

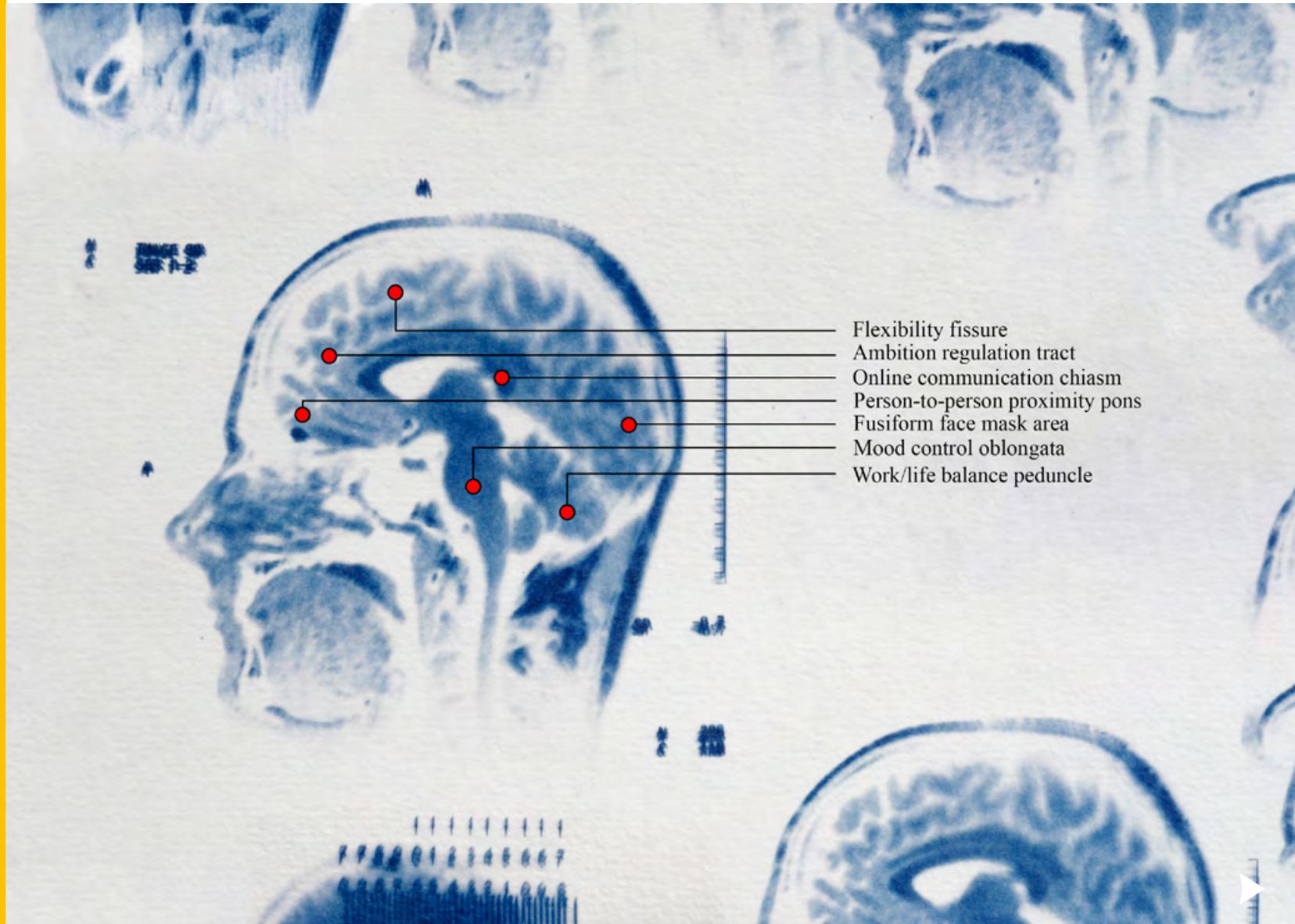
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Uncharted territory



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From the board: Science-Policy integration

The current era illustrates on a daily basis that it is not easy for either scientists or politicians to work with evidence that is still in the making, and translate that into dichotomous decisions. Should we close schools, or not? Should people wear face masks in shops and offices, go to restaurants and meetings, or not? With so many people affected by government measures, the progression of time, and daily coverage by all news outlets, everyone is now becoming a COVID-19 'specialist'.

Still... if you had 90 billion euros to invest in the health and well-being of the Netherlands population, where would you put it? Would you speed up the transition towards a green economy and help save the planet? Would you support people in need, families who struggle with social and financial problems, address loneliness in older persons, change food habits and lifestyle, take measures to prevent mental

disorder or suicide, improve facilities for continuous education? Or would you impose a lockdown in times of COVID-19 to save lives on ICU wards? Not easy to answer.

For all of these issues, facts are crucially important, whether you like them, whether they are convenient or not. That is where science has to play its role.

However, truth is not an easy thing. Within science, we are not only driven by the search for the truth, but we also compete for scarce funds and positions, we try to get our results published in major journals, and, if possible, we would be happy to receive prestigious awards and grants. The search for truth, therefore, should be regulated with sufficient checks and balances to ensure an optimal, non-biased process. And if we find truth, how should we communicate its relevance? Should we learn additional skills to translate



findings in such a way that politicians and administrators can use them in a sensible way, and how should society deal with the levels of uncertainty that are nearly always inherent to scientific findings?

The physical BCN Conference 'Nothing but the Truth' will be postponed until the fall of 2021, hoping that circumstances will then have (somewhat) normalised. In the meanwhile, we will organise a number of online webinars on the above-mentioned conference topics.

For now, on behalf of the BCN board I wish you a good start of the new academic year, in unusual circumstances.

- BY ROBERT SCHOEVERS
- PORTRAIT PHOTO BY MICHIEL HOOIVELD



Language learning and bilingualism: A riveting interview with Prof.Dr. Merel Keijzer

Merel Keijzer is a professor of English linguistics and English as a second language (ESL) and a recipient of the Rosalind Franklin fellowship. She is currently heading a project that is based on second language learning titled : “Language Learning Never Gets Old: Foreign language learning as a tool to promote healthy aging”. The aim of her research group is to provide a new impetus to the field of bilingualism and its applicability in healthy ageing.

What were the successful factors in your application that contributed to the achievement of Rosalind Franklin Fellowship?

When I was a student, I really wanted to do a PhD and after completing my PhD, I thought academia was not apt for me. It was a lot of stress and late hours. So I went into teaching outside of academia and tried applying for different teaching positions. However, I also started missing academia. I was working in Utrecht as an assistant professor for 5 years and then I saw the opening for the Rosalind Franklin fellowships. I thought this was great, since relatively few women are in full-time professor positions. I am not sure what the successful factors were, however, I think the drive and determination were important factors to apply. My CV was also not a standard type of CV since I had a gap in between. Thus, having been away from academia made it more determining to apply for the fellowship. We have to be in the right

place at the right time and know the right people. At that point of time they were looking for someone with a background of second language acquisition (such as I) but from a psycholinguistic perspective. It was a good timing. We must make our chances as good as they can be and that doesn't mean a straight CV. There can be gaps as long as you explain the choices that you made.

How different was your dissertation compared to your current work in terms of the subject covered? What made you interested in this current field (second language development and usage of the same for senior citizens with cognitive impairment)?

The subject covered may seem different, but it is not. There is more of an overlap. I looked at language attrition: How a first language fades away when you become immersed in another language environment, i.e., when

you learn a second language. There was already a second language aspect. Because there wouldn't be first language attrition if there wasn't second language acquisition. I noticed in my PhD that when people became older, they were becoming better in their first language again. This was interesting since the opposite would generally be expected. Thus, I started looking at how this would work with brain aging, inhibition, and how its related to language. This led to my interest in brain and language and how language learning could have a positive effect on cognitive flexibility. When I looked at Dutch people who had moved to Canada years ago, when telephones did not really exist, I learned that they called themselves “immigrants”. People these days tend to call themselves “expats”. There are lots of ways to learn a new language these days. However what is not different from the past is the interaction between the first and second language competition. That is really what drives a bilingualism researcher. This is where my passion lies in.

What have you learnt through this process?

The dynamicity between first and second language and how intricate it is. We can never compare a group of bilinguals and group of monolinguals. There are too



much individual differences, even aside from the number of languages a person speaks. That must be lacking in bilingualism research thus far, since they have compared bilingual people to monolingual people, instead of looking at whether they are bilingual but in reality speak only one language. Some people switch languages with various emotions and factors involved. Neural imaging is also used and I can notice a few differences from such data. Although I am not a psychologist or a neurologist, I am working with people from the medical faculty. Our PhD candidate is also supervised in an interdisciplinary project. It is interesting since we get to use different methods that are generally used in medical sciences, on language research. That has taught me quite a lot.

What are the areas of research that impel you the most today? At the start of your career, were these the areas that captured/ intrigued you?

In a way yes, in a broader since. It has always been language and the fascination behind speaking multiple

"There are lots of ways to learn a new language these days"



languages. That has always remained the same. For example, if you are in the bus and suddenly a person switches from one language to another, I always wondered why they would do that. Was there an emotional reason behind it? Essentially that interests me until this very day. Bilingualism, and partly what causes it, and what it leads to. Overall fascination has not changed since the beginning.

Which methodology or technique that you have developed would have an impact on the field of linguistics?

I had developed a questionnaire with one of my first PhD students from Groningen. Since no two bilinguals are the same and there are always different language experiences, there was no questionnaire for older bilinguals that tapped into their life experiences. That is something that was developed as a part of her PhD and is continued to be used. It is hopefully made clear that it is not a good thing to lock all the bilinguals together, especially seniors. Since, apart from emotions as a factor, there is also well being. Different languages have different emotional attachment to them. This may be more important in senior stages. We must also take into account emotions that underlie bilingualism that can have cognitive effects. Hopefully we have bridged the gap between cognition and emotion. And how they come together in bilingual research. Were there significant differences? Yeah. People have reported an effect of bilingualism on cognition. They outperform people who are monolinguals. The findings were mixed, which led to debates. We found that bilingualism is a huge life experience and has an impact on cognition, but

in conjunction with other factors. For instance, in a cluster analysis, we tried to tie together how open you are to new experiences. Bilingualism showed to be a significant predictor of cognitive performance but not by itself. How intricately it links along with other factors. This may shed a light on other studies.

In our current project we compare learning a new language to learning how to play guitar. We think that there may be an effect of learning a language over learning to play guitar, since there is competition between two languages. And if you learn a complex new skill, it can lead to structural and functional changes. We want to see if there is something unique about language compared to another skill. Another group have shown that as proficiency picks up, different neural pathways are activated. But if you stop using a language, they can be deactivated. It is interesting since they compare learning to juggle to a different kind of skill and what it leads to. It may revert back to baseline when the skill is not being practiced anymore.

Are there any languages that you have tried to learn? How was your experience in this learning process?

It is interesting because the theory behind second language development is that it never really works for yourself. I have learnt few languages. Dutch is my first language, I picked up English when I was 10 at school. In the Netherlands, there has been a lot of exposure to English via music, television and I picked it up in a multimodal way of learning. I think I am better in English compared to the other foreign languages that I have learned. But I don't really use German or French.

"When bilingual people became older, they were becoming better in their first language again"



I would like to learn a language purely for experiment, where there is no exposure at all in the Netherlands; a language notoriously different such as Hungarian. Just to see how that would work. Certain linguist colleagues have tried it and say that it doesn't work. So I would be interested to do the same and see which language teaching method would be better suited in the language acquisition process. At school, we learn a language but not in much detail and I think the social side of language learning must not be forgotten. To make it meaningful and communicative. It would be nice to make language learning more communicative in schools. This would also stimulate social interactions.

■ BY KAVYA PRASAD

■ PHOTOS BY RONALD ZIJLSTRA

Intro new staff writer

> KAVYA PRASAD

As a molecular biologist, it has been intriguing to study the machinery of a model organism. In my master's degree in molecular biology and biotechnology at the University of Groningen, I had successfully worked in cell-biochemistry and cryo-electron microscopic studies. Further, I wanted to understand the underlying molecular mechanisms in disease models and treatment strategies.

