude women as research subjects. This excuse is highly prevalent in basic and preclinical research, where the male bias is surprisingly strong. For example, a study that surveyed 1244 neuroscience articles from the most prestigious journals found that 32% used only males while 7% used only females. In 29% of all studies, both sexes were used but there was no mentioning of sex-related analyses; the studies that reported whether there was a sex-related difference were only 4%, while in 28% subject sex was not specified [6]. The list goes on: for example, cough hypersensitivity is a frequent problem in postmenopausal women, yet cough research is performed on only male guinea pigs. Females report more pain- and anxiety-related problems than males, but again research on those topics is based on male subjects. Even the drug Flibanserin, developed to enhance libido in women, was tested on male rats for its effects on serotonin receptors, behavior and cognition [7].

There is a general assumption that the hormonal fluctuations of females may increase the variability of the results, rendering the data hard to interpret. Mouse and rats have an estrous cycle of four days. Some argue that the female rodents would have to be analyzed in each stage of the cycle in order to obtain reliable results, multiplying the costs of the study. However, a meta-analysis of mouse and rat studies found that females were no more variable than males, regardless of the estrous cycle [6]. This does not mean that the estrous cycle does not influence biological processes, but does indicate that it is not a big source of variability. Furthermore, many sex differences may not be due to hormonal fluctuations but due to differences in metabolism or the brain itself.

Does Sex Matter?

What are disadvantages of not including females in research? Women may respond to drugs differently than men. For example, they have greater sensitivity to some antidepressants, beta blockers, opioids, and typical antipsychotics. In contrast, many anti-arrhythmic drugs are less effective in women than in men [8]. Between 1997 and 2000, eight of ten drugs that were withdrawn from the market caused adverse events in women. By not studying sex differences, valuable information on disease mechanisms could also potentially be lost. Even when working with primary cell lines, sex also matters! For example, stem cells derived from female mice showed higher muscle regeneration efficiency than male stem cells [9].

As of 2016, the NIH requires all new grant applications to consider sex as a variable [6]. Some researchers have welcomed this regulation with enthusiasm while others invoke the freedom to choose whether to investigate sex difference or not. In any case, with this new era of equitable research men will hopefully stop saying that women are too complicated!

Humboldt Graduate School Women’s Representatives: Who We Are and What We Do (For You)

Hello there! If you were not aware that there is a women’s representative at the Humboldt Graduate School and you wonder what we do - this article is for you!

Like many other institutions, the Humboldt University has a ‘central’ women’s representative, who works full-time in this job to ensure equal opportunities for men and women at the university. However, there are local women’s representatives at every faculty who fill this function alongside their jobs and are a direct contact person for you.

In our case, we are the women’s representatives of the umbrella organization ‘Humboldt Graduate School’ (HGS), which means that we are there for anyone affiliated with HGS, whether it’s through MedNeuro, Mind and Brain or any of the other numerous programs.

We were elected last November and took office on the 1st of January this year. We are two PhD students: Uta Sommer, from the PhD-Net "Das Wissen der Literatur" and myself, Juliane Schiweck, from the Medical Neurosciences program working as Uta’s deputy. Our tasks include participation in staff elections, counseling of the HGS in all matters concerning women, be it structural, organizational or personal as well as ensuring an appropriate percentage of women in selection procedures.

For the following 2 years (our term in office), we want to focus especially on the topics of being able to combine a PhD and parenthood. For this purpose, we are currently working on a comprehensive document that summarizes possible problems, their solutions and your right to be provided with as much information as possible. This document will be online on our website soon (http://bit.ly/2jEEAXR).

We will offer counseling on a walk-in basis once a month and you can arrange a meeting with us via email anytime! We are happy to support you with all concerns, ranging from sexual harassment to combining family and career!

Juliane Schiweck
PhD Student, AG Eickholt

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Publishing Beyond English – Not Quite Dead Yet

English is undoubtedly the lingua franca in dealings on this earth, and research makes no exception here. To reach as large an audience as possible, most scientists resort to English in their publications, conferences and talks. Indeed, if you search for a certain - let’s say molecule - on Pubmed, it is a good guess that you will need to scroll for a while to find papers that were not written in English. However, this does not mean that Zeitschriften, revues or revistas have become extinct (yet).

