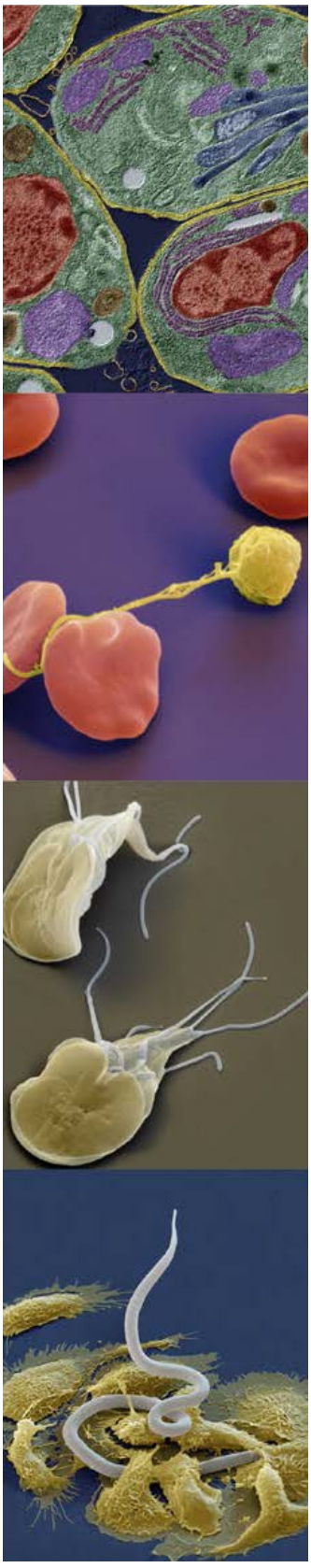
GRK 2046 Newsletter December 2022



Summary, Update and News

Hello and welcome everybody to the 14th edition of our GRK 2046 newsletter. Finally, travel to conferences and meetings was possible again. In the declining pandemic (not over, yet) our PhD students took their chance to participate in important conferences in person, e.g. the ICPOW in South Africa or the ICOPA in Copenhagen. You will find in the students' corresponding reports good reasons why it is so important to interact and network with fellow scientists in person. In addition, our PhD students developed and organized their own symposium, which took place in August. The idea came up with the longing for in person interactions, having enough time to discuss scientific projects. You find the report on the symposium in this newsletter edition.
Also, the organization of both, the GRK 2046-workshop at the DGP conference in Gießen and the GRK 2046-Africa workshop field work started. Both events will take place in March 2023. So, we will give you more information on that in the next newsletter edition.
As usual, we report in this edition on conference and workshop attendances, all GRK 2046 events, new publications, and a new face in our Research Training Group. Welcome!

Have fun!

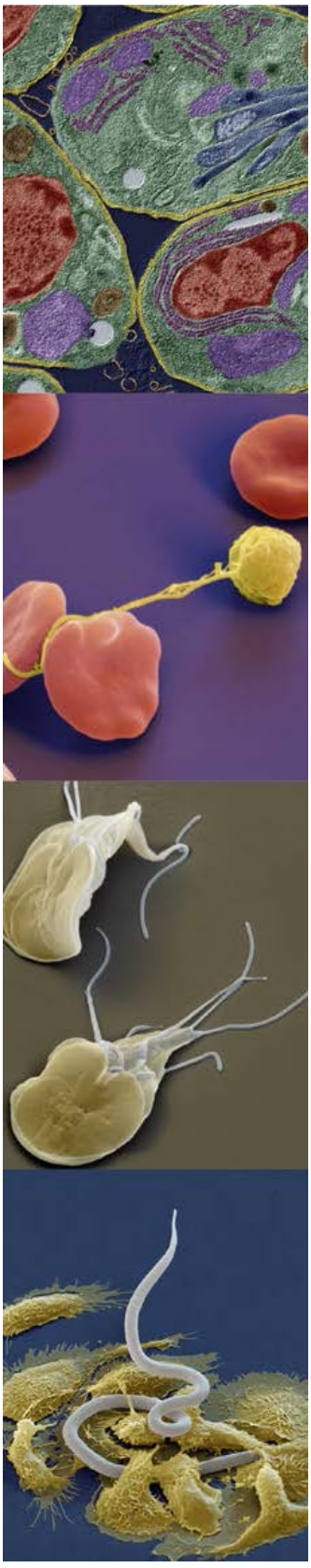
- Marko

New Student

Philipp Höfler (Project B4 associated, FUB)

