

Research Report Donders Institute 2020

A. Reflection and outlook

Global health challenges and the need to innovate our educational and research endeavours in the face of pandemic have been at the top of our agenda, just like for any other institution. Thanks to the tireless work of everyone from our students and researchers to support staff and faculty members, as well as the creative and timely support of faculties and university administration, Dondersians across the campus were able to establish a new routine to continue producing world-class research and train our students in and outside of the classroom.

The challenges have not deterred us from our annual action plan as we focused on developing a new governance and research organization for the Institute. After extensive consultations with researchers, staff members and stakeholders, we have formulated a new vision for the research organization and proposed a new governance structure that will help us to look at the next 10 years from a new perspective. To facilitate Donders' progress towards becoming a European powerhouse in research on brain, cognition and behaviour, we established a trans-European network with 7 other Universities and founded the European University of Brain and Technology (Neurotech^{EU}). The work on creating the digital university platforms has already been started. First educational programs will be online in the coming months; the first cooperative research programs will start this fall under a joint graduate school. More than 250 partners across sectors have been recruited to create an ecosystem of innovation focused on Neurotechnology and to significantly expand the institute's reach within and outside of academia.

These foundational building blocks alone won't be sufficient to reach our goals to become the European leader in brain research in Europe. During 2021, we will need to create a joint vision across the campus in our domains of expertise, detail an action plan and help create the conditions that will enable us to implement this vision.

Vision and mission

It is widely recognized that understanding the neurological substrate of the human mind is one of the most challenging tasks of today's science. Neuroscience and related fields are providing us progressively faster with new insights about the neural underpinnings of cognition and behaviour in health and disease. The Donders Institute has a strong impact on this field. The Institute's mission includes conducting interdisciplinary research at the unique interface between genetic, molecular and cellular processes at one end of the scale and computational, system-level neuroscience with cognitive and behavioural analysis within individuals and specific populations at the other. This mission is implemented in a setting that

is the academic home to more than 700 researchers from 40 countries who share the common goal of contributing to the advancement of the brain, cognitive and behavioural sciences through curiosity-driven research. They are also engaged in improving health, food & cognition, public & politics, education and technology by applying advances in these fields.

The Donders Institute focuses its research on four themes: 'Language and Communication', 'Perception, Action and Control', 'Plasticity and Memory' and 'Neural Computation and Neurotechnology'. Over the past year, we have had many discussions and several 'heidagen' within the entire Donders Institute to discuss the research organisation. The proposal developed as a result of this process is under consideration at College van Bestuur. We look forward to starting the transition period at the beginning of the next academic year, 2021-2022.

Donders Citylab @ muZIEum

In 2020 the first steps have been taken to establish a Donders Citylab at muZIEum. Donders CityLab at muZIEum (or the CityLab in short) will be an Experium where visitors actively learn about their brain and how it controls the body. The CityLab will host public lectures bringing scientists and the public together in interactive lectures, workshops, and exhibitions. Going beyond participation in exhibitions, visitors will become participants in ongoing scientific experiments, collect data on their own brain and behaviour, and learn how the brain and technology shape the world. Learning by doing will help them to internalize the knowledge, promote Citizen Science, life-long learning and curiosity in all visitors across age groups. Visitors will be acutely aware of all of their senses and can explore their brain in action, as all segments of the society become a research population.

Sustainable science

In 2016, the Board of Directors started the 'sustainable science initiative' with a document including the perceived problems with the current scientific system as well as proposed solutions. A number of suggested measures were implemented in 2017 and continued since then, e.g. we instigated a peer coaching scheme, a personal development plan for postdocs, changed the names of intermediate level positions to be more in line with international practice, and actively encouraged pursuance of alternative career pathways. In addition, we introduced the Donders Mohrmann fellowship, a PI position that is open to outstanding applicants with a background that is underrepresented in science (particularly in terms of gender and minorities). The laureate, dr. Freyja Olafsdottir who started in December 2018, co-chairs the diversity and sustainable science committee within the Donders Institute. In autumn 2020, the committee has held a large survey amongst all Donderians. The report is expected in spring 2021.