The need to unfold molecular mechanisms sparked my curiosity to expand to a more complex model system. Thus, a PhD in molecular imaging and neuroscience using rodent animal models seemed to be a successful step in getting closer to understanding the same. Currently, I am working towards understanding the roles of adenosine and dopaminergic systems in the rodent brain. These receptors are involved in cognitive and motor functions in the striatum of the basal ganglia. I would be looking at the changes in these receptors in-vivo using positron emission tomography (PET) imaging. This is an imaging modality where we can detect diseases and is a real time monitoring of therapeutic responses. At present, I am working on a Parkinson's model system to unfold the effects of treatment in neuroinflammation.

It is a great opportunity for me to work for the BCN newsletter. I am motivated to write about and share breakthroughs in neuroscience.

■ PHOTO BY SANDER MARTENS



The wonderful story of Stefan Huijser

Stefan Huijser is a young teacher and a rising star in academia whose success can be traced back to his heritage and academic entourage spanning the two northern provinces of the Netherlands (Drenthe obviously does not count). Starting in his homeland of Friesland where he decided to pursue a career in psychology at the RUG, to continue an MSc in Twente, both with cum laude. Right now, Stefan is divided between finishing his PhD in cognitive modelling and artificial intelligence at the RUG and his teaching responsibilities in his new home of Deventer.

Stefan, it is so encouraging to do an interview with a PhD candidate who has already started his life in academia. How is it being on both sides of the river, one as a PhD candidate finishing his thesis and as teacher at the Saxion University of Applied Sciences?

Quite challenging, but certainly doable. Starting a new job in a new town is exciting but also demands a lot of energy. New colleagues, new friends, novel tasks, procedures you could not imagine existed, all that takes energy. Finishing your thesis – which is no slouch in itself – is quite a feat. That said, I learned that if you prioritize well you can find time to write your thesis. In fact, working in a new job rekindled my motivation to finish the dissertation. After writing full-time on it for the majority of my final fourth year, it is nice to have it as a side activity.

Can you tell me about the story arc: starting with, what I guess was an unusual start to the academic year due to the situation with the Corona virus? How did you cope with all of the changes?

Does it sound crazy if I say I kind of liked the change in some way? Don't get me wrong, the whole Corona situation is unfortunate (not just for teachers and researchers, but also for our students!), but it also creates opportunities to be creative in how you teach the material to the students. For example, I recently discovered that you can randomly assign students to groups in Blackboard* collaborate (*that website the RuG calls Nestor). In applied science schools, students often work in small groups on assignments. Very frequently, they only engage with students they befriended at some point. By randomly assigning the students in groups I'm mixing up the classroom. Although this may appear to be



By randomly assigning the students in groups I'm mixing up the classroom.

annoying to the students at first, I actually get very nice feedback from doing this. Highly recommended! That said, there are some hard challenges. In particular keeping track of progress of different students is hard. In the traditional classroom, you would just walk past their computers (or their paper notebooks if they're old fashioned) to see how far they are and check if they've understood the material. In an online classroom this is much more difficult to do. What I currently do is let students hand in their assignments for me to check. But this does not seem to be a sustainable solution given the huge extra workload it provides. I'm really happy to get tips from readers on this topic [email me at: s.huijser@saxion.nl]

Amazing. Corona really changed the rules of engagement. Earlier on I went in depth on your current work, but please tell me what is your PhD about? Do you miss the north?

These are two questions Sebastian! But let's start with the first. My PhD is about a phenomenon that everybody is very intimately familiar with: mind-wandering. During my PhD I studied how mind-wandering can arise amongst ongoing activities, and how and why it influences our performance on ongoing activities. Aside from the negative aspects, I was also interested in the positive sides of mind-wandering. For example, there is an



interesting characteristic of mind-wandering that it is very often future-oriented and goal-directed. I studied how effective people can plan ahead whilst performing an ongoing activity. Furthermore, I wrote an opinion article about why mind-wandering is a rational process and how it can support adaptive behaviour (not published yet, I'm sorry!).

Do I miss the north? A bit, but not much. In many regards, Deventer is better place to live than Groningen. It's way more beautiful, less expensive (!), and much less crowded. Also, the surroundings are really nice. If you're an avid cyclist like me there is so much to enjoy here. However, nothing beats home, right? I frequently return to Friesland to visit friends and family.



What drew you to AI and cognitive modelling? was that your passion when you started your studies in psychology? Did you have other aspirations?

As most psychology students, I started with the idea of becoming a therapist after my studies. However, I quickly discovered that listening to someone else's problems all day wasn't going to be my dream job.

Leaving clinical psychology behind, I became really interested in cognitive psychology. I was, and still am, fascinated by how our memory works and how we solve problems. I was also very much interested in technology, therefore, I decided to do my Masters in human factors and engineering psychology in Twente. How I came to do a PhD at AI was actually a happy accident. I did not know much, if anything at all, about cognitive modelling before

There is an interesting characteristic of mind-wandering that it is very often future-oriented and goal-directed. It combined both interests for cognitive psychology and technology. I had an amazing time at the AI department!

I started my PhD. But it combined both interests for cognitive psychology and technology. I had an amazing time at the AI department!

As you mentioned before, you pass through Friesland and Groningen. A true son of the North of the Netherlands, how does this influence your life?

I am not so sure. The Netherlands is really too small for that I think. That said, Frisians (and Groningians ??) are known for being down-to-earth. I would say that also applies to me.

Another aspect of Academia besides research and teaching, is organization. Not everyone knows but you are the former Chair of the BCN PhD Council, how do these kind of organizational skills translate to your new job?

Much more than I thought. Teaching at applied science universities requires a broad skillset. Not only do you need didactic skills, but you also need to have communication skills, pedagogical skills (first year students have barely left puberty), organizational skills and leadership skills. Organizations skills, in particular, are required for setting up courses and organizing

events such as symposia for the students. Leadership is required to manage the classroom, but also to coordinate colleagues who are teaching the same course.

Looking back in your student life, what would you recommend to new students?

Study what you are interested in, not just something that makes you (think you are) employable.

Those are some wise words. Which let me wonder, how does your PhD help you? Do you have anyone you'd like to thank?

If you're looking for a job as a teacher at an applied science university, it really helps to have (or close to having) a PhD. You will likely have some experience with teaching, as well as supervising students. Having that experience is really helpful. Having a PhD also bring other bonuses: you are allowed to do more (complex) tasks, get more opportunities to grow, and get paid more! There are so many people I would like to thank. To have the full list you will have to wait for my dissertation. It will not really fit here. I am really grateful to my supervisors and colleagues at AI. They were so kind, inspiring and supportive! I also want to thank my friends at BCN and the council. You really made my PhD time memorable.

Final question, what does the future holds for Stefan Huijser?

Difficult question! I am not really a person who thinks a lot about what the future might hold. However, I am happy to say I am really happy with teaching now. I don't mind to keep doing that for the foreseeable years.

Thank you for accepting this interview, it was a refreshing perspective on another path of a PhD student and a friend. I can say that whatever path you choose to follow it will be an interesting one.

Thanks Sebastian! I am sure that will also be the case for you.

- BY SEBASTIÁN BALART SÁNCHEZ
- PHOTOS BY GERARD KINGMA AND PHOTOCÉE



Intro new staff writer

> **ANNIKA SAUTER**



During my Bachelor in Pharmaceutical Sciences, I learned to explain mechanisms in the human body based on cellular processes and their underlying chemical equations, physical laws and molecular structures. Basically, I learned to see the human body as a connected cell cluster. Before starting my master in Cognitive Neuroscience, I found it challenging enough to derive implications on a cellular level from the letters and lines in a chemical structure.

After being confronted with studies of cognition, involving not only the human body but also the human mind, the molecular world suddenly seems like a comfort zone.

Meanwhile, I have completed the first year of the Cognitive Neuroscience master at the University of Groningen, also known as the C-track of the BCN research master. Within this first year, I came across multilevel statistics, neuroimaging, questions of consciousness and wrote a thesis on the timing of optimal learning efficiency. Apart from my studies and in order to gain hands-on experience in cognitive research, I did an internship in the Clinic of Neurology of the University Hospital Zurich. I helped with carrying out a study that links sleep restriction to decision making, which was investigated by modulating sleep intensity through auditive stimulation.

I am excited to further expand my understanding of neuroscience and thus of the human body and mind, from drawing chemical structures to drawing conclusions on a cognitive level. Finally, I am looking forward to sharing these insights and my passion for writing in the BCN Newsletter.

■ PHOTO BY SANDER MARTENS

Bits and Pieces: The treasure hunt of grant writing



My current academic life in four words: writing, writing, writing, writing. Emails, articles, grant proposals, columns. I'm on a writing retreat on the Groningen country side. For a week I'm living underneath nothing more than a simple a roof. With just a bed, a table, and 4G internet. That's it. I'm here to write a major grant proposal. My ticket to freedom.

Because that is what a grant can be. Freedom to study what I want. However, getting money to fund my research is often very frustrating. Recently, I received the disappointing news that a grant proposal I worked on for several months was rejected. And as I write this (seriously), I see another grant rejection delivered in my mail box. The frustrating part is often the bad luck with reviewers who simply don't

get it, or refuse to see the beauty of the proposal. It's most frustrating when an idea you believe in, doesn't get to see daylight.

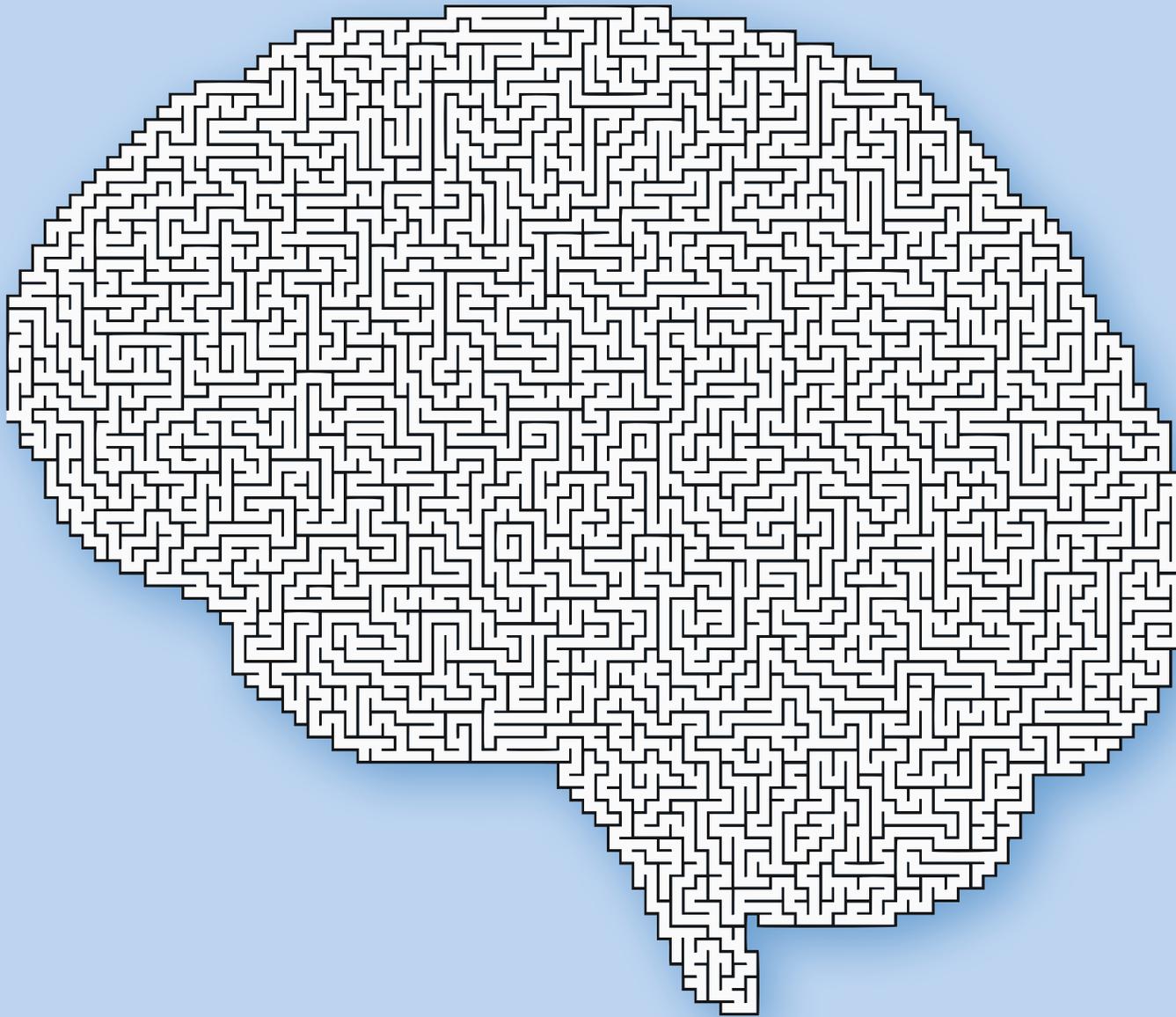
Currently, I'm writing a VIDI-grant proposal. It is a beautiful personal grant that would give me a lot of freedom. So, I want it. However, chances to get it are low, competition is guaranteed to be fierce. I try my best to ignore those facts. Usually my attitude is 'at least someone has to get it, it might as well be me'. And so I start thinking of a topic. Of where I want to go. Of whom I would love to collaborate with. Of which basic questions I would like to see answered. As a PhD-student I was always afraid I wouldn't have enough ideas. Now I don't worry about that anymore. I mostly worry about the deadline, because I tend to start writing way too late.

