

Newsletter January 2023

"Happy New Year"

Welcome to #5 of the CRC1451 Newsletter

Dear readers,

After a busy fall, mostly for the PIs, an equally busy pre-Christmas period followed with numerous workshops for the early career researchers.

The central project Z03 "Human Motor Assessment Centre" invited all Early Career Researchers and Postdocs to the Z03-workshop on September 13 with great success and the participants seemed to be satisfied.

The "Research Data Management with DataLad" workshop series continued with its third run in November after two previous workshop offers in January and April. We hope that everyone is now familiarized with this topic now, and please don't hesitate to contact the virtual office hour every Tuesday at 4:00 pm organised by the INF team (more info: <https://rdm.sfb1451.de/datalad-help/>). Additionally a DataLad mini-workshop took place on November 30 with focus on a subset of DataLad functionality (data publication). Please also watch out for the upcoming INF workshop series in 2023!



Currently the EMG recordings workshop of the central project Z02 "Animal Motor Circuits Core Facility" is running in cooperation with our guest Turgay Akay, who will be introduced in this newsletter issue later in the guest scientist section.

Meanwhile the PIs had a very fruitful PI meeting on cross-species readout on December 6 and our regular PI meetings are well attended. The Inclusivity, Diversity and Gender Committee also organised a very successful "self-confidence, self-presentation, self-marketing" workshop for our female PIs on November 24, which will be continued in 2023; watch out for announcements. Also, our "Helping Hands" offer is gaining attention within our family support opportunities (more info: <https://www.crc1451.uni-koeln.de/index.php/family-support/>). In 2023 we have the opportunity to focus more on diversity topics and are planning events e.g. on the International Women's Day 2023 on March 8, so please save the date.

In conclusion, we would like to thank everyone involved in this very busy and fruitful pre-Christmas period 2022 and are looking forward to an even more eventful year 2023, which you can see in the News and Events section. We now head-start in the year 2023, which is the third funding year of our CRC1451 already! Unbelievable, but true. We wish the CRC1451 team a successful year and are looking forward to our retreat in April to discuss future directions! We hope you had a peaceful Christmas time and a great start in the New Year! Whenever you have any topics, scientific progress, scientific pictures, etc., please contact sfb1451-sekretariat@uni-koeln.de.



Gereon Fink
Spokesperson



Silvia Daun
Vice-Spokesperson



Christian Grefkes
Vice-Spokesperson

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1. Introduction of New Employees

We are happy to announce that with filling the last two open PhD positions in A04, and the second PhD position in A07, the CRC1451 is finally fully booked for this funding period. Additionally, to work full speed, A04 is supported by another affiliated PhD candidate. All four will be introduced here, and welcome all of you!



Alisa Bakhareva

Who are you and where do you come from?

Hey all, I am Alisa Bakhareva, a new PhD candidate in the Motor SFB. I was born in Tula, Russia, grew up in Moscow, and moved to Germany two years ago.

What is your academic background and where did you study?

I got my Bachelor degree in Neuroscience at the Lomonosov Moscow State University, and a Master degree in Translational Neuroscience at the Heinrich Heine University Düsseldorf.

Which CRC1451 project are you related to?

I am a part of the project A04 "The role of the reward system in obesity- and ageing-associated changes of motor behaviours".

What is the title of your thesis and what is it about?

The title of my PhD project is "Regulation of feeding and stress-related responses by lateral hypothalamus and prefrontal cortex". The aim of the project is to study how neural circuits of prefrontal cortex and lateral hypothalamus affect free-choice, food-directed and anxiety-driven locomotion in mice. In order to get insight into the neuronal dynamics and functions of the brain regions of interest I will use in vivo calcium imaging and optogenetics. To quantify the locomotor behaviour of mice, I will establish and use a pipeline based on machine learning, implementing such software as DeepLabCut and SimBA.

What was your motivation to apply for the CRC1451 PhD position?

I have started studying neuronal circuits that control how anxiety influences behaviour, including feeding, during my Master thesis. This is relevant for such common diseases as obesity and anorexia nervosa, but also happen in everyday life of healthy people. Studying something that you experience yourself is intriguing, and this is why I got passionate about this topic and am now excited to continue and develop the project in my PhD.

What do you like to do when you are not doing science?

When not doing science, I like to cook, read, go to the theatre and explore new cities.



Chantal Wissing

Who are you and where do you come from?

Hey, my name is Chantal Wissing and I am a new PhD candidate from Germany.

What is your academic background and where did you study?