In fact, back in the day, many of the world’s most prestigious journals appeared in … you guessed it, German! As Michael Gordin, Princeton University’s Rosengarten professor of modern and contemporary history, puts it in an interview with the BBC [1]: “So the story of the 20th Century is not so much the rise of English as the serial collapse of German as the up-and-coming language of scientific communication”. And before German, there was no way around Latin when discussing scientific topics.

In science, there is no way around English

Despite overwhelming trends, you might say, some journals still cherish their linguistic heritage. Take Angewandte Chemie, as an example, which is a leading journal in the field of chemistry. Its editors have struck a balance between “old” and “new”, and now Angewandte Chemie appears in both German and English. Countless other scientific journals appear in non-English languages, such as French or Spanish, but often provide abstracts in English.

ZEITSCHRIFTEN, REVUES OR RIVISTAS HAVE NOT DIED OUT YET

Interestingly, this seems to differ according to discipline. For instance, a recent study found that English was the predominant language in hard sciences, such as physics or engineering [2]. On the other hand, researcher from non-Anglophone countries were more inclined to publish in their native language in fields related to ‘softer sciences’, such as arts and humanities.

For better or for worse, for people in our field there seems to be no way around English.


Helge Hasselmann
PhD Student, AG Otte/ AG Paul

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www.medical-neurosciences.de
Does Neuroscience Need Neurodiversity?

As neuroscientists, it's important to take a critical look at how we understand our research subjects. Enter Neurodiversity, a term implying three different things: The social activists of the neurodiversity movement, their beliefs- known as the neurodiversity paradigm- and the biological fact of neurodiversity itself.

In short, neurodiversity represents the idea many different kinds of human minds and brains should be acknowledged and valued. Judy Singer coined the term in 1988, but it was only ten years later that Harvey Blume popularized the word by stating: "Neurodiversity may be every bit as crucial for the human race as biodiversity is for life in general. Who can say what form of wiring will prove best at any given moment?" [1].

The neurodiversity paradigm mandates that every kind of mind is equal and there is no type of mind that is superior. The pathological paradigm, in contrast, suggests that there is one normal way to exist and anything else is flawed and should be "cured" by medical intervention. In neurodiversity, everything is accepted and celebrated. Individuals with autism spectrum disorder initiated the neurodiversity paradigm, but the concept has been applied to other people with ‘different kinds of minds’ as well, such as people with attention deficit hyperactivity disorder, or Tourette syndrome.

Why do we need these terms?

Historically, "a child with the diagnosis autism was not treated as a child anymore" [2]. This remains the essence of the problem for people with disabilities in our society. People with disabilities are not seen equivalent to so-called "neurotypical" people. To see them as equivalent does not mean seeking to make their brains fit within dominant societal standards of ‘normal’, but to give them the same chances. In other words, do not try to cure autism, but include people with autism. We could even learn from them.

Not only is every person with autism different, but so is every single human being! The autistic spectrum (and other conditions) is thereby part of the human diversity.

A CHILD WITH AUTISM WAS NOT TREATED AS A CHILD ANYMORE


Anahita Poshtiban
PhD Student, AG Pleased

Born Lower Class: The Real Minority in Science?

A CNS Opinion Piece
The pathway to a scientific career is not only tedious but also highly competitive, full of setbacks and disappointments. Scientists are so devoted to their work that they often have difficulties in keeping a certain distance from personal feelings. It is this fusion of ambition and personal experience that raises the question: To what extent does the personal background - socially and economically- affect young people in becoming a scientist?

Starting Early
There is no doubt that your background already influences the success of your education very early: At the elementary school level, teachers decide if a child is suited to on one of the three secondary school streams in Germany, thus essentially determining the possibility to enter the university career track later on. Due to a lack of support with homework and financial means for additional teaching material, children from lower socioeconomic background especially suffer from this system. Simply put, if your parents are poor and/or have had a lower educational background, your chances of obtaining a higher education will be a lot smaller. Therefore, the chances of entering a scientific career are significantly reduced by the fact that you have a lower class background.

Once you have escaped the injustice of the education system and decide to do a PhD, economic challenges, everyday hassles and family stress that come with struggling to make ends meet every month have already pre-shaped you. Needless to say all these factors have influenced the development of your brain in a certain way, and provide you with a different approach towards dealing with stress compared to people who grew up in a stable environment.