And then, after some expert-level procrastination, it's suddenly there. Enthusiasm. A bit of love. For grant writing! My work is usually very reactive. I hardly read literature, or learn new things, I hardly write things from scratch. At least that is how it feels. But with grant writing, I do all these things. I love getting lost in pubmed. It feels like a treasure hunt, cross-linking from article to article, finding the literature to substantiate my assumptions, finding out about the creative work and methods of other groups, and experiencing that in the end no one already performed the exact work I'm proposing (even though I occasionally experience a heart attack when one of my brilliant ideas was already proven to be wrong... back in 1979).

I don't know if I will get the money. I do know that I will surely feel desperation somewhere in the coming weeks and will feel like giving up. That I will feel exhausted. But I also know I will be proud of having managed to submit an OK version. A version I can always re-use for future applications. And whatever happens, I will be re-energized. Because I spent time on thinking, on learning things, on working out new ways of answering my research questions. Those are the things that made me decide to be an academic in the first place. At the very least I will have enjoyed a wonderful week somewhere under a simple roof in a windy corner of the province of Groningen.

■ BY MARIE-JOSÉ VAN TOL





NEW TECHNOLOGY HIGHLIGHTS

Can epigenetics help us bridge the gap?

The central dogma in molecular biology describes how proteins are made based on instructions encoded in the DNA structure, which is then transcribed into RNA. This RNA code is then responsible for the translation into the final product (proteins). Epigenetics focuses on the heritable changes which occur on the DNA structure without directly affecting its sequence. This usually means changes in histones (proteins around which DNA helix winds) or chromatin (a complex of DNA, histones and other proteins forming chromosomes). These can affect gene expression levels and consequentially their translation into proteins, for example by “turning off” certain parts of the genome, or influencing the accessibility of a given DNA fragment for transcription.

What role can these epigenetic modifications play in neurodevelopmental disorders? For most of these, no clear genetic markers have been found and it’s usually hard to pin down the biological cause. Autism Spectrum Disorder (ASD) comprises of symptoms such as deficits in social interactions, speech development problems and

repetitive behaviors. Most of the cases are idiopathic, meaning with no known cause (around 85%). The syndromic ones, caused by e.g. 15q duplication, occur relatively rarely. Nevertheless, ASD traits are highly heritable. Since there is a wide etiological heterogeneity, not only in terms of genetics, but also the environment, this begs the question of where the coherent clinical image comes from. Gene expression studies have shown that changes in the coding regions (genes which end up forming proteins) are extremely rare and most loci individually explain less than 1% cases of autism. Environmental risk factors can also be extremely varied, from chemical toxins to maternal infections. This is where epigenetics could come into play, providing an intermediary step between genotype and phenotype.

So far it has been shown that many of the risk genes for ASD are involved in chromatin remodeling, and most epigenome-wide association studies have focused on DNA methylation, which can act as an “off-switch” of genes. However, not much is known about histone modifications in psychiatric diseases, such as e.g. acetylation. Acetylation drives differences in gene expression levels, and is specifically found at sites of active enhancers and promoters (places where the transcription of a gene starts), hence it can serve as a measure of genes’ regulatory function. Epigenetic methods can help us identify where in the genome these modifications occur so we can then deduct which genes are differentially regulated in a given disorder.

In a recent study by Sun et al., this epigenetic signature of ASD was investigated. Levels of acetylation were

measured in samples from post-mortem brain tissue of ASD patients and controls. Differences were found near genes involved in synaptic transmission, immune functions and other aspects known to be linked to ASD. These changes would not be uncovered in “classic” genetic studies, since the change isn’t in the DNA code itself, but rather affects later steps of the transcription process. They also discovered that genes, which are known to be differentially expressed throughout development, had different acetylation levels. Specifically, genes upregulated during early postnatal development (10-12 months after birth) showed different acetylation levels between autism patients and controls. This suggests that these genes were differentially expressed, which could potentially be linked to occurring at that time experience-dependent synaptogenesis.

Epigenetics could also be useful for investigating neurodegenerative diseases, such as Alzheimer’s or Parkinson’s. While we have not yet found any reliable genetic signatures for these, epigenome-wide studies have pointed to differences in histone modifications coherent between patients with and without neurodegenerative diseases. Additionally, one other epigenetics modification, namely chromatin remodeling has recently been shown to play a crucial role in the ageing brain. Since chromatin is responsible for the tight packaging of the genetic material, its modification can influence how accessible certain DNA fragments are for the RNA transcription, and therefore for translation into proteins. Imbalances in chromatin functioning may accumulate over time, also explaining the importance of ageing as a risk factor.

“Epigenetics could also be useful for investigating neurodegenerative diseases, such as Alzheimer’s or Parkinson’s.”

The coherent image of acetylation change in ASD patients suggests that its diverse mechanisms might share common downstream epigenetic changes. This could also be the case for other neurological disorders, not only in the context of histone modifications but also chromatin structure, which may contribute to the progression and development of neurodegenerative diseases. Still many questions remain, such as investigating the causal mechanism of these changes. However epigenetics could provide a new window into the mechanisms of many neurological disorders.

■ BY ALEKSANDRA CYWINSKA

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> BCN MASTER COLUMN

Expectations and Reality

Am I going mad, or is just the world going crazy? This fear daunts people with psychotic experiences who I have studied. But as my research project progressed, I began to question this myself as well.

On a January evening, I arrived in Cambridge in the United Kingdom. For the coming six months, I would study hallucinations and delusions for my final BCN master project. In particular, I studied how our expectations of things and situations cause the emergence of hallucinations and delusion. For instance, if you highly expect your phone to ring because you await a friends' message, you might end up hearing the ring while your phone remained completely silent.

But how about my own expectations? For example, I expected that the Brexit would be the greatest hurdle for the Cambridge adventure. So on the 31st of January, I congratulated myself that the worst case scenario hadn't happened, and together with my housemates we raised our glasses at our count-down dinner with relieved smiles. What we didn't know was that the greatest hurdle was yet to come.

Expectations seem especially beneficial in an environment that is constant and logical. But how do you know what to expect, or decide who has become mad when the world turns upside down due to a pandemic? Had I really become mad when I decided to fly back home, as my housemates quietly questioned. Besides, should you quickly give up your long-held beliefs, or firmly hang on to them? Half of my belongings are still overseas, as I couldn't believe then that the crisis would really last this long.

Not only can expectations change rapidly, but they can also be induced swiftly. In one of our study tasks, we induced with Pavlovian conditioning the expectation that participants would hear a beep whenever a checkerboard flashed onscreen. Some participants relied on their expectations so much, that they reported hearing a tone while it was in fact not presented (we

call this a conditioned hallucination). Interestingly, our healthy participants who were more susceptible to these conditioned hallucinations were also more prone to experience hallucinations and delusions in their daily lives.

Moreover, we found that our healthy participants were far less confident in their responses than psychotic patients in a previous study. Possibly, there's a link between how confident you are about what you see, and developing a psychotic illness. So perhaps precisely my doubts on whether my thoughts were delusional indicated that I was not yet becoming my own research subject. But, just that the world was going crazy.

■ BY FRANCISKA DE BEER



A photograph of a chessboard with several pieces. In the foreground, a white pawn is in sharp focus, standing on a light-colored square. Behind it, a white king is also visible but out of focus. The background is a soft, blurred blue gradient.

Mindwise: You Are Not a Virologist

Second-year Psychology students participating in the University Honours College followed a workshop on Blogging Science, which aims to help students to learn how to communicate science to the general public through informing, expressing an opinion, and relating scientific topics to relevant issues in society. Some of these written blog posts were selected to be published on Mindwise. This is the second blog post of this series and was written by Finn Kappus.

You might be a scientist, a prospective scientist, or just a person interested in psychology. Regardless of this, you are most likely not capable of debating the science behind COVID-19.

On a daily basis, we receive news about the pandemic. We check how many people are affected and if the government has taken new steps to fight the crisis. However, instead of supporting health-related decisions

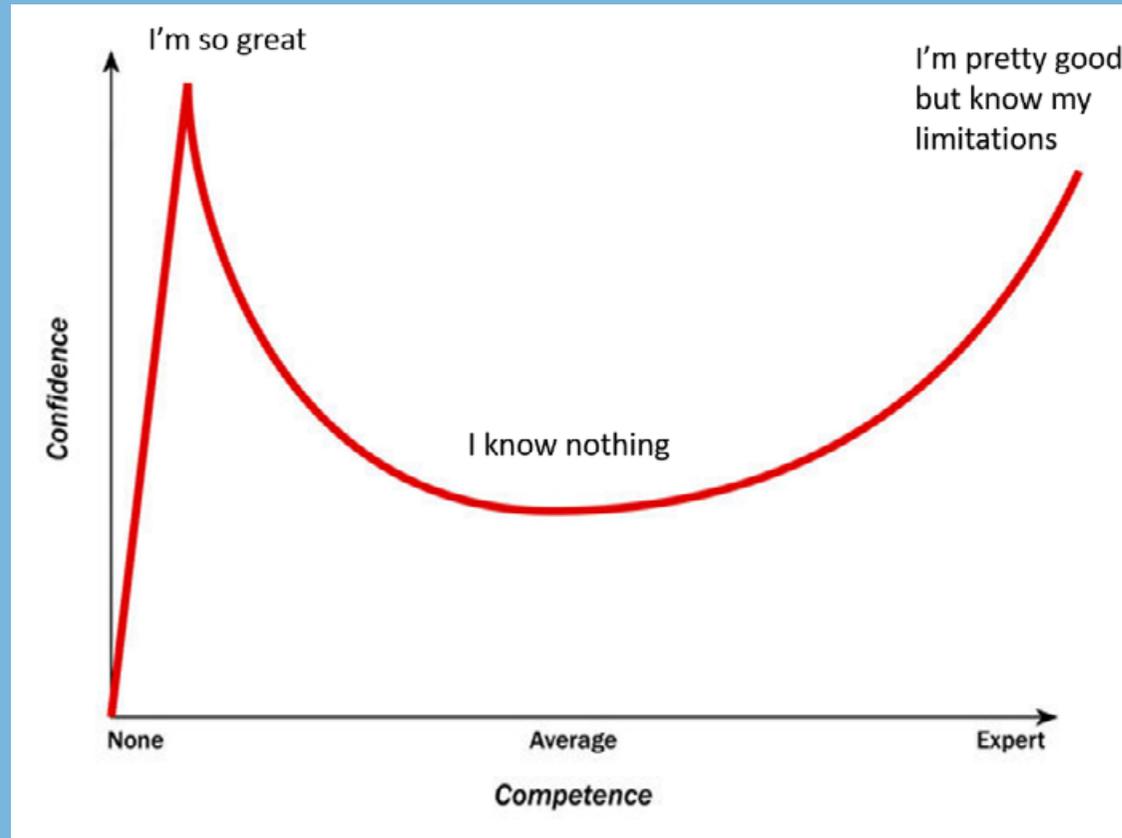


based on scientific facts, we discuss them in long phone calls with friends and relatives mainly because there is not much else to talk about in times of a global pandemic. Just the other day, I was talking to my mother and I noticed that we have developed distinct opinions about the measures taken by the government, the estimated number of unknown cases, and whether or not COVID-19 is deadlier than regular flu. Is it not weird how we believe to understand such a complex disease to the extent that we are confident enough to evaluate institutional efforts? It actually is not.