B. Discussion points for the meeting with CvB

We would like to discuss:

- a. Governance Donders Institute,
- b. Donders Budget,
- c. Donders CityLab at muZIEum

C. Quality of research output (max. 250 words)

The Donders Institute strives for high-quality publications in leading international journals, but our goal is to have high impact in science and society. In 2020 researchers further solidified the strong characteristics of each research Theme ('Language and Communication', 'Perception, Action, and Control', 'Plasticity and Memory', 'Neural computation and Neurotechnology'). Despite the COVID-19 pandemic, researchers remained highly motivated to continue their research. For some researchers the pandemic offered new research opportunities, like investigation of the effects of the corona crisis on mental health, and vulnerability and resilience to stress-related disorders. Furthermore, the corona crisis can be used as a strong argument when demonstrating the necessity of animal research in the media and in high- impact scientific journals (e.g. in Current Biology) as well as in national media.

The scientific excellence and vision of the Donders Institute has been recognised in several grants, prizes and appointments. In 2020:

- John van Opstal received Royal Honors;
- Naomi Nota (and Evelyn Bosma from Leiden University) received the Klokhuis Science Prize;
- Lorijn Zaadnoordijk received the Dutch Society for Developmental Psychology (VNOP) dissertation award;
- Mark Dingemanse and Tessa van Leeuwen received the Radboud Science Award;
- The Donders Wonders received a NWO Communication Prize.
- Two new KNAW members Karin Roelofs and Bas Bloem were elected;
- Five early career researchers were elected to join the Radboud Young Academy: Inti Brazil, Mark Dingemanse, Martin Dresler, Eelke Spaak, Fleur Zeldenrust;
- NWO Veni laureates: Kiki van der Heijden, Wim Pouw, Isabella Wagner, Else Elsing;
- NWO Vidi laureate: Koen Haak;
- NWO Vici laureates: Sabine Hunnius, Christian Beckmann, Annette Schenck;
- ERC Consolidator grants for: Floris de Lange, Andre Marquand, and Sonja Vernes.
- European University of Brain and Technology (NeurotechEU) has been established and installed by the European Commission as a European University.

D. Societal impact (max. 250 words)

The research conducted at the Donders Institute has considerable potential for benefiting society. The Donders Institute focuses on generating societal impact in five domains: Health & Healthcare, Food & Cognition, Learning & Education, Neurotechnology & Big data and Public & Politics. In 2020 again, the Institute was successful to generate and transfer knowledge, collaborate with companies and other non-academic partners, share facilities, and play a role in policy making.

To inform the scientific community, Donders Researchers take the lead in organising workshops and international conferences. The Institute is also involved in Radboud Technology Centres and Radboud Research Facilities, and in this way, it shares its technical expertise, high-end equipment, and biobanks. The BrainGain consortium is another example of a broad consortium of scientific institutes, industry and patient groups applying brain-research results for society at large.

The establishment of Neurotech^{EU} and the planned Donders Citylab at muZIEum have outstanding potential that will benefit the society at large. Furthermore, the Food and Cognition program had organised four webinars on consumer behaviour, lifestyle, and eating and smell experiences, between July-Nov, in which hosts interviewed an academic and an SME guest. The public-private NWO crossover MOCIA (E. Aarts) started in Sept. There were media appearances on radio and in the printed press on the effect of distraction on eating behaviour, and appearances at private-public events, like the FoodSummit by Food Valley on Oct. 13, and at OnePlanet innovation center for AI on precision health.

Our research is frequently translated into education -see examples of the Dutch Brain Olympiad (BrainBee), the Brain Awareness Week, and the Radboud Science Award below- and is well embedded in clinical care within the Radboudumc and beyond. Donders researchers are actively involved in developing diagnostic tools and standards of care.

E. PhD policy

The PhD programme of our Graduate School offers young scholars training within a vibrant and challenging international research environment. We do our utmost best to ensure that every PhD candidate finishes her or his project having acquired a valuable set of skills that will open up new professional opportunities.