Careers in Science from a Socioeconomic Perspective
The mere process of getting a PhD stretches you to the limit - you have to deal with being under pressure to perform for years. On top of that, you have to accept that you are not appreciated as a full-value employee while you are working just as hard and ambitious as a post-doc, for instance. Coming from a lower class background with the potential to escape the vicious cycle puts you under a special form of pressure. The urge to be financially independent as soon as possible might lead to the decision to leave (academic) science after the PhD, to cut short during your PhD studies or to not even enter this track. Personal preferences might get suppressed in favor of economic stability.

Unfortunately, discussions about inequality concerning career paths predominantly focus on the gender gap. Perhaps your socioeconomic status is more vital than your sex when it comes to career chances.

Eileen Schormann
PhD Student, AG Krüger

Source: Wikimedia Commons
Signing Off

Like many of us, I started writing for the CNS as a (fun) way of fulfilling part of our master’s program’s requirements. More than four years later, my credit point coffers saturated, it’s time for some reflection.

Working with the CNS team has been a delightfully rewarding experience. Every issue, I have the privilege of experiencing firsthand how creative and inspiring my fellow young scientists can be given the opportunity and support. As the submission deadline approaches, the buildup of excitement that comes with doing something meaningful outside our daily lives as graduate students is refreshing. For several weeks at a time, the team works exceptionally hard on the articles, sharing ideas, providing feedback to authors, and I’ve always counted myself lucky to be a part of it all. The outcome is a truly remarkable publication – of the highest quality by any standard.

The best thing about our newsletter is that it helps us expand our already seemingly infinite repertoire of opportunities as budding scientists. Not that I would ever claim any credit at all for this, but seeing some of our regular authors find their passion in science writing and communication makes me proud. Others yet have established important contacts, developed an interest for some special topic, and are well on their way to contributing substantially to society as up-and-coming leaders.

Over the past few years, the newsletter has made some considerable progress. We’ve maintained an impressive number of articles and contributors per issue and strengthened the CNS’s online presence. We’ve also established partnerships; a selection of our articles now regularly features in the Center for Stroke Research Berlin’s quarterly newsletter (in German), and the Career Section (in cooperation with Erasmus+) provides valuable resources to young scientists on employability. Our team has interviewed Nobel laureates, critically assessed the current state of science, and highlighted the Berlin neuroscience community’s laudable ongoing efforts at social engagement. I’m confident that Constance and our new Editor-in-Chief Helge will continue on this outstanding path.

This article isn’t meant as a goodbye – expressing my appreciation for the newsletter and the people behind it is something I’ve wanted to do for a while now. In 2017, I’ll be taking a small step back from the CNS as I work on the next steps in my career. But ten remarkable issues as Editor-in-Chief will always remain in my memory. I can honestly say that I’ve never been a part of something as special as this newsletter.

Ahmed Khalil
PhD Student, AG Fiebach

Graph showing statistics on the CNS Newsletter (for each issue) from March 2012 to December 2016.
“New authors” refers to the number of contributors to a particular issue who had never written for the CNS before that issue.
At the Interface Between Medicine, Communication, and Business
Interview with Shari Langemak, Editorial Director at Medscape Germany

Since this issue covers inspiring women in science, what better time to meet Shari Langemak. With an impressive curriculum including an MD, a PhD, and an MBA, she has been Editorial Director at the German branch of Medscape for 3 years now. Medscape is an international online magazine that offers information and media resources on a wide range of medical topics destined for healthcare professionals. In addition to this, Shari is also a public speaker at conferences, and a coach for startups, especially in the field of digital health. We sat down to talk to her about how she got here, her thoughts on diversity in tech and much, much more.

What is your role at Medscape?
I am responsible for the production of medical content that enables physicians to stay up to date with their specialty. I work with science writers, medical experts and colleagues from all over the world. Regular discussions with all of them are crucial, as we need to identify the biggest topics in medicine and to stay updated on the latest findings in research. My job also includes quite a bit of traveling, as we make videos with key opinion leaders at international congresses.

How did you get into this field? Why did you decide not to follow medical practice or research?
I appreciated my medical studies a lot, but from the very beginning I felt very intrigued by the entire healthcare industry and was curious about innovation, both medical and technological. I realized quickly that a role in journalism would enable me to understand the healthcare system on a meta level. Somewhat randomly, I got an internship at Axel Springer; wrote quite a lot of articles about topics in medicine for Die Welt and Welt am Sonntag, and continued working as a freelance journalist in addition to my medical studies and my PhD.