The Dunning-Kruger effect

in the field of Psychology, the Dunning-Kruger effect (Kruger & Dunning, 1999) has been known for quite a while. It is a bias in which people overestimate their own capabilities due to a lack of cognitive abilities in combination with missing awareness about their inability. Let's consider Donald Trump. The current president of the United States is known for being overly confident. In fact, there are several topics that he claims to have a better knowledge of than anyone else such as renewable energy, social media, taxes, and the extremist group ISIS. This would be quite the astonishing extent of expertise for a single person if it were actually accurate. However, it seems like Trump has not exceeded a relatively low level of competences in the aforementioned fields and he appears to be unaware of it.

The figure below illustrates this phenomenon conceptually and displays people like Trump at the first tip of the graph, on the opposite side in relation to experts.



(Original source: <https://www.trainingpeaks.com/coach-blog/where-are-you-on-the-dunning-kruger-wiggle/>)

My mother and I, and probably many more, are not that different from people like Trump after all. We watch the news, read articles, or do other kinds of “research” about COVID-19, which is just about sufficient to obtain a basic understanding of the virus. By contrast, it takes four years

of undergraduate school, four to six years of graduate school (Ph.D.), and three to five years of postdoctoral research training to become an established virologist according to the American Society for Virology. Yet, we argue as if virology is no more intricate than a child's puzzle. We fail to see that we have merely finished the frame of the puzzle and even though virologists might have a few pieces missing as well due to the complexity

of the pandemic, they are definitely a lot closer to seeing the full picture. We need to be careful when questioning information provided by professionals and realize that we are not qualified enough to debate the science behind COVID-19. Obviously, a critical mindset is appropriate with certain kinds of information, but we need to have trust in the scientific process and embrace the governmental measures that have been thoroughly developed in collaboration with academic institutions. We need to be careful when questioning information provided by professionals and realize that we are not qualified enough to debate the science behind COVID-19.

Although a modest dispute with your mother about COVID-19 seems relatively harmless, it can get the ball rolling. Opinions and beliefs without underlying proof may circulate all around the world. This so-called fake news constitutes a serious threat in times of the crisis. In fact, UNESCO is actively opposing disinformation and endorses true facts instead, after a significant increase in the prevalence of false information has been observed. This covers disinformation about the origin of the virus, possible interventions, as well as statements by governments or celebrities. For example, Bill Gates has been accused of misusing the development of a vaccine against COVID-19 to implant microchips despite any evidence on this matter. Consequently, efforts by social media platforms have become crucial because of their facilitating function in the spread of fake news. For instance, the messenger service WhatsApp reacted to the recent developments by implementing limitations to the forwarding function of messages.

Opinions and beliefs without underlying proof may circulate all around the world. This so-called fake news constitutes a serious threat in times of the crisis. Certainly, you are not a virologist, hence your understanding of the virus is limited. Being aware of the limits of your knowledge is important to prevent the occurrence of the Dunning-Kruger Effect, which may have severe consequences during the ongoing pandemic. Regardless of how annoying it is to wear a face mask or to keep the distance at the beach on a hot summer day, there is a perspicuous reason for the measures: stopping the spread of COVID-19. Everyone should remind themselves that even with decreasing numbers in Europe, the end of the pandemic is not predictable. It remains crucial to take the situation seriously by reporting false information and searching for reliable sources, as well as adhering to governmental measures.

■ BY FINN KAPPUS

Originally published by [Mindwise](#)

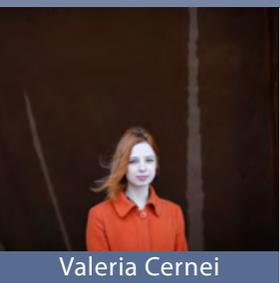
■ ILLUSTRATIVE PHOTO BY SÉBASTIEN DUPONT

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Finn Kappus is currently in his second year of Psychology at the University of Groningen, Netherlands. His main interests are Environmental Psychology and Economic Psychology. These evolved due to his commitment to a more sustainable living in a broad way and his deep interest in the global economy.



Valeria Cernei



Aleksandra Cywinska



Franciska de Beer



Kavya Prasad



Michiel Hooiveld



Abigail Toth



Evelyn Kuiper-Drenth



Sander Martens

New staff writers wanted!

Do you enjoy reading the Newsletter? If so, why not join our enthusiastic editorial team and make it even better? Regardless of whether you're a master student or PhD student, it's a great way to expand your network, improve your English writing skills, and be actively involved in BCN. Interested? Send an e-mail to Sander Martens, sander.martens@gmail.com!



Sebastian Balart-Sanchez



Jaime Mondragon



Joost Schreuder



Anna Neustaeter



Marlijn Besten



Namrata Rao



Annika Sauer



Mindwise: The value of connectedness in times of online learning

On Thursday, March 12, the University of Groningen decided to close its doors for all activities, including teaching, effective immediately. Over the weekend that followed, courses and student supervision suddenly all moved online. Teachers invested amazing efforts and time to make this transition possible, while working from home and not knowing how this time will affect everyone's lives. From their side, students were also unsure of the pandemic's consequences. Many students, especially those coming from outside The Netherlands, decided to travel home to their families. Others decided to stay in Groningen.

Online teaching overnight

While our lives changed dramatically, University activities continued online. By Monday, March 16, teachers were prepared to go online and teach their last lectures of the block, but testing for large courses was not as easy to adjust to. To support students in these times, many offered additional online meetings and extended deadlines. Recording lectures at night when children finally slept suddenly became a common practice for many teachers. As members of the Educational Committee, we read all course evaluations and were impressed by the teachers' creativity and engagement. Some teachers did their outmost best, but also had to invest more than the usual hours during the transition. Some teachers offered more contact

moments to encourage their students and engage them in their learning – making online learning alone at home fun. Others used lecture recordings from last year.

Staying focused on their studies has been a challenge for many students. However, many expressed in a short survey that the move to online teaching helped structure the block and workload better. In particular, the new interactive/live lectures were deemed a success and the new focus on assignments was seen as a positive change. For example, Stephan Schleim changed the lectures to a podcast style and a weekly Q&A in his course "Theory of Science". The multiple-choice exam became weekly assignments, consisting of open questions for groups to work on. Students mentioned

that this enabled them to engage with content on a higher level.

From online to "hybrid" teaching

Recently, the Dutch government has started relaxing restrictions at local or neighborhood level. However, life at the University is unlikely to return to what it used to be, anytime soon. The doors are still closed and will only open slowly for some small-scale teaching. Teachers are now asked to think how to design their courses for the first semester, using hybrid forms of teaching if possible. Hybrid forms, but what does this mean? Lectures will continue to be online and only some small groups could occasionally meet in University buildings, if teachers feel safe to do this and social distancing measures can be followed. Master students will most likely be able to meet some of their fellow students and teachers. However, how will this work in the bachelor programs? This is currently still discussed by management and teachers. How would you as a student decide? Staying at home following online education (to save some money) or moving to Groningen to have the chance to possibly meet some students and teachers?



One thing is clear, at the moment many students feel left in the dark when it comes to what the implications of “hybrid teaching” will be for them. Overall, it seems that if hybrid teaching means meeting at the University once a week, then most would prefer to stay online.

Longing and belonging

As seen from both the student and staff perspective, online teaching has been a positive experience for most, and many seem to not mind that it may carry on this way for another semester. However, our current students have already had the chance to get to know their fellow students before the pandemic changed everything; they knew their small group members with whom they were working hard on each assignment. Yet, from September onwards the reality will be different, and this presents yet another challenge. First-year students or new master students have not yet met their fellow peers. In this way, students’ needs are fundamentally different to the ones from the past few months. They long to meet fellow students, establish an academic and social network, and form connections with lecturers. But also, the seemingly smaller things. Sitting in the garden or canteen and enjoying a coffee, the impromptu meetings with friends and even teachers to discuss material, life, and anything else that may come up.

As a University, we want students to experience a sense of belonging, and inclusion, and students also long for this. So now, it’s our job to focus on how we can foster this through online teaching, or even “hybrid teaching”.



Suggestions to promote inclusion

1. For each course, create the opportunity for collaborative work groups on the Nestor environment. Allowing students to meet people beyond that of their small-scale teaching, discuss things related to course, but also university life in general. It can be linked to that of a study group, or social group.
2. Teacher office hours, online or in person. The University is a large institution, one that it feels easy to get lost in. Lecturers could provide these hours to form connections with students.
3. Interactive lectures. Online lectures are fine, but only when they are interactive. Students do not want pre-recorded lectures, but they long for interaction, stimulation, and the ability to ask questions and partake in discussions. This allows students to feel part of something.
4. Buddy programs: New students in previous years have

been assigned buddies. Older students who help new students adjust, and often fosters a friendship between two people. We encourage this system to persist, it would provide new students a base someone who knows more than they do about student life, but is also in the same position as they are, as a student.

In the Educational Committee, we are discussing these issues and trying to advise our director of teaching. To conclude, we strive to focus on the quality of the education but acknowledge that this quality is contingent on both students' and staff's well-being (the current overwork is worrisome!). Administrators/politicians/anyone may interpret online education often too opportunistically and may argue to stay here. This is not what we meant in this post. Teachers invested extraordinary efforts in these specific current times and the lessons learned might be useful in the future – but mostly online is not our aim. Developing means which promote feelings of belonging and inclusion for our students and sharing good practices of online teaching will hopefully help to develop suitable forms of hybrid teaching in this specific times – until the doors will open again for all!

■ **BY MARIA UGLVIG AND NINA HANSEN,
WHO ARE MEMBERS OF THE PSYCHOLOGY
EDUCATIONAL COMMITTEE.**

Originally published by [Mindwise](#)



Maria Uglvig is currently finishing her Masters in Work, Organizational and Personnel Psychology. Being part of the educational committee and working as a student mentor, her interests have mainly lied in how to identify/implement innovative teaching methods and a focus on student well-being. Throughout the three years serving the educational committee she has enjoyed engaging with and getting to know the university in a different way than that of being a student. The committee includes 3 other students, who helped to conduct the survey among students, and 4 teachers. Their aim is to safeguard and improve the quality of education within the Psychology programs. This year, the Committee aimed to help to support students and teachers when the University has to close its doors and transferred to online teaching. This blogs is one of their outcomes, to share the students' and teachers' perspective with a broader audience. Nina is associate professor for social psychology and has been the chair of the committee for four years and her term will soon end. Her research centers on the theme of the social psychology of cultural development. She studies cultural changes that are instigated by "development aid" in the Global South and migration in the Global North (focusing on newcomers' integration).

BCN WEBINAR

A couple weeks ago we decided that the BCN conference **Nothing but the truth**, planned to take place on October 19-20 this year, had to be postponed to **November 1-2 next** year due to the corona virus.

Since then we have been working hard on digital updates leading up to the conference and we are excited to announce our first online event...!

Casper Albers, professor in applied statistics and data visualization at the faculty of behavioural and social sciences, will give a webinar titled **'Looking at data: What the data can tell us'**.

During this webinar he will share his expertise on data visualization and misleading graphs. He will provide tips and tricks for researchers on how to present results in a fair way and how to recognize misleading graphs.