I completed my bachelor's degree in life science at the University of Osnabrueck and then moved to Hamburg to graduate my master's degree in biology with focus on molecular biology and biotechnology. After my master I went to Umeå (Sweden) to continue my master studies in the field of biomedicine.

Which CRC1451 project are you related to?

Project A04: The role of the reward system in obesity- and ageing-associated changes of motor behaviours.

What is the title of your thesis and what is it about?

The topic of my PhD project is "Regulation of feeding and social behaviours by the lateral hypothalamic circuits". The lateral hy-

pothalamus (LH) is decisive for the regulation of innate behaviour including locomotion, food intake and arousal. Activation of cell ensembles in the LH have been shown to initiate locomotion and modulate food intake. The aim of my project is to study how various cell types in the LH (e.g. neurotensin or leptin cells) regulate hypothalamic circuits and innate behaviours. I will also investigate how different diets influence the neuronal dynamics of hypothalamic cell network, as well as different aspects of motor

behaviours and social interactions.

What was your motivation to apply for the CRC1451 PhD position?

I have always been very interested in studying how innate behaviour affects neural circuits. I hope to contribute to a better understanding of the circuit mechanisms involved in innate behaviours such as locomotion, arousal, sleep, and food intake in the lateral hypothalamus as part of the A04 project. The use of food-regulated locomotion and state-of-the-art methods in

aging, obese, and healthy animal models gives me the opportunity to develop and improve in the research area of neurobiology. Within the CRC1451, I would like to take advantage of the great opportunity to network with other highly qualified graduate students and expand my interdisciplinary environment.

What do you like to do when you are not doing science?

Outside of my work I like to do sports, to go on trips and explore new places, and meet up with my friends.



Vlad Mardare

Who are you and where do you come from?

My name is Vlad Mardare (27) and I am from Italy. My family has Romanian origins.

What is your academic background and where did you study?

After high school, I worked as a surveyor for an architecture firm for a couple of years. Then I took a bachelor's in Cognitive Science followed by a master's degree in Cognitive Neuroscience at CIMeC (Center for Mind/Brain Sciences) in Italy. I have used several electrophysiological methods from Magnetoencephalography in human research to extracellular live recordings in birds.

Which CRC1451 project are you related to?

Project A04: The role of the reward system in obesity - and ageing - associated changes in motor behaviour.

What is the title of your thesis and what is it about?

The thesis is titled "The role of the reward system in ageing-associated changes of motor behaviours". Old age brings alterations in the reward and motivation system. These alterations can have a domino effect on the overall quality of life. So I will be studying VTA neurons' firing patterns with high-density chronic implants in adult and old mice. This will be combined with kinematics and a translational focus.

Now it's already the case, but our societies will have to cope with increasingly older populations in the future. Digitalisation, automation and immigration can only attenuate such processes. By understanding the relationship between the ageing brain, the body and the impact on motivation we can generate strategies and therapies that can improve the quality of life of the senior population. Increasing their autonomy, and participation in the social and economic spaces as a consequence. I believe that long term, this line of research will lead to a more sustainable and happy population.

What do you like to do when you are not doing science?

I like hiking, writing, cooking and playing video games. Probably I'll add tailoring into the mix in the next few months. and explore new cities.

What was your motivation to apply for the CRC1451 PhD position?



Prisca Kuhnhäuser

Who are you and where do you come from?

Hello, I am Prisca Jovana Kuhnhäuser, and I was born in Cologne 27 years ago.

What is your academic background, and where did you study?

I had broad interests, which is why I had a few turnarounds (International Relations and Pharmacy) before I started with the biology bachelor program at the University of Cologne. From then on, my way was straightforward. First, I did my bachelor's thesis in the lab of Kei Ito, focusing on glial cell degradation in drosophila. Then, after finishing my bachelor's, I switched from general biology to the neurosciences master program of the university hospital in Cologne. During my master's thesis, I worked in the Aswendt Lab focusing on post-stroke spasticity. I worked in vivo in

mice using photo thrombosis, optogenetics, and EMG to identify the extrapyramidal motor nucleus responsible for the induction of spasticity in mice. I finished my master's at the beginning of September 2022, and since October, I have joined the Vogt Lab as a Ph.D. student.

Which CRC1451 project are you related to?

Project A07: Role of synaptic lipid modulated cortical excitability in motor control.

What is the title of your thesis, and what is it about?

Title: Role of synaptic lipid signalling in cortico-striatal loops and its importance in motor control.