Journalism is very interesting, because you keep up with all the different topics out there. You get a broader understanding of the healthcare system, and you meet many people. So it was a very cool job to do while being a student. After finishing my medical degree, my freelance activity paid off, and I started working as an editor for Die Welt. This was definitely exciting - going from a clinical career to a big media corporation where I had a completely different life!

And when did you do the MBA?
I did my MBA in parallel to my current job at Medscape, as I really like to challenge myself. My main goal is to understand the healthcare system from all the different aspects and stakeholders' points of view, especially from an entrepreneurial and an economic perspective. I aim to play an active part in the innovation lifecycle. But I realized that without business knowledge, this would not be possible. I already had the medical and the research point of view, and then journalism, which allowed me to talk to a lot of people from different areas in healthcare. But especially because I work with startups a lot (I am a startup mentor and speak about what the healthcare system might look like in the future), I should know the basic principles of business, finance, and entrepreneurship. So the MBA was a great opportunity for me to catch up with that. I think I now have a broad view of the healthcare system.

What do you like the most about your job?
I like that I can learn about many different topics in medicine. And I love working internationally. And building a product in the German market, while working with very insightful colleagues. I also really like our company culture. We have many women working at Medscape, and they are really tough and smart.

What are some of the challenges of your job?
Media is a tough field, with lots of competition. It’s really hard to get the attention of the reader in a digital world, where everything is so quick. It’s not like you stay at home on a Sunday and read the newspaper anymore. There is so much distraction and information, and competition for the reader’s attention. Also, it is challenging to keep up with the innovation in digital health across the globe. The industry is rapidly evolving, which – to be honest – is also incredibly rewarding.

The world of technology is very male-dominated. Have you gone through any difficulties for being a woman, or experienced inequality?
No, quite the opposite. I’m invited to be a speaker quite often, being a young female, so I cannot say I have a di-
advantage. I think people want to hear more diverse opinions, different perspectives. I also see a growing number of women who are founders in the startup scene, including health-tech. I believe that the male domination has other reasons. Many women, or rather girls, maybe pursue the wrong career path because they don’t know that they make great engineers, programmers, and entrepreneurs.

During school and university we are told that women are not good at tech. I personally was a little nerd child. I used to game, I built my own computer... So I was always around many males. I learned a lot by just playing and being around friends with the same interests – that’s the best way to learn and pick your interests for your career later.

**Can you tell us about the Startup Bootcamp where you are a mentor?**

It’s an accelerator. Startup Bootcamp helps startups to grow by empowering entrepreneurs with knowledge and network. Many mentors from different areas do this type of work. I coach startups on digital health. I help them with market access, understanding how each player in the health industry thinks, product design, identifying which regulatory challenges they might face – as there are plenty. Many startups are international and want to grow a product in Germany, so they don’t know which problems may come up here.

What do you know now that you wish you had known when you were in university? What would the current Shari tell the student Shari?

Everything is possible! It’s not because you chose one field of study that you will eventually end up in this specific field of work. But it’s also not as if it comes to you. You have to define your path and build your own brand. You should think early in your studies where you want to be, and many options are possible. You have to think about what makes you happy and get an inside view of the job you would like to do, so that you can actually see what it is like – by doing internships, talking to people... And if you still like it, perfect. Then you should think: what do I need to do to get there? Or what kind of skills would this future employer like to see? And then work on these. Academia is one thing, but especially if you want to move into a different field, you need very specific and practical skills. And while you are still studying, you can start developing some of them.

**Thank you for this interview!**

Mariana Cerdeira
PhD Student, AG Harms

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**Gender Balance in Neuroscience at Charité**

For many years, German lawmakers have been deeply invested in encouraging the participation of women in the upper echelons of academia, and many programs are in place to support them, from PhD to professorship. But how well is this working for neuroscientists at the Charité?

Charité’s figures about female workforce participation are readily available, and the most recent report details data from 2012-2014 [1]. As a whole, Charité’s workforce is predominantly female: 72% of the organization’s employees are women. This is also mirrored in the student body, where women make up 63% of the total population. Things even out by the time these students gain PhDs: 42% of graduates are female. However, from there, things start to look a little more grim. Only 24% of habilitations in 2014 were women, and 19% of professors.