This event is organized in collaboration with DASH and will take place on **October 20, 2020, 14.00-15.00 hours**. More information will follow soon on our website www.nothingbutthetruth.nl!

By Amke Müller

Illustrations by Sander Martens



> PHD COUNCIL NEWS

Dear BCNers,

We hope your research projects are restarting, that you are all healthy and adapted the best you could to this “new normality” of a social distancing context.

We have been in contact with several BCNers for the past months in our virtual events, including the Q&A session with Karen Huizing on “How to keep motivated and stay sane during COVID-19”, the first “Virtual PubQuiz” and the online versions of the “BCN Retreat”. We can say that all of our lives have certainly changed. Most have come up with creative adapting solutions, and we are also proud to hear that BCNers have a natural talent for connecting with each other, regardless of the medium.

Cheers for that!

BCN PhD Student Council Events

> BCN online lecture with Jimmy Stehberg

On May 28th, a BCN lecture was organized by Rodrigo Moraga. This was a test lecture, to further create an online BCN lecture series with researchers from around the world. The invited guest was Prof. Jimmy Stehberg, from Universidad Andres Bello in Chile and the presentation title was: “Astroglial regulation of glutamatergic transmission via release of glutamate and D-serine is necessary for short-term fear memory and their excessive release during chronic stress contributes to the development of depression”. In his talk Prof. Stehberg talked about astrocytes and how the involvement of these cells in neurotransmission is involved in a series of psychiatric diseases in animal models. He made a special emphasis on the release of astrocytic glutamate and D-serine in the modulation of behaviours including fear memory, and both anxiety-like and depressive-like behaviours. This lecture had a very broad audience and interesting scientific discussions were had. We hope that you enjoyed it.

> How to keep motivated and stay sane during COVID-19

In the past 3 months, together with GOPHER, we invited Karen Huizing to lead a questions and answer’s (Q&A) webinar on mental health related to the COVID-19 pandemic. The event was held using Zoom, logistically remotely managed by both the GOPHER association and the BCN PhD council members Magdalini Ioannou and Rodrigo Moraga.

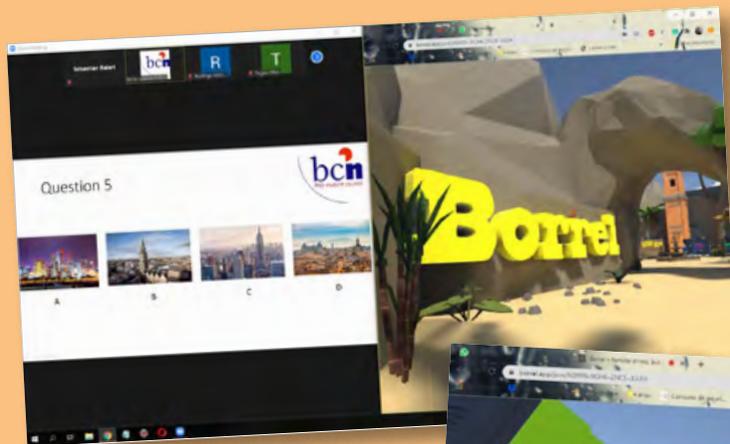
The event was attended by both master and PhD students of BCN. Dr. Huizing talked about how to cope with stress and work management in this COVID-19 pandemic. In this session, she actively asked the audience about their experiences in the last period, including the problems that may have arisen, and how people were reacting and coping to them. She gave several pieces of advice in order to improve mental health for the following period. One of the main pieces of advice was to take days off (around 2 weeks) to be able to forget about work, because it takes more than one week away to really disconnect. Other advice included to work 40 minutes (maximum time of attention span) with 15 minutes break in between, to work during the normal working hours, to not go to bed thinking about work, and to keep the “before COVID-19” routine, including waking up for regular working hours, taking a shower and dressing up as if you are going to work.

We hope that the people who attended found it useful, and we thank them for their assistance. More events like this one will be planned for the future. Also if you have special requirements, you can send us your ideas to our email (see below).



> Virtual BCN Pubquiz

The first ever virtual BCN PubQuiz was a sound success. The event was lead organized by Emile D'Angremont, who came with a novel app 'Borrel' to meet in a virtual environment that allowed us to move, interact and play. This gave an extra kick-off to the event, people were logged in to the event and were "transported" to an island as a virtual avatar whose head was their webcam feed.



To make the event more real, the virtual environment only allowed you to hear the surrounding avatars close to you, so as long as you were "distant" from the other teams, no one would hear your discussion related to the answers of the PubQuiz. In order to maintain this, we were spread across the island trying to catch any spies from other teams, meanwhile Emile's voice was heard by all participants.

A fun and unusual PubQuiz, where five teams competed for the first place. The winning team was: "Last but not Yeast", who were virtually prized at the podium of the island in front of all participants.

Online BCN Retreat

Together with the BCN coordinator Diana Koopmans, we organized the online versions of the BCN retreat. A short pilot online version was first held on May 13th, 2020, in



which 8 PhD students were asked to present their work. After a successful first attempt, an evaluation form was sent out, and the outcome of it was used to improve a second online version of the retreat. This improved online version, was a longer version of the retreat, and was held on June 2nd, 2020. This version had 12 presenters, and an online 'scientific speed dating' session was launched. Both versions were hosted by Rodrigo Moraga, the chair of the BCN PhD council, and co-hosted by Tiago Medeiros, another member of the council. We hope that the people who experienced these online sessions enjoyed them and found them useful.

We are currently contacting scientists around the world to give online lectures for the BCN community. If you have suggestions about presenters, we would like to hear them. You can always send them via email, Facebook, or contacting one of the members of the BCN PhD Student Council.

The BCN PhD Student Council
Rodrigo Moraga
Sebastián A. Balart Sánchez
Mayra Bittencourt Villalpando
Emile D'Angremont
Hermine Berberyan
Alejandro Marmolejo Garza
Tiago Medeiros Furquim Mendonça
Magdalini Ioannou

email: phdcouncil1@gmail.com

> PHD AND OTHER NEWS

Covid-19

On Monday March 16, we were all told that we should work at home. And we all did. At the beginning, we thought that this would just be for a short period, but very soon, we realized that this would be reality for quite a long time. We tried to adapt to this new situation, I hope that you also did!

We started to organize online courses, like Managing your PhD, and the BCN Statistics course. Even the BCN retreat took place online twice. The BCN PhD council started to organize Zoom activities right from the beginning. I hope you participated and enjoyed these initiatives.

A positive side effect of this new situation is that it gave us a fresh look at what we are organizing. We realized that we should organize online events more often in the future. The BCN PhD council started a lecture series, but they would appreciate your input! Let them (or me) know who you would like to invite for a BCN lecture! The world is open now! Let us organize an online lecture with the possibility to interact with your favorite scientist!

BCN Courses

BCN expects that all courses during fall 2020 will be organized online. However, there is not a complete overview of courses at this time. As soon as a BCN course is organized, I will send an email invitation to all BCN PhD students.

BCN Orientation Course

The BCN Orientation Course will start on September 11th (instead of the 4th, as communicated earlier), and continue every Friday from 13:00 – 17:00 hrs until November 20th, 2020. Please note that this is a compulsory course for all BCN Research Master Students and BCN PhD students.

We are currently still working on the online edition, and more details will soon be available in the course application system, see link below.

BCN Symposium Nothing but the Truth

If it were not for the Corona virus, we would have now been very busy organizing the BCN symposium ‘Nothing but the Truth’, which was originally planned to take place in October this year. However, earlier this summer we decided to postpone the symposium until 2021. The new dates are now November 1st and 2nd, 2021. Fortunately, the planned speakers are still willing to participate in the 2021 edition. In the meantime, we will organize online webinars that fit the theme of the symposium. More information will follow soon.

Agenda BCN Activities

> September 11, 2020
start BCN Orientation Course

Course application:
<http://cursus.webhosting.rug.nl/gsms>
 Please check the website for more detailed information.

■ BY DIANA KOOPMANS



WWW.PHDCOMICS.COM

Cool links

- > The dimming of Betelgeuse earlier this year may be explained by a “sneeze”, an ejection of hot, dense gas that quickly cooled and blocked viewing of the southern part of the star. However, the mass ejection did not arise from the pole of the star, where the gravity is weakest, baffling astronomers further.

Press article:

<https://astronomy.com/news/2020/08/a-stellar-sneeze-could-explain-betelgeuses-dimming>

Original publication:

<https://iopscience.iop.org/article/10.3847/1538-4357/aba516/pdf>

- > A multinational Ancientbiotics team from the UK and USA found that a potion called Bald’s eyesalve potion, obtained from the 10th century Bald’s leechbook, is effective against Methicillin-resistant Staphylococcus aureus (MRSA), often referred to as ‘hospital bacteria’, in both mice and in vitro studies. Ingredients of the potion include onion, garlic, wine, and cow’s bile salts.

Press article:

<https://www.freethink.com/articles/medieval-medicine>

Original publication:

<https://www.nature.com/articles/s41598-020-69273-8>

- > Caffeine plays an ambiguous role for migraine sufferers, acting as both a treatment as well as a trigger.

Original publication:

<https://www.mdpi.com/2072-6643/12/8/2259/htm>

- > Painting eyes on cow butts helps ward off predators. The study, performed in Botswana, selected 14 cattle herds in areas of reportedly high predation rates; one third of the cattle had eye marks painted on the rump, one third acted as controls where crosses were painted in place of the eye markings, and one third remained unmarked. Ambush predators, like lions, were significantly less likely to kill cattle with artificial eye spots, when compared with either cross marked or unmarked controls.

Original publication:

<https://www.nature.com/articles/s42003-020-01156-0#Abs1>

> GRAND STUFF

BCN researchers on Youtube

<https://www.rug.nl/research/behavioural-cognitive-neurosciences/organisation/bcn-researchers-on-youtube>

Iris Sommer in the Lancet

The Lancet has published a personal profile of Iris Sommer (Cognitive Neuroscience Center, BSCS, UMCG)

New book on ADHD by Laura Batstra

She has written a book, Hoe voorkom je ADHD? Door de diagnose niet te stellen (How can ADHD be prevented? By not diagnosing it). She organized Festival Apart, for more tolerance for people who are 'different'. And she has also developed a plan for children's birthday parties for the whole class. All of these activities typify psychologist Laura Batstra.
<https://www.rug.nl/news/2020/02/wezitten-vast-in-het-stoornisdenken>

Jelmer Borst - Better understanding of the human brain

'Reading thoughts' – this is what keeps Jelmer Borst busy. Not in an esoteric way but with high-tech neuro-imaging techniques. In this way, he gains insight into what happens in our brains if, for example, we multitask, solve problems or allow our thoughts to drift.
<https://www.rug.nl/news/2020/03/beter-begrip-van-het-menselijke-brein>



■ PHOTO BY SANDER MARTENS



■ PHOTO BY ELMER SPAARGAREN

Insight

Iris Sommer—unravelling biological mechanisms of psychiatric disorders

When Iris Sommer retires, she wants to leave behind a new treatment for psychiatric illness that really makes a difference. "I realise this is easier said than done," she tells *The Lancet Psychiatry*. "In neurology, we understand underlying mechanisms so much better than before. But in psychiatry, we are still trying to understand even the basic mechanisms behind many conditions."

Now director of the Research Institute of Brain and Cognition at University Medical Center Groningen, Groningen, Netherlands, Sommer's career has always crossed the boundaries between neurology and psychiatry. "I began doing research in the first year of medical school. I always like to ask why, rather than just learn the facts" she says. At medical school in Amsterdam she worked on research projects on depression in patients with Parkinson's and Alzheimer's disease.

Her first clinical work was with patients with Parkinson's disease, but her fascination with psychosis made her choose to become a psychiatrist, and she trained with Rene Kahn (now chair of psychiatry at Mount Sinai, New York, NY, USA). Her PhD and much of her clinical work since has been on understanding schizophrenia. Her first publication as a PhD student was in *The Lancet*, reporting on the phenomenon of cerebral mirror-imaging, a consequence of monozygotic twinning. During her PhD was also when she and her husband (Robert Schoevers) had their two children. "I found that research was much more flexible than clinic work with a young family" she says.