I aim to analyse the role of PRG-1 deficiency in striatal D1 and D2 neurons in motor control by using in vivo and in vitro electrophysiology.

What was your motivation to apply for the CRC1451 Ph.D. position?

I worked my whole studying time in laboratories involved in the CRC1451. Due to this involvement and my strong interest in motor control and locomotion, it was an obvious choice for me to join the Vogt Lab.

What do you like to do when you are not doing science?

When I am not doing science or enjoying time with my little daughter, I like to read books and do sports (Yoga, Climbing).

2. Introduction of Guest Scientist



Turgay Akay

Who are you and where do you come from?

My parents migrated to Germany in the 60's from Turkey as Gastarbeiter and I was born and grew up in West-Berlin. I went to school in West Berlin and Turkey.

What is your academic background?

After finishing high school in Turkey, I studied Fishery Engineering in Egridir, Turkey. Following my graduation I moved back to Germany and studied Diplom Biology in Bielefeld. After graduation, I started my Dr. rer. nat. degree under the supervision of Prof. Dr. Ansgar Büschges at University of Cologne and finished it in 2002.

How long do you stay?

From November 2022 to January 2023.

What is the purpose of your stay?

Research and teaching in the EMG workshop.

3. Career path interview

Since Christian Grefkes-Hermann was appointed Chair of Neurology and Director of the Department of Neurology at the University (Hospital) of Frankfurt starting in January 2023, we took the opportunity to have him interviewed for the Career Path Interview in this issue. The University of Cologne has confirmed that he will stay deputy speaker of the CRC1451 and may continue his CRC projects with Frankfurt as additional study site. The interview was held by our Central Office assistant Jacqueline Riffel.



Christian Grefkes-Hermann

1. What did you study and where?

After starting studying Chemistry at the University of Heidelberg in 1997, I switched to Medicine at the University of Düsseldorf in 1998. Later, during my practical year, I also was a student at the University of Sydney/Australia in 2003 and at the University College London/UK in 2004.

3. Why there?

Actually, Düsseldorf was not my first choice, but due to the German allocation system for study places, I was assigned to the University of Düsseldorf. In retrospect, this fateful decision was certainly very formative for my later career up to the present day.

4. What were decisive steps in your career?

My first contact with neuroscience was the neuroanatomy lecture held by Professor Karl Zilles in the 2nd preclinical semester. I was absolutely fascinated by the lecture topics, so that I asked Karl Zilles for starting my MD thesis in his lab at the C. & O. Vogt Institute for Brain Research despite my still very early stage in medical studies. In 1999, I started a histological brain mapping study on the cytoarchitecture of the sensorimotor cortex. As my entire later research life has been devoted to different aspects of the sensorimotor system, Karl Zilles was clearly a key person for my scientific career, and always very supportive, also with respect to writing publications when still being a young MD student. I still remember that when I submitted my first manuscript for publication in 2000, it was by sending a big envelope to the

2. Why?

I always wanted to study Medicine. I remember that when I was in elementary school, I was asked to draw my career choice, and I drew a stethoscope. Probably my mom was the most important source of inspiration, because through her work as an ophthalmologist, I had contact to patients already when I was a small child – obviously I liked it. :)

journal office in the US with a printed manuscript and hard copy photos of histological figures, and a few weeks later, there was a letter by the editorial office of Neuroimage that the manuscript has been received and is now under review - quite a contrast to how submissions are processed nowadays. In the same year, during a flight to the Human Brain Mapping conference in San Antonio/Texas, I met Gereon Fink at the galley of the plane and we talked about fMRI - a relatively new technique at that time. As a consequence, I continued my MD research projects under his supervision at the Institute of Medicine (IME) - now called Institute of Neuroscience and Medicine 3 (INM3), Jülich Research Centre (FZJ). Gereon was always extremely supportive, and helped me a lot when writing my second and third first-author paper, which finally managed to be published in Neuron and Neuroimage, respectively. Another important contact associated with my MD thesis time was that Simon Eickhoff joined the lab of Karl Zilles around 2000/01 for starting his MD thesis. This contact was the foundation of a long-lasting professional and personal friendship between Simon and me with up-to-date more than 60 joint papers. After graduating from med school and starting at the Department of Neurology of the University Hospital Aachen in 2005, I was able to acquire intramural funding for a research year, again at the Research Centre in Jülich in Gereon's group, where I learned methods like dynamic causal modelling and transcranial magnetic stimulation. The respective papers from that time helped me to apply for a junior research group at the Max Planck Institute for Neurological Research (now called MPI for Metabolism Research), which I headed from 2007-2014. As Gereon had been appointed as Director of the Department of Neurology at the University Hospital Cologne in 2006, I also switched from Aachen to Cologne in 2007 in order to continue my medical training. In 2011, I finished my habilitation, and in 2013 I was appointed as W2-professor of Stroke and Neurorehabilitation at the University of Cologne. In addition, I was appointed as scientific group leader the INM3 in Jülich. My close and very fruitful scientific interactions with Gereon with more than 80 joint papers and book chapters enabled us to develop a first concept for neuroscientific CRC in Cologne already in 2015/2016, which ultimately resulted in our CRC1451 in 2021. My next (ultra-) decisive step in my career has just been taken: I have started as