These statistics examine Charité as a whole, but what about in neuroscience-specific positions? First, we looked at principal investigators (Pis) who were members of Charité’s largest neuroscience research/training group, NeuroCure (including the Neuroscience Research Centre). Out of 51 group leaders mentioned on the website, only 14 (27%) are female [2]. What about in other centers? Since numbers aren’t tabulated in the same way as, say, NeuroCure, we made a rough estimate based on who was named as PI or project leader on departmental websites. Please keep in mind that these numbers may not be current, and that many individuals are also affiliated with NeuroCure and/or multiple institutes (and thus have been counted more than once):

**Percentage of female PIs per Charité department:**

- **Centre for Stroke Research:** 1/16 or 6% [3]
- **Institute for Neurophysiology:** 1/6 or 17%
- **Department of Neuraphology:** 1/4 or 25% [5]
- **Department of Experimental Neurology:** 0/10 or 0% [6]
- **Department of Neurology:** 7/24 or 29% [7]
- **Institute of Cell Biology and Neurobiology:** 4/10 or 40% [8]
- **Institute for Integrative Neuroanatomy:** 2/5 or 40% [9]

How does your affiliation rank? Have we missed anyone? Let us know at cns-newsletter@charite.de!


Constance Holman
PhD Student, AG Schmitz

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"YOU HAVE TO DEFINE YOUR PATH AND BUILD YOUR OWN BRAND"
The Glass Ceiling – Has it Gone Out of Fashion?

A Critical Comment on the “Women in Leaderships” Debate

When the CNS team came together to discuss the upcoming issue and decided to write about minorities in science, it wasn't long before we ended up talking about women. Instantly, I felt a certain discomfort because - as a woman - I am kind of tired of the whole gender theme itself. It always directly leads to the implication that women are underprivileged in terms of career options, that the so-called “glass ceiling” is holding them back from reaching top positions. Personally, I always thought that the only thing that hinders you from being successful is yourself.

Self-Created Glass Ceiling
Recently, surrounded by other PhD students, I opened a discussion with the provocative hypothesis that the glass ceiling is created by women themselves. Everyone strongly disagreed, citing the childcare problem, unequal salaries and unfair hiring decisions. No doubt, there are big issues in the system that need to be fixed. However, there are also problems that have to be changed by women themselves. For instance, unequal salaries won't go away if women shy away from stressing their capabilities and demanding fair pay. Confidence and negotiation skills are learnable. Today there are numerous opportunities to get coached on all imaginable needs. We just have to use the resources!

Alongside the general conditions that might hinder women from pursuing a successful career, we shouldn't forget that perhaps even smart, educated and qualified women simply do not consider the option of a leadership position. Referring to my personal environment that consists of numerous highly educated women my age, I think this may be the majority. They explained that the mere thought of leading a group of people made them uncomfortable, that they feared the responsibility and the fact that you have to make important decisions. Nevertheless, there are big differences between women and examples of ambitious and fearless women are all around us. Examples are my PI, the head of my department and, of course, our chancellor Angela Merkel!

Modern Female Role Models
One of my female friends ended up as a business partner in a well-known pharmaceutical company at the age of 32. She is the mother of a toddler, and did a few months of sabbatical to spend time with her daughter before she got a promising job offer. She then started to follow her vision, using her education but also her personal interests and talents to reach a fulfilling position. She found a niche where she is especially talented, could profit from a network she built up herself and was supported by her husband. From what I observed, she worked hard and followed her desires. She took over responsibility for her own fate. And even if there were obstacles when she decided to have a baby, she obviously found a way to overcome them. This is the take-home message: if you are passionate about something, then focus, work hard, find support and make use of your resources!

Let’s Create a Post-Glass-Ceiling Era
The glass ceiling as a phenomenon was defined in 1987 – it's 2017 now! I don't want to be influenced by 30-year-old (or even older) thinking, I want to be influenced by aspiring women in this day and age. Businesswomen, women in science and politics – their numbers are growing. And I would be glad if their numbers rose faster, but in my view, most women are not ready yet. Today there are more women with high educational achievements (including PhDs) than ever. So we are already one step closer. Next, more women need to work on their attitude and their confidence to capitalize on their potential.