For much of the last two decades she studied auditory hallucinations and established a "Voices Clinic" at the University of Utrecht, Utrecht, Netherlands to help these patients. Her team discovered that when patients hear voices, there is language activity mainly in the right hemisphere, in contrast to normal language, which involves mainly the left. More recently, in collaboration with Kenneth Hugdahl at the University of Bergen, Bergen, Norway (where she was a visiting professor), they discovered that a specific area of the brain activates just before a voice is heard, and then deactivates again shortly before the voice stops. "It's almost like a switch," Sommer explains. "We are currently writing up the results and looking at ways to target that switch, to turn the voices off." Simultaneously, she performs clinical trials to optimise treatment for people with schizophrenia, with one recently published in this journal.

In 2016, Sommer's career changed direction when she took up a post at the Department of Biomedical Sciences at the University Medical Center Groningen. The facilities in this new location allow her to study cellular

and molecular brain mechanisms that might underpin psychiatric disorders. "Many mechanisms could play a role in multiple psychiatric symptoms across different diagnoses. When investigating cellular and molecular mechanisms, it makes sense to broaden the scope to also include bipolar disorder, unipolar depression and even neurological diseases like Parkinson's and Alzheimer's disease."

Her team is now studying how the microbiome might influence cognition, which could be relevant for various psychiatric and neurological disorders. An ongoing study is analysing the effects of providing nine bacterial strains that improve gut barrier function for patients with bipolar disorder or schizophrenia. "The microbiome is something we can manipulate easily," she explains.

Sommer's team, including PhD student Janna de Boer, is developing a biomarker based on the quantitative analysis of spontaneous speech. Such a biomarker could facilitate diagnosis of psychiatric disorders and alert patients to relapses. "The acoustics, linguistics, grammar and prosody all change when people develop a psychiatric disorder. Specific speech characteristics provide information about the type and severity of that disorder" explains Sommer.

She also initiated and leads the nationwide HAMLETT consortium, a large treatment study for people with a first episode of psychosis, who are followed up for 10 years. This consortium not only yields information on the clinical course of psychosis and the influence of antipsychotic medication, but it also unites most psychosis centres in the Netherlands, providing a close circle for implementation of new findings.

Outside her lab she is a bestselling scientific writer, now finishing her fourth book on different aspects of the brain and brain disorders. A book reviewer called her the Dutch Oliver Sacks, an author that she admires and with whom she wrote a case report for *The Lancet*.

"Iris is one of the most creative and knowledgeable enthusiastic persons I have ever met. She is the queen of research on hallucinations," says Hugdahl. "Her enthusiasm and positive approach to science has deeply impressed me, but perhaps equally much the way she cares for people. When my wife passed away three years ago, Iris invited me to spend time with her research group because 'we need to cheer you up', which she did by inviting me to her home and discussing science while walking her dog in the evenings."

Tony Kirby



For more on Iris Sommer's PhD publication see *Lancet* 1999; 354: 1445-46

For more on brain processing of auditory hallucinations see *Brain* 2008; 131: 3169-77

For more on schizophrenia treatment research see *Articles Lancet Psychiatry* 2018; 5: 797-807

For more on spontaneous speech as a biomarker see *NPJ Schizophrenia* 2020; 6: 10. DOI:10.1038/s41537-020-0093-3

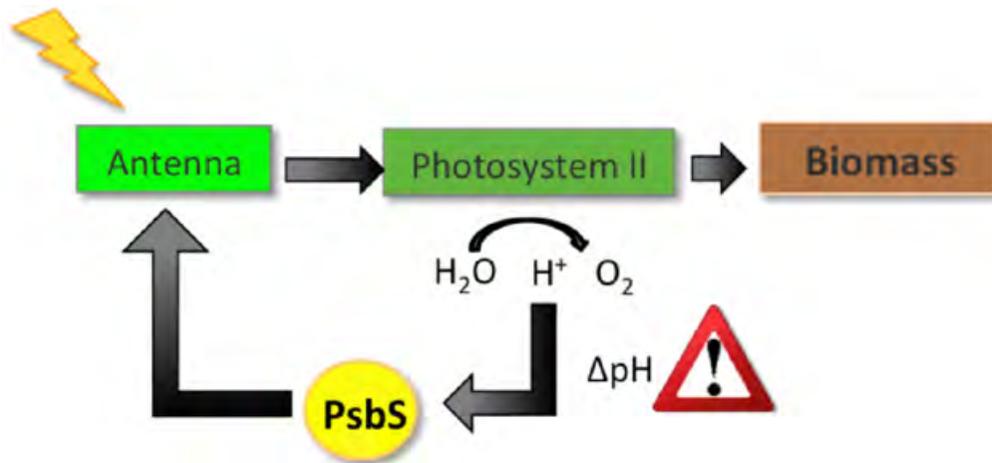
For the Case Report with Oliver Sacks see *Lancet* 2014; 384: 1998

Prof. Marrink and Dr. Jansen partners in ENW-GROOT project of EUR 2.7 million

Siewert-Jan Marrink of the Groningen Biomolecular Sciences and Biotechnology Institute (GBB) and Thomas la Cour Jansen from the Zernike Institute for Advanced Materials (ZIAM) are two of six partners in an ENW-GROOT project by the NWO.

The project received EUR 2.7 million in total, for research on how the PsbS protein in plants can recognize danger.

https://www.rug.nl/news/2020/04/prof.-marrink-and-dr.-jansen-partners-in-enw-groot-project-of-eur-2_7-million



Over 3 million euros for research in esketamine as a patient-friendly alternative to electroshocks

The UMCG, together with several hospitals and mental healthcare institutions, will start a study that may offer an alternative to electroconvulsive therapy (ECT) as a last resort in the treatment of major depression. In the coming years it will be investigated whether oral intake of the anaesthetic esketamine is equally effective or even more effective. The study could lead to an enormous improvement in the care of individuals with very severe depression for whom ECT is the only remaining treatment option because they do not or insufficiently respond to psychotherapy and antidepressants. This research is made possible with a subsidy of €3.2 million from Zorginstituut Nederland and ZonMw, through the subsidy scheme Veelbelovende Zorg (Promising Care).

Spinoza Prize awarded to Pauline Kleingeld

Pauline Kleingeld has won the Spinoza Prize 2020. The NWO Spinoza Prize is the highest distinction in Dutch academia.

<https://www.rug.nl/news/2020/06/spinoza-prize-awarded-to-pauline-kleingeld>



■ PHOTO BY REYER BOXEM

> PROMOTIONS

Perinatal tissue oxygenation and neurodevelopment in preterm and growth restricted infants

PHD STUDENT

A.E. Richter

THESIS

Perinatal tissue oxygenation and neurodevelopment in preterm and growth restricted infants

PROMOTORS

Prof. dr. A.F. Bos

Prof. S.A. Scherjon

COPROMOTOR

Dr. E.M.W. Kooi

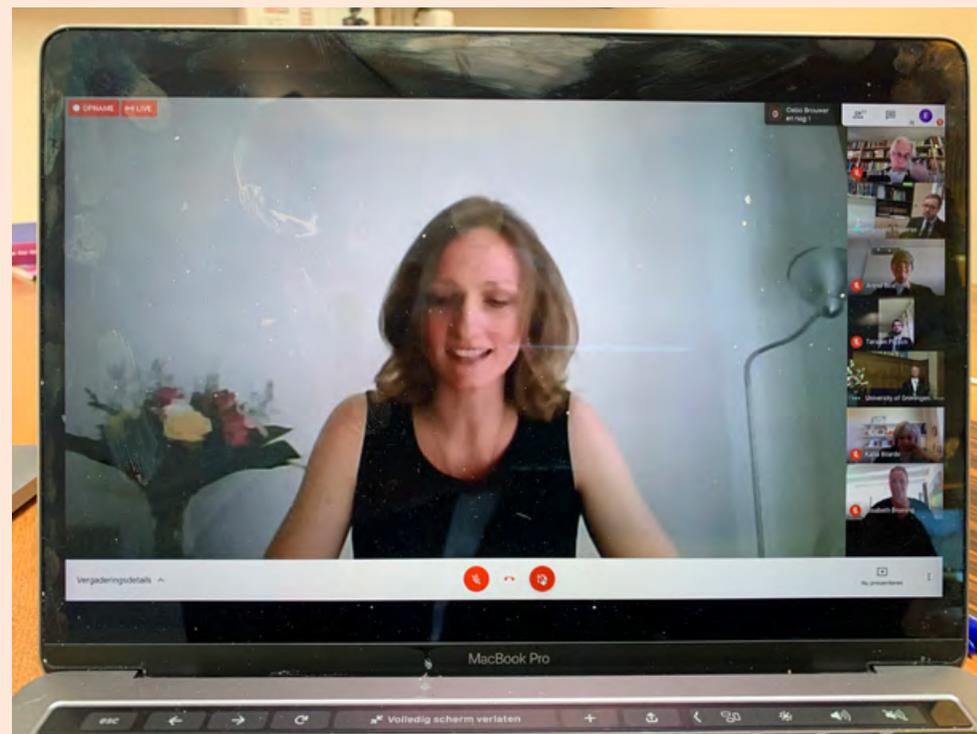
FACULTY

Medical Sciences

Preterm birth and fetal growth restriction present major risk factors for an inadequate oxygen supply of the developing brain and other organs. Doppler ultrasound and near-infrared spectroscopy help assess organ oxygen delivery in the fetus and newborn. Using these techniques, this thesis investigated how placental insufficiency and drug exposure before birth affect oxygenation of the brain, kidneys, and intestines in preterm and growth restricted infants. Additionally, this thesis assessed how fetal 'brain-sparing' (redistribution of

blood flow to the brain at the expense of other organs as a compensatory response to chronically low oxygen levels in placental insufficiency) and oxygenation of the brain after birth relate to neurodevelopmental outcome. Our data suggest that fetal brain-sparing and higher cerebral oxygen saturations after birth are related to less behavioural problems and better executive functions. On the other hand, fetal brain-sparing may cause cerebral oxygen levels being too high for preterm babies, which we associated with an increased risk of retinopathy of prematurity, a potentially blinding eye condition, and poorer long-term Performance IQ. Epigenetic changes seem to be involved. Moreover, fetal brain-sparing seems to impair autoregulatory mechanisms, with which the brain protects itself from harmful fluctuations in blood flow and oxygenation after birth. Fetal exposure to drugs with vasodilative properties, appeared to also affect organ oxygen delivery in the newborn. This needs to be taken into account when using these drugs in pregnant women or when investigating new treatments for placental insufficiency.

Anne Richter (1990) studied Medicine at the University of Groningen. She did



■ PHOTO BY EDUARD VERHAGEN

her PhD research at the Neonatology department of the Beatrix Children's hospital of the University Medical Center Groningen. Her research falls within the research program Translational Neuroscience of the Research Institute Brain and Cognition. She now works as a physician assistant at the pediatrics department of the Helios Klinikum Uelzen in Germany. She was promoted on April 20, 2020.

Seek and destroy: Light-controlled cancer therapeutics for local treatment

PHD STUDENT

M.W.H. Hoorens

THESIS

Seek and destroy: Light-controlled cancer therapeutics for local treatment

PROMOTORS

Dr. W.C. Szymanski

Prof. dr. P.H. Elsinga

Prof. dr. B.L. Feringa

FACULTY

Medical Sciences

In the fight against cancer, we need chemotherapeutic agents to excel in two things: 1) being very active in tumors and kill all cancer cells. 2) being inactive in healthy cells and tissues. Unfortunately, this combination of properties is challenging to achieve and all undesired activity in healthy cells and tissues results in damage and side-effects. Therefore, we work on light-controlled chemotherapeutics that can overcome this limitation. We envision that the inactive form of the drug can be administered and circulate through the patient and, that - guided by medical imaging - the drug is locally

activated by light in the tumor. To further develop this concept, also known as photopharmacology, there are still several chemical challenges to overcome. These studies are described in this PhD thesis.