new Chair of Neurology and Director of the Department of Neurology at the University (Hospital) of Frankfurt. I hope that the second half of my research life will be as fun as the first one.

5. What would you do differently?

To be honest: In general very little. I might have been faster, more efficient, more productive, or more impactful but I always enjoyed the different steps of my career until today. There are no regrets with career-changing decisions as I always tried to make the very best of it and -for me the most important point- always had fun with what I was doing despite some frustrations that may always happen with research projects or collaborators.

6. What would you do exactly the same again?

For my career decisions, I always trusted my intuitions informed by the valuable advices given by my great supervisors. I don't know where I would have been now if I had stayed in Heidelberg or if I had done surgery instead of neurology. But this doesn't matter to me.

7. What allows you to relax from work?

It depends on whether you had ask this question 10 years ago or now. Ten years ago, I would have answered that going to the gym, playing my piano or having drinks with friends help me to relax from work. Nowadays, it helps me to calm down when I go to the playground with my two little twin boys or read fairy tales for them; if time is left I love to go to the great Kölner Philharmonie (or from now on to the famous Frankfurt opera house) together with friends.

8. Do you have any tips for young colleagues on how to deal with frustrations?

Frustrations are part of the game, therefore you should accept them to happen as long as your love your work in general. Talk to your supervisor about your frustrations, she/he will probably have some valuable advices which may restore or even boost your motivation. Don't be afraid from trying new things. And always look forward, not back (at least not too much...;)....)

4. Gender Tips

1. Work/Life-Integration

The CRC1451 promotes the reconciliation between work and private life of all its personnel. We aim to create a family friendly work-environment to particularly support parents with young children as well as CRC personnel with care responsibilities. Offers are open to all CRC personnel (Early career researchers, group leaders and junior professors). We established the following measures:

- 1) Child day care
- 2) The KidsBox - the mobile parent-child room
- 3) Parent-child room
- 4) Child Care during CRC events
- 5) After-hours child- and elder care
- 6) Helping Hands (student assistants to support young parents currently working in part-time)



Please contact us (sfb1451-equality@uni-koeln.de) if you are interested in the measures above or you require support due other family related issues.

In case your personal situation is not listed here but you would like to enquire financial support from Equal Opportunity funds (according to DFG rules), please do not hesitate to contact us, as well!



<https://uni-koeln/RDPAS>

2. New Kids Box Mini

We just received a new Kids Box Mini, which is located at the FLEX building 74. The Kids Box is like a mobile parent-child room, which is a great thing when you need to bring your kids to work. For more details: <https://www.crc1451.uni-koeln.de/index.php/kidsbox/>

Please contact Helene Walter helene.walter@uk-koeln.de for this Kids Box when you are close to the FLEX building Helene. For the Kids Box at building 30 Neurology, please contact Christina Stark christina.stark@uk-koeln.de and for the Kids Box in the Biocenter please contact Erika Häusler erika.haeusler@uni-koeln.de



5. News & Events

Study on age-related development of movements is looking for participants



We are looking for **children and adolescents** aged 5 - 16 years as well as children with motor tic disorder or Tourette syndrome between 5 - 11 years!

Children with metallic implants or fixed braces are unfortunately excluded from the study.

The aim of the study is...

... Examining changes of brain activity as we age as well as determining activity patterns related to movement. We are also looking forward to contribute to new therapeutic approaches.

For participating in our study (CRC project B02 Bender/Konrad), as a thank you, all research participants receive 8 euros per hour or a voucher (e.g. for cinema, toys, etc.) with an equivalent value. Travel expenses will also be reimbursed.

You are interested in participating or need further information?