Eileen Schormann
PhD Student, AG Krüger

"YOU HAVE TO DEFINE YOUR PATH AND BUILD YOUR OWN BRAND"

Source: http://bit.ly/2aFYt1S
Two applicants are competing for one job. They have equal qualifications but, in the end, only one of them can be employed. How can we, if two applicants are so similar, prevent that an unfair choice is made due to discrimination, regardless of whether it is conscious or not? Part of the answer may lie in anonymous application procedures.

**Discrimination in the Hiring Procedure?**

There are two ways of exploring if discrimination in labor markets exists: audit studies and correspondence studies. In audit studies, two applicants who match in all characteristics except for one (e.g. ethnicity) apply for the same job. In correspondence studies, two fictitious paper applicants compete for one job and, again, only differ in one trait [1]. Multiple studies have used these two procedures and all found one thing: at the initial hiring stage, it is most likely that if the applicant has a migration background, is an elderly job-seeker, or is a woman with children, he or she will not be called back [1].

**Why We Need Anonymous Application Procedures**

Anonymous applications typically don’t provide any information on an applicant’s name, contact details, gender, physical appearance, age, place of birth, nationality, marital status, or number of children, and thereby only leave criteria such as skills, qualifications, and experience available for a decision [1]. Similar to blind experimental studies, this makes it impossible for the employer to introduce a bias based on his or her expectations [1]. Removing discrimination from the hiring procedure should therefore lead to the employment of the most productive worker and will benefit the employer as well as increase diversity in the workplace.

Indeed, in randomized field experiments in Germany, Sweden, and the Netherlands, applicants of minority groups and comparable, majority group candidates had equal success rates of being called back when anonymous application procedures were used [1]. In a different study, researchers found that female musicians were more likely to be hired when playing behind a curtain during auditions [2].

Taken together, there is substantial evidence that gender and ethnicity matter in the hiring process, although this is considered discrimination according to current legislation [3]. Anonymous application procedures can, in part, remove some of this bias.

**Anonymous Application – The Way To Go?**

Although anonymous application procedures seem to have a positive effect on reducing discrimination, they are not entirely effective in ending discrimination and need to be implemented carefully. For instance, one common method to anonymize applications is by blacking out the relevant information. This procedure takes time and money and may make it difficult to read some documents, like letters of recommendation, where sentences need to be rephrased at times. Another way of implementation is the use of standardized application forms, which are less costly and do not impair reading [1].

One main argument against anonymous application procedures is that they only postpone discrimination. Even if a bias is removed during the initial hiring procedure, the anonymity cannot be kept throughout the entire hiring process and the employer will know your age, ethnicity, and gender during an interview at the latest. However, one study suggests that discrimination takes place predominantly during the selection procedure for the interview and might be of minor importance during the job offer stage [4].

Another argument is that anonymous application procedures effectively remove bias at the initial step of this process. Even though discrimination cannot be abolished completely, anonymous application procedures are a way to reduce unfair bias at least at one stage of the application procedure and, in the long term, may likely increase diversity in the workplace and improve society, because it increases the percentage of the best candidates - independent of irrelevant characteristics.


Juliane Schiweck
PhD Student, AG Eickholt
Chimeras – Possible Organ Donors

Scientists got closer toward growing animals with organs that are suitable for transplantation into humans. Reports of the creation of mouse-rat, human-pig and human-cow hybrids recently made a splash on social media.

The researchers used CRISPR gene-editing technology to create embryos without the genes that cause specific organs to form. They then injected pluripotent stem cells – which can become any type of organ – from a second species into these early embryos. The foreign cells differentiated and spread throughout the body, forming the organs that the original species couldn’t.

Rat-mouse chimeras were quite a success: The resulting chimeras of a mouse embryo with rat stem cells had organs that were composed largely of rat cells. The animals lived for up to two years, the normal lifespan of a mouse.


The attempt to hybridize two distantly related species - humans and pigs - was less successful. The team injected more than 1,400 pig embryos with one of three types of human induced pluripotent stem cells. Chimeras injected with intermediate stem cells grew to contain the largest proportion of human cells. However, only about 1 in 100,000 cells in the pig-human chimeras were human. The resulting human-animal chimeras were much smaller than normal and seemed to grow more slowly. The hybrids are still a long way from serving a useful purpose, such as being used as organs for transplantation. In theory, pigs would make great organ donors, because human and pig organs are of similar size.