Mark Hoorens (1992) finished the Bachelor Life Science and Technology at the Technical University of Delft. He changed from molecular biology in the direction of the organic chemistry during his Life Science and Technology Master at the University of Leiden, where he graduated in the lab of Prof. Mario van der Stelt. His doctoral research took place in a cooperation between the Medical Imaging Center of the University Medical Center Groningen and the Stratingh Institute for Chemistry, under supervision of Prof. Wiktor Szymanski, Prof. Ben Feringa and Prof. Philip Elsinga. He was promoted on April 22, 2020.

From skin to brain: Modelling a whole-body coordination scenario of nervous system origin

PHD STUDENT

O.O. de Wiljes

THESIS

From skin to brain: Modelling a whole-body coordination scenario of nervous system origin

PROMOTORS

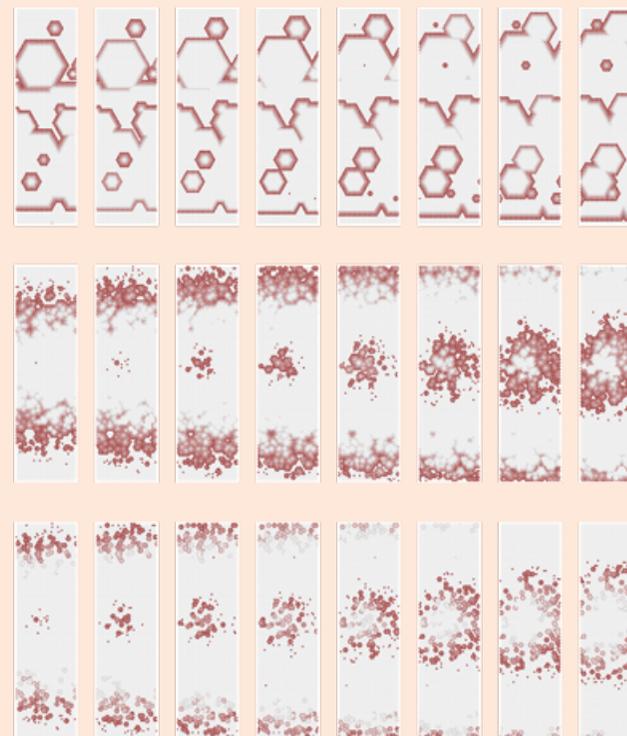
Dr. F.A. Keijzer

Prof.dr. J.W. Romeijn

FACULTY

Phylosophy

Nervous systems are ubiquitous in the animal kingdom, yet the evolutionary origin of this essential feature, the basis of human cognition, is unclear. Since the emergence of nervous systems happened



at least 430 but likely as much as 600 million years ago, there is little hard evidence to illustrate this evolutionary process. To understand the evolutionary origin of nervous systems, theoretical frameworks putting what evidence there is into context are crucial. One such framework, the internal coordination view, posits that nervous systems arose in order to allow early animals to coordinate their multicellular bodies as a whole. In this research, we explored potential intermediate evolutionary steps on the road to a true nervous system. To that end, we used computational models of very simple simulated animals. In these simulations, we investigated mechanisms short of nervous systems, using (simulated) biological building blocks which would likely have been present in animals at the time nervous systems evolved. These models demonstrate that even very rudimentary mechanisms have the potential of providing useful coordination to early animals, thereby supporting the internal coordination view of nervous system origin: nervous systems likely evolved to allow whole-body coordination.

Ot de Wiljes (1982) was promoted on May 4, 2020.

Energy balance after bariatric surgery

P H D S T U D E N T

E. Somogyi

T H E S I S

Energy balance after bariatric surgery

P R O M O T O R S

Prof.dr. G. van Dijk

Prof.dr. C.J. Nyaka

C O P R O M O T O R

Dr. A. van Beek

F A C U L T Y

Science and Engineering

Obesity and its associated comorbidities have spread worldwide and cause a significant burden to patients and health-care systems. The most effective treatment of obesity is bariatric surgery but the underlying mechanisms of weight loss are not well understood. In this thesis, Edit Somogyi investigated how ileal transposition (IT) and Roux-en-Y gastric bypass (RYGB) creates a negative energy balance thus contributing to the observed weight loss in rats. While this is usually resulting from lower intake, it is not known whether and how different components of energy expenditure are affected, and whether bariatric effects depend on diet. Different diets (High fat – HF, High protein – HP and High carbohydrate –

HC) were utilized to document if diet influences weight loss and energy balance following these surgeries. We found that the primary cause of weight reduction after IT was decreased food intake and not increased energy expenditure. Only ingestion-related energy expenditure (IEE) increased, which could lead to higher satiety thus, contributing to weight loss. Energy efficiency (i.e., weight gained per energy ingested) was decreased after both surgeries, but for longer time only after RYGB probably contributing to the greater and more sustained weight loss compared to IT. The HP diet seems to be most effective to reduce weight either with or without surgery, while HF diet had a biphasic effect; before surgery HF diet led to weight/fat gain but shortly after both surgeries resulted in the most weight loss and reduced energy efficiency. Interestingly, HF diet after RYGB seemed to alleviate the postsurgical stress.

Edit Somogyi (1970) was promoted on May 26, 2020.

PET methodology in rat models of Parkinson's disease

P H D S T U D E N T

A. Schildt

T H E S I S

PET methodology in rat models of Parkinson's disease

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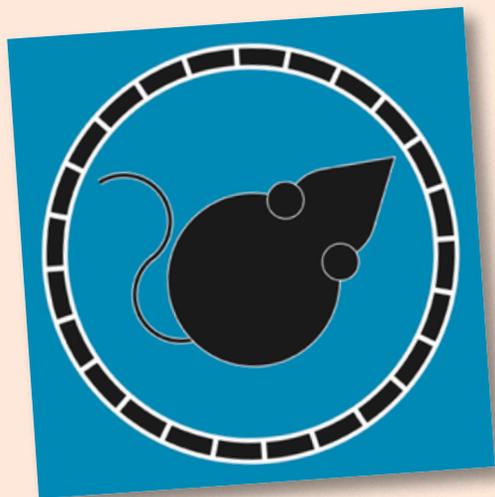
C O P R O M O T O R

Dr. J. Doorduyn

F A C U L T Y

Medical Sciences

Parkinson's disease (PD) is one of the most common neurodegenerative diseases worldwide. The use of animal, especially rodent, models is of utmost importance to expand our understanding of the pathological features and treatments for the disease. Research in PD patients and rodent disease models has indicated that several neurotransmitter systems and inflammatory processes are involved in the brain of PD patients. A common method for the assessment of physiological processes in vivo is positron emission tomography (PET). Radiolabelled compounds specific for a certain biological process are administered



to a subject and subsequently their distribution through the body, or brain is followed over time using a PET camera. The distribution and kinetics of the radiolabelled compound can be used to quantify the physiological process of interest using mathematical models. In this thesis, methodological aspects for the quantification of markers of the cholinergic neurotransmitter system using PET imaging were evaluated. The optimal quantification methods for the PET radiotracers [11C]-PMP, an acetylcholinesterase substrate, and [18F]-FE0BV, a ligand of the vesicular acetylcholine transporter, were determined in rats. Furthermore, the newly characterized, as well as established radiotracers were applied to quantify changes in cholinergic

activity, dopaminergic innervation, and neuroinflammation in rat models of PD. In the first study in a striatal 6-OHDA model of PD, no increase in cholinergic activity was found up to one month after the 6-OHDA injection. Additionally, no effect of exercise on cholinergic activity was seen. In the second study, a rat model carrying one of the most common genetic mutations in PD patients (LRRK2 p.G2019S) was subjected to a peripheral inflammatory trigger and followed over several months. Ten months after the inflammatory trigger no change in dopaminergic innervation but increased neuroinflammation in brain regions related to other neurotransmitters was found.

Anna Schildt (1987) studied Molecular Life Science at the University of Lübeck, Germany. During her doctoral research she was related to the department of Nuclear Medicine and Molecular Imaging of the institute Brain and Cognition of the University Medical Center Groningen and the PET-MR Imaging Centre of the University of British Columbia, Canada. Soon she will start as a postdoctoral researcher at the Athinoula A. Martinos Center for Biomedical Imaging in Boston, United States. She was promoted on May 27, 2020.

A neurolinguistic approach to pronominal resumption in Akan focus constructions

P H D S T U D E N T

N. Lartey

T H E S I S

A neurolinguistic approach to pronominal resumption in Akan focus constructions

P R O M O T O R

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C O P R O M O T O R S

Dr. S. Popov

Dr. C. Felser

F A C U L T Y

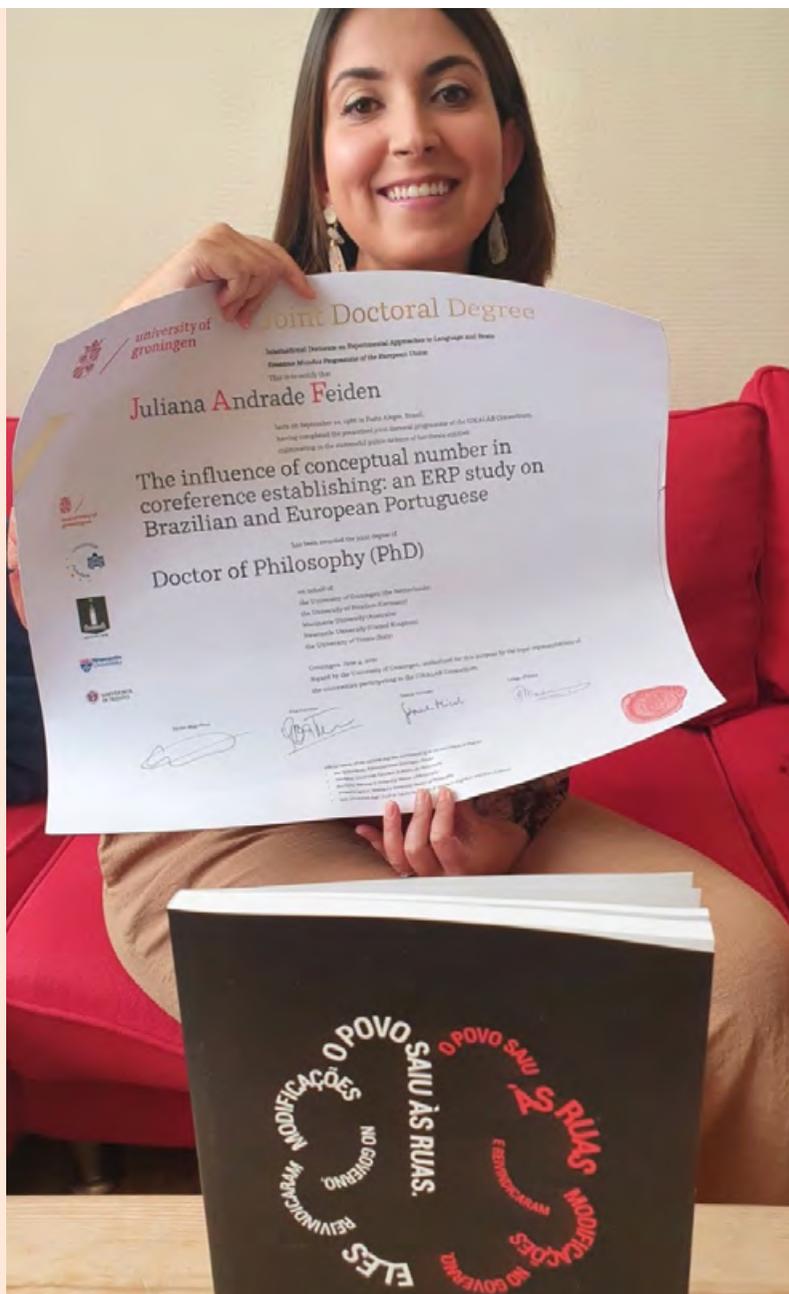
Arts

The current project explored the phonological and syntactic aspects of Akan pronominal resumption. The grammatical tone features of the resumptive pronoun and the clause determiner were assessed in Akan speakers with agrammatism. We found that the resumptive pronoun worsens wh-question comprehension in agrammatic speakers. However, the production of pronominal resumption was relatively spared. The ERP study investigated Akan native speakers' sensitivity to the distribution of the resumptive pronoun by creating word-order and animacy violations. Our study represents a novel



addition to the sentence processing field, as it looks into the interface between syntax, semantics, and phonology in Akan pronominal resumption.