Please contact us via:

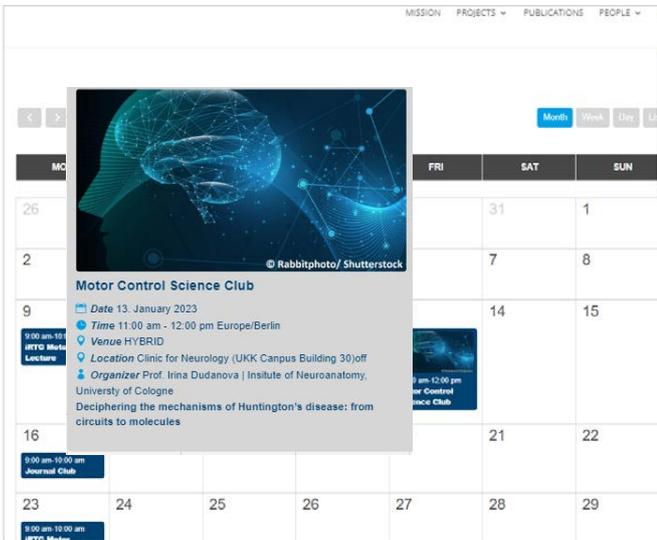
Theresa Heinen
0241 80-80989
theinen@ukaachen.de

Further information on the study is also available at:

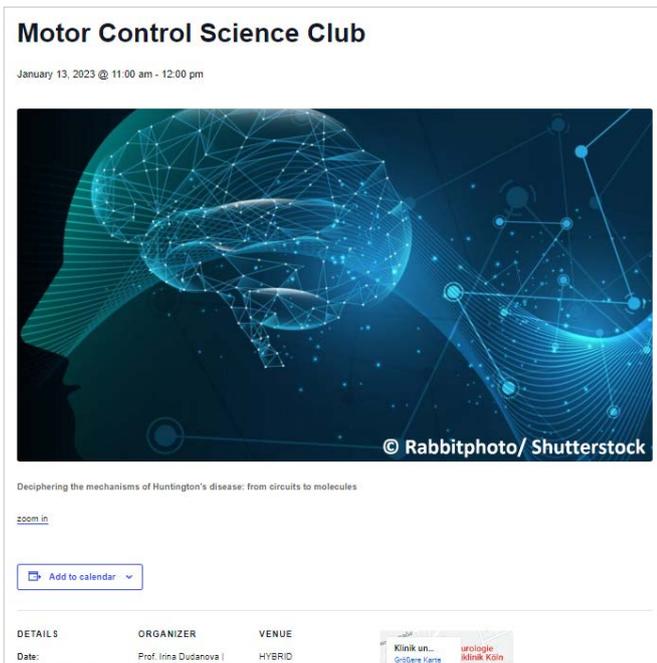
<https://www.crc1451.uni-koeln.de/index.php/news-events/volunteers-wanted/>

Better late than never - our homepage has earned another unofficial star for user-friendliness

Finally, our events are added to a digital calendar on our CRC1451 homepage. Now, you can stay up to date by finding our calendar in the first subfolder of the "News and Events" - category.

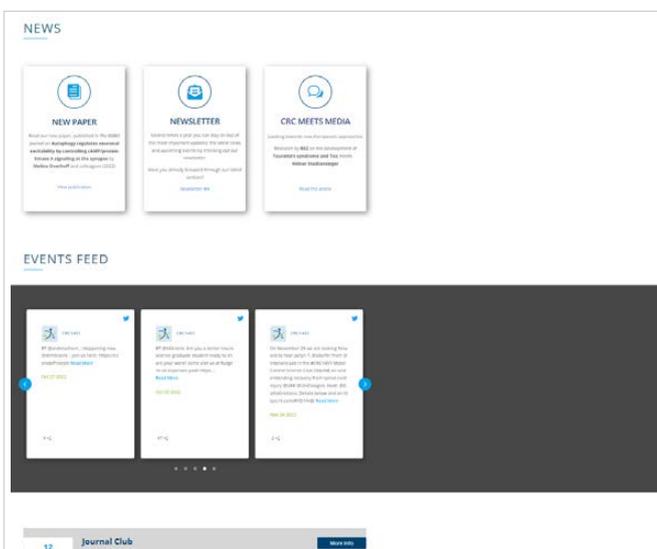


The most important information, such as the venue and time of the event, is already summarized in the tooltip (this preview appears by moving your cursor over the event).



All further details, such as zoom links or schedules, are available with a click on the corresponding event. In this detailed view, you can additionally export single events and add these to your private calendar by clicking on "Add to calendar".