(Wu et al, Cell, 2017)

Claudia Willmes
PhD Student AG Eickholt / AG Schmitz

Animal – Killer Mice

Researchers have isolated the brain circuitry that coordinates predatory hunting. One set of neurons in the amygdala, the brain’s center of emotion and motivation, cues the animal to pursue prey. Another set signals the animal to use its jaw and neck muscles to bite and kill.

Using optogenetics, they manipulated mice to bite on an object, hold it with their paws and intensively bite at it. The mice were even more aggressive when hungry, which might be attributed to the animal’s interest in obtaining food. When the researchers lesioned the neurons associated with biting and killing, the animals would pursue the prey but not kill it and the biting force of the jaw was decreased.

(Han et al, Cell, 2017)

Human – Female Doctors

Female doctors save more lives! Differences in practice patterns between male and female physicians may have important implications for patient outcomes. One reason might be that female physicians are more likely to adhere to clinical guidelines and evidence-based practice. The study analyzed a random sample of Medicare fee-for-service beneficiaries, 65 years or older and hospitalized with a medical condition. They were treated by internists for four years, and female and male physicians within the same hospital were compared. The association between physician sex and 30-day mortality and readmission rates was significant!

Even when female doctors treated sicker patients like those with sepsis, pneumonia, acute renal failure, and arrhythmias, mortality rates were lower than when patients were treated by male physicians.

(Tsugawa et al, JAMA Internal Medicine, 2016)

Technical – Low-Cost Centrifuge

Inspired by a whirligig toy, Stanford bioengineers developed a 20-cent, hand-powered blood centrifuge with rotational speeds of up to 125,000 rpm. The device can separate blood plasma from red blood cells in 1.5 minutes, no electricity required. Built from paper, twine, and plastic, the “paperfuge” could be used to diagnose diseases like malaria, African sleeping sickness and tuberculosis in the poor, off-the-grid regions where these diseases are most prevalent.

Manu Prakash – senior author of the study – recognized the need for a new type of centrifuge after he saw an expensive centrifuge being used as a doorstop in a rural clinic in Uganda. There was simply no electricity to run it. After some prototyping and computer simulations to capture design variables like disc size, string elasticity and pulling force, the product now matches the performance of standard centrifuges that cost 5000-25000 times as much.

Paperfuge is the third invention from the Prakash lab. They also developed “foldscope”, a fully functional, under-a-dollar paper microscope and a $5 programmable kid’s chemistry set, which enables the execution of precise chemical assays in the field.


Master’s Applications 2017: 250 Applications From Australia to Brazil

Our call for applications was less well received than the previous one, with around 250 applications from around the world. A total of 120 completed applications were thoroughly evaluated by our selection committee, and we invited 44 applicants to sit the first admission test.

Some fun facts: gender was almost equally split globally among the world regions. In Europe, around 65% were female applicants, although the applications rates from Europe, especially from Germany, have dropped significantly.

Admitted students now have to pay a tuition fee of EUR 2,500 per semester. We will keep you posted on scholarships.

Five New PhD Students Joined the Program

We would like to warmly welcome our new PhD students to the program: Juliane Schiweck (AG Eickholdt), Dilansu Güneykaya (AG Kettenmann), Ana Lucía Herrera (AG Bajbouj), Maximilian Hoffmann (AG Judkewitz) and Lisanne Schulze (AG Judkewitz). Ana Lucía was a former master’s student of our program. Lisanne is a NeuroCure fellow.

Meet Prospective Students During the Admissions Symposium

On March 16-17th, 2017, the admissions symposium for the final selection interviews will take place. We are looking for current MSc and PhD students willing to give brief lab visits as well as campus walks. Email the office at office-med-neuro@charite.de if you want to help out (some of you may have been taken around the campus by students last year). On the first day, the casual meet-and-greet with pizza and beer at the HGS lounge – almost a tradition by now – will be followed by a visit to a local pub.

The second day is science-related. The senior master’s students will present their thesis projects.

Another Round of Functional Neuroanatomy

This summer, you are encouraged once again to participate in the elective course “Functional Neuroanatomy” taught by Prof. Wil Smeets of Vrije Universiteit Amsterdam (VU).

Neuroscience Berlin Site Offline

The neuroscience community running the www.neuroscience-berlin.de site has decided to take it offline. From now on, elective courses offered by the MedNeuro faculty can be found at: https://www.medical-neurosciences.de/en/program/elective_courses/.

Upcoming Events

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