Nathaniel Lartey (1990) was promoted on June 4, 2020.



The influence of conceptual number in coreference establishing: an ERP study on Brazilian and European Portuguese

PHD STUDENT

J.A. Feiden

THESIS

The influence of conceptual number in coreference establishing: an ERP study on Brazilian and European Portuguese

PROMOTORS

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Prof. G. Micele

COPROMOTOR

Dr. S. Popov

FACULTY

Arts

Number agreement depends on two kinds of information: grammatical and conceptual information; and generally, they converge. However, for collective nouns, syntactic and conceptual number do not match. When collective nouns are involved in coreference establishing, the pronoun agrees with the noun's conceptual number, thus creating a number disagreement (e.g. the band {SG} played last night. They

■ PHOTO BY ROELOF ERINGA

{PL} were great). This PhD Thesis aims to investigate how conceptual number affects coreference establishing and we explore such linguistic phenomena in both Brazilian (partial pro-drop) and European Portuguese (pro-drop). We also investigate whether intra and inter-sentential processing affects the way conceptual number influences coreference establishing.

Juliana Feiden (1986) was promoted on June 4, 2020.

Plasticity of visual field representations

PHD STUDENT

J.C. De Oliveira Carvalho

THESIS

Plasticity of visual field representations

PROMOTORS

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Prof.dr. N.M. Jansonius

COPROMOTOR

Dr. R.J. Renken

FACULTY

Medical Sciences

Unravelling the organization of the visual cortex is fundamental to understanding the degree to which the adult visual

cortex has the capability to adapt its function and structure. The research in this thesis aimed to: 1) understand how the visual field representations present in the adult visual cortex are shaped by visual experience, predictive mechanisms, damage due to visual field defects or developmental disorders, and 2) develop advanced techniques and paradigms to characterize receptive fields (RFs) and their connections using neurocomputational models. To do so, I combined the neuroimaging technique functional magnetic resonance imaging (fMRI) with biologically-driven neurocomputational models to investigate whether neurons – at the population or subpopulation level – have the capacity to modify their receptive field properties following damage (artificial and natural) to the adult visual system or following changes in the stimulus. The main project outcomes are: 1) the development of a new and versatile brain mapping technique that captures the activity of neuronal subpopulations with minimal prior assumptions and high resolution, which we call micro probing (MP); 2) the design of alternative visual mapping stimuli, with which we have shown that the recruitment of neural resources depends on the task and/or stimulus; 3) the development of a novel approach to map the visual field and

that enables the evaluation of vision loss and provides important information about the function of the visual cortex and 4) the finding that in response to an artificial scotoma (mimicking a lesion to the visual system), there is a system-wide reconfiguration of cortical connectivity and RFs which may underlie the predictive masking of scotomas. These novel techniques and findings increase our understanding of the neuroplastic properties of the visual cortex and may be applied in the evaluation of pre- and post-treatment strategies that aim for vision restoration and rehabilitation.

Joana De Oliveira Carvalho (1992) studied Biomedical Engineering at the University of Lisbon, Portugal. Her doctoral research took place at the Laboratorium for Experimental Ophthalmology of the University Medical Center Groningen. She was promoted on July 6, 2020.

Epidemiological insights in management of aneurysmal subarachnoid hemorrhage

P H D S T U D E N T

C.E. van Donkelaar

T H E S I S

Epidemiological insights in management of aneurysmal subarachnoid hemorrhage

P R O M O T O R S

Prof.dr. J.M.C. van Dijk

Prof.dr. R.J.M. Groen

C O P R O M O T O R

Dr. N.J.G.M. Veeger

F A C U L T Y

Medical Sciences

Spontaneous subarachnoid hemorrhage (SAH) is a devastating type of stroke, with the most frequent cause being a ruptured intracranial aneurysm. One of the most important things after the occurrence of a SAH, is the prevention of a rebleeding of the aneurysm. Therefore, the aneurysm needs to be occluded by either endovascular coiling or neurosurgical clipping, traditionally performed in the first 72 hours after the ictus. In this thesis, risk factors for early rebleeding after SAH are identified. Based on this, a new treatment paradigm for the acute phase of a SAH is proposed, recommending treatment of patients at

high risk for rebleeding on an emergency base. Furthermore, this thesis highlights the importance of accurate identification of patients in a poor clinical condition for decisions regarding timing and type of treatment. The developed SAFIRE-grading scale is proposed as a new tool to assess the patients' outcome soon after the ictus. Last, it revealed the impact of treatment delay and rebleeding on the outcomes of the International Subarachnoid Aneurysm Trial (ISAT), a large trial comparing both treatments, and found that after correcting for this, coiling and clipping could be considered comparable in long term based. All together, these new insights can lead to improved treatment of patients with aneurysmal SAH and a further decline in mortality and morbidity rates.

Karlijn van Donkelaar (1994) studied Medicine at the University of Groningen. During her doctoral research she was related to the Neurosurgery department of the institute Brain and Cognition of the University Medical Center Groningen. She now works as ANIOS Gynaecology at the Medical Center Leeuwarden. She was promoted on July 6, 2020.



Movement disorders in inborn errors of metabolism: Characterisation of motor and non-motor symptoms

P H D S T U D E N T

A. Kuiper

T H E S I S

Movement disorders in inborn errors of metabolism: Characterisation of motor and non-motor symptoms

P R O M O T O R S

Prof.dr. M.A.J. de Koning-Tijssen

Prof.dr. T.J. de Koning

F A C U L T Y

Medical Sciences

Inborn errors of metabolism (IEM) form a large varied group of disorders that often present in childhood. Movement disorders such as tremor, jerks or involuntary muscle contractions can all be caused by IEM. In this thesis we studied the types of movement disorders that occur in several different IEM, the severity of these movement disorders, and their impact on daily life. We found that many IEM patients, both children and adults, suffer from movement disorders. Depending on the type of IEM (glutaric aciduria type 1, classical galactosemia

■ PHOTO BY MARTIJN HERTOGS

and Niemann-Pick type C, among others, were studied), movement disorders were found to be present in 49 to 100% of the studied patients. Movement disorders significantly influenced daily functioning; patients with a more severe movement disorder experienced more problems in daily life and reported a lower quality of life. It was further observed that in addition to movement disorders, many patients suffered from psychiatric and behavioural problems, which can also be very bothersome and impact functioning. Despite the frequent occurrence of movement disorders in IEM and their significant impact on daily life, only a few patients are actually treated for their movement disorder. Therefore, movement disorders in patients with IEM deserve more attention. We plead for more awareness by physicians treating patients with IEM for movement disorders and their treatment options. Standardized assessments of the presence of a movement disorder should be included in the routine checks for patients with an IEM that is known to be associated with movement disorders.

Anouk Kuiper (1988) studied Medicine at the University of Utrecht. During her doctoral research she was related to the Neurology department of the institute

Brain and Cognition of the University Medical Center Groningen. She now works as AIOS general medicine in Nijmegen with the SBOH. She was promoted on July 7, 2020.







Molecular tools for light-navigated therapy

P H D S T U D E N T

F. Reeßing

T H E S I S

Molecular tools for light-navigated therapy

P R O M O T O R S

Dr. W.C. Szymanski

Prof.dr. B.L. Feringa

Prof.dr. R.A.J.O. Dierckx

F A C U L T Y

Medical Sciences

Even though constant advances and innovations in modern medicine continue to improve the health and quality of life of millions of people worldwide, challenges such as the need to increase the selectivity of drugs or the informative value and sensitivity of medical imaging techniques still remain. New solutions to these problems would significantly increase the safety and efficacy of pharmacotherapy by reducing the side effects of drugs and enabling early diagnosis. For this purpose, several approaches that rely on the implementation of light-responsive molecular structures are described herein. Firstly, a new methodology

■ PHOTO BY STEPHAN KEEREWEER

based on a multi-component-reaction for the synthesis of photoactivatable multifunctional compounds is introduced. Secondly, research focusing on the development of light-responsive MRI contrast agents for selective imaging and possible monitoring of drug delivery is presented. This concept is built on the potential use of light-emitting targeting moieties that would activate an MRI contrast agent at the site of interest, leading to a signal amplification and thus enhanced sensitivity. The final part of this thesis illustrates the development of new fluorescent tracers for the selective imaging of microbial infections, as well as the imaging of parathyroid tissue. Overall, the presented research aims to enhance the scope of available photo-responsive core structures for light-activated therapy and the diagnostic power of MRI and optical fluorescence imaging.

Friederike Reeßing (1990) studied Pharmacy at the Christian Albrechts Universität in Kiel, Germany. After that she worked as a trainee researcher within the department of Prof. dr. Anna Hirsch at the Stratingh Institute for Chemistry at the University of Groningen and also as a trainee in a pharmacy in Kiel. She received her license as a pharmacist in 2015.

Her doctoral research took place at the Radiology department of the University Medical Center Groningen in cooperation with the Stratingh Institute for Chemistry of the University of Groningen under supervision of Prof. dr. W. Szymanski, Prof dr. Ben L. Feringa and Prof. dr. Rudi Dierckx. She was promoted on July 8, 2020.

■ EVELYN KUIPER-DRENTH, ON BASIS OF PRESS REPORTS OF THE UNIVERSITY OF GRONINGEN

> CHEEKY PROPOSITIONS

"What the world of tomorrow will be like is greatly dependent on the power of imagination in those who are learning to read today." (Astrid Lindgren).

> Anne Richter

"The risk of interdisciplinary research is developing tricks instead of actual skills."

> Mark Hoorens

Marie Curie's statement about the fear of radioactivity also applies to the current COVID-19 pandemic "Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less."

> Anna Schildt

"In a post-truth world, in which public figures and parts of society prioritize emotions over facts, scientists and the media should communicate research in an understandable, honest and relatable way to the public to allow everyone to draw conclusions based on scientific evidence rather than fake news and feelings."

> Anna Schildt

"Wisdom is like a baobab tree, no one individual can embrace it. (Ewe proverb)."

> Nathaniel Larthey

"Education is a progressive discovery of our own ignorance. (Will Durant)"

> Nathaniel Larthey

"Research is formalized curiosity. It is poking and prying with a purpose. (Zora Neale Hurston)"

> Nathaniel Larthey

"Statistics do not lie, but they can put you on the wrong foot: "The per capita consumption of mozzarella cheese correlates with the number of civil engineering doctorates awarded." (Spurious Correlations, Tyler Vigen)"

> Joana Oliveira Carvalho

"Adaptability is the most valuable human skill and the greatest challenge in understanding physiology from disease."

> Joana Oliveira Carvalho

" 'n goud pad krom, loipt nait om. (Gronings gezegde)" ["You will be better off by staying on the main road than to taking a shortcut" (local expression)]."

> Karlijn van Donkelaar

"Goed kijken naar patiënten om bewegingsstoornissen op te sporen is zeer belangrijk, maar om degene die tegenover je zit echt te begrijpen is goed luisteren de eerste stap. Dit laatste geldt overigens niet alleen voor dokters." [Looking closely at patients to detect movement disorders is very important, but to really understand the patient sitting in front of you, listening carefully is the first step. The latter does not only apply to doctors.]

> Anouk Kuiper

"As a PhD student, you are the captain of your own ship. However, it is essential to have a good compass for guidance and a supportive crew on board."

> Friederieke Reeßing



> COLOPHON

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Deadline for the next edition: 18 October 2020

A photograph of a tree with a sign and a mask. The sign is white with black text and is attached to the tree trunk. Below the sign, a white surgical mask is hanging from the tree. The tree has green leaves and small white flowers. The background is a dense forest of green trees.

ADEM IN
ADEM UIT