A subscribe function for the entire calendar, coming along with the possibility of exporting all events (or filtered by category), will be available soon.



As before, the events feed remains available on our News and Events page.

To never miss any news again, we encourage you to subscribe the CRC1451 on twitter - you can directly get to the account by clicking on "Read More" of our displayed feed or the Twitter-logo in our footer.

That leaves us to say: Keep up to date and subscribe - we are looking forward to an eventful year 2023!

All ongoing and past Events can be also found here: <https://www.crc1451.uni-koeln.de/index.php/news-events/>

Cologne Theoretical Neuroscience Forum (CTNF) – 11 am CET

The CTNF aims at regular talks on every 2nd Thursday of the month.

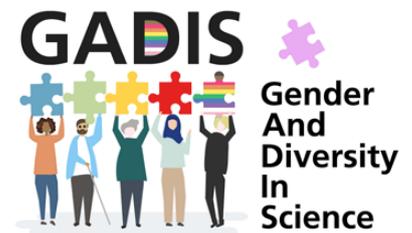
For more information, visit the website under <https://computational-systems-neuroscience.de/ctnf/>

Motor Control Science Club – 11:00 am CET with meet the speaker lunch

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|--------------|---|
| › February 3 | Laura Ranum , “Repeat Associated Non-ATG (RAN) in neurological and neuromuscular disease”
(online 3:00 pm CET!) |
| › March 3 | Ariel Levine , “Spinal Cord Cell Types for Motor Control” |
| › May 5 | Masud Husain , “When the spark goes out: The neurology of apathy and motivation” |
| › June 2 | Aya Takeoka , „Spinal circuit plasticity for movement generation” |

GADIS Lecture (after Motor Control Science Club see above at 12:00)

- | | |
|-----------|---|
| › March 3 | Ariel Levine , “Sustaining Joy As an Academic Scientist (and Parent, Partner, Person)” |
| › June 2 | Aya Takeoka , Title TBD |



Early Career Researcher (ECR) & Postdoc Specials:

INF Methods Course

We are happy to announce the following methods course on “Programming and Data analysis with Python” which will be held in person at the Biocenter from February 27 until March 17. The course consists of the following parts:

- | | |
|--------------------------|--|
| › February 27 to March 3 | Introduction into Scientific Programming with Python (incl. simple data analyses examples) |
| › March 8 | Reproducible Data Analyses with DataLad |
| › March 9 and 10 | Basics of Machine Learning (ML) |
| › March 13 | Application of ML: Spike train data analyses, monkey |
| › March 14 | Application of ML: fMRI data, human |
| › March 15 and 16 | Advanced Neural Data Analysis (M/EEG time series analyses, human) |
| › March 17 | Open Questions |

For further details, please contact Claudia Wegscheid c.wegscheid@uni-koeln.de or the INF team (Silvia Daun, Sacha van Albada, Vahid Rostami, Martin Nawrot, Azamat Yeldesbay, Nils Rosjat, Michael Hanke, Michal Szczepanik).

Contact details INF Expert Team: <https://www.crc1451.uni-koeln.de/index.php/inf/>

Early Career Researcher (ECR) & Postdoc Specials:

iRTG Motor Lecture – 9:00 am CET

- › February 6: Markus Aswendt, “Motor recovery after stroke - same principle in mice and humans?”
- › February 27: Marc Tittgemeyer, Title TBD
- › March 6: Matteo Bergami, “Mapping structural changes of circuit connectivity in response to experience”
- › March 20: Alexander Drzezga, Title TBD

iRTG Journal Club – 9:00 am CET

- › February 13: Alicia Jones (C03 Scholarship) | Prisca Kuhnhäuser (A07)
- › March 13: Lin Mahfoud (C07 Scholarship) | Chantal Wissing (A04)



More information on iRTG events will be send out by the CRC1451 iRTG coordinator Claudia Wegscheid on a regular basis. In case you don't receive the info, please contact c.wegscheid@uni-koeln.de.

All ECRs and Postdocs, please keep in touch with the iRTG coordinator to follow your duties within the CRC1451 programme. Please remember that the CRC1451 lectures and events are mandatory and we are having live events again under the current Covid-19 regulations.

The structured programmes (PhD and Postdoc) of the CRC1451 Graduate School can be found here: <https://www.crc1451.uni-koeln.de/index.php/young-researchers/>

Collaborative Research Center 1451

Key Mechanisms of Motor Control in Health and Disease
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