In 2020, several measures regarding well-being, supervision and training of the PhD candidates were taken:

1. To support PhD's in COVID-19 times, supervisors were asked to keep a closer eye on their PhD candidates. To support PhD's and their supervisors, PhD supervision guidelines were implemented. With more online meetings and more PhDs with difficulties, having guidelines on expectations on the supervision is aimed to help towards an even more successful PhD

trajectory. Most PhD's whose contract ended in 2020 and experienced COVID-related delays were granted an extension.

2. During one of the plenary PI meetings we invited Claudie van Dreumel (AMD) to give indications on how to detect problems of employees suffering with mental health problems.
3. In addition, a well-received writing week was organized at an external location. Unfortunately, due to the restrictions a potential second writing week had to be postponed.
4. With the university transitioning to a software package called 'Hora Finita (HF)' to register and monitor PhD candidates, ensuring a smooth transition from the current monitoring system, PhD Track, to HF, has been high on the priority list. Implementation date is scheduled for April 1st 2021.
5. Also, an inventory on the PhD's who are well beyond their contract date of their PhD trajectory was held. This inventory showed different reasons for the delay in finishing their thesis and we were able to help a notable number of PhDs to finalize their project in 2020. The majority of the remaining PhD's are expected to finish their thesis in 2021, a few decided to stop their PhD, and of the others it remains to be seen whether they will graduate. Over the past years we have already implemented several measures (such as a plan to finish which is sent to the director, MD and GSC) and this will continue being developed for the future.

Based on confidential supervision questionnaires of our monitoring system, PhD Track, the graduate school coordinator approached a number of PhD candidates. Some consulted the Occupational Help Service of the Radboud University and Radboudumc (AMD) to discuss for example questions regarding work life balance.

F. Academic integrity (max. 150 words)

All researchers are informed about the Netherlands Code of Conduct for Research Integrity and about what to do if they suspect scientific misconduct, i.e., they should contact a confidential adviser at the institute or university level. All researchers are regularly reminded that they are responsible for securing integrity and ethics approval of their research, including the research projects of their group members. The DI has four academic integrity confidential advisers, one for each centre. In 2020, dr. Joukje Oosterman was appointed to replace prof. James McQueen for the DCC. Also last year, the advisers attended centre and graduate school meetings to explain their role and to promote awareness and programmes on issues related to good scientific practice and scientific conduct. They also exchanged information about procedures, experiences and possible improvements regarding research practice with lab managers. The advisers taught in the CNS master's course 'Trends in Cognitive Neuroscience' and also at the scientific integrity course for PhD's on 4-2-2020: From plagiarism to P-hacking and other scientific do's and don'ts. The DI has adopted a new policy on the proceedings of the third checkpoint meeting in a PhD project, making them the same as in the second checkpoint. In these checkpoints the PhD candidate meets with a neutral external adviser, who is not from the same research group, to freely speak about potential problems related to the project, including issues related to scientific integrity. No major incidents involving scientific integrity were handled in 2020.

G. Open Science (max. 250 words)

Open science is a core value for the Donders Institute. It has been one of the topics of the sustainable science initiative since the start of the initiative in 2016. Donderians use our self-developed digital system for managing, archiving, and sharing research data: the Donders Repository ([link](#)). This repository is an essential component for the RDM workflow that spans the whole research lifecycle. The objectives of this workflow are: (1) long-term data preservation for internal reuse, (2) documenting the analysis pipeline, allowing for collaboration, and reproduction of the published results, and (3) easy sharing of data and analysis pipelines with colleagues around the world. The Donders Repository confirms herewith to the FAIR-principles. The Donders Repository is used by 1,912 researchers to manage their research data, organized in 744 work-in-progress and 50 finalized data acquisition collections, 549 work-in-progress and 39 finalized research documentation collections and 212 work-in-progress and 147 published data sharing collections. Everyone can request access to the published data sharing collections.