private photo

Hey everybody! I am Philipp and I got associated to the GRK2046 in September. I started my project "Fiber supplementation in *Ascaris suum* infected pigs" in June right after graduating in vet medicine in April 2022. In my project the fields immunology, microbiome studies, animal nutrition and parasitology are getting unified. I'm quite happy to have the opportunity to work so interdisciplinary. I think that especially in times of increasing numbers of parasitic diseases, but also resistances against antiparasitics, it is important to look at new innovative approaches to fight these infections. Therefore, this transfer of knowledge between the different disciplines is the first step. GRK2046 offers exactly this platform to exchange and collect new information to



form my project professionally and I'm really looking forward to gaining more experience and starting my academic career.

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Conferences

BioCHIP Berlin International Forum on Biochips & Biochip solutions

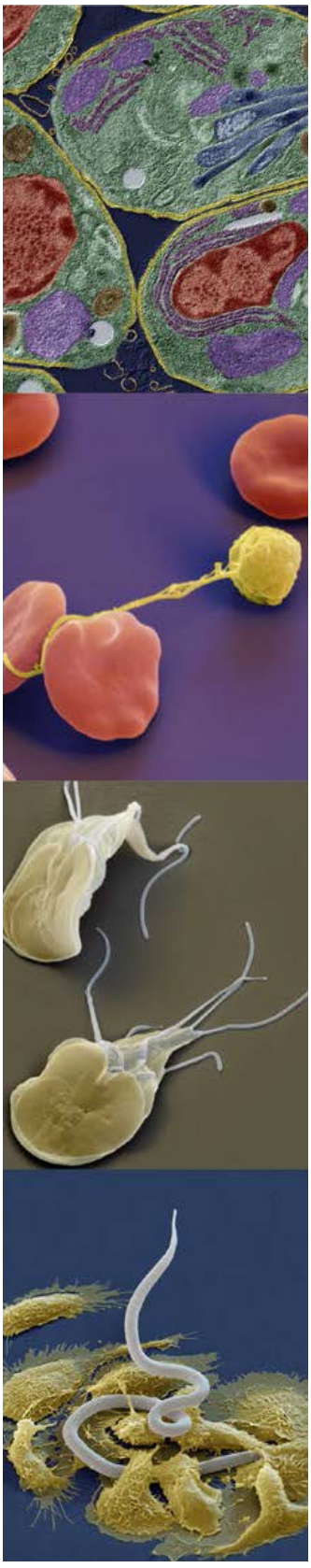
May 10-11, 2022, Berlin (Germany)

Taken from https://biochip-berlin.de/

In May, I was able to attend this years' BioCHIP conference in Berlin – an "International Forum on Biochips & Biochip Solutions" focusing on innovative technologies and applications of microfluidic systems, which is attractive to both industry and academia. Over the course of two days, the scientific program offered research talks on a vast range of topics, while the show floor allowed companies to exhibit their products and engage potential customers and cooperation partners.

Since I am working with different intestinal organoid systems to model the interaction between gastrointestinal parasites and their host, I was especially looking forward to the scientific presentation about "Systems biology of organ-on-chip models" given by colleagues of the Hans-Knöll Institute in Jena. It was extremely inspiring to hear about the newest developments in biochip technology and discuss their applicability for my own research project with experts in the field.
All in all, the conference provided the ideal surrounding to gain new insights and get in touch with other scientists.

- Antonia Müller (project B3)



Tagung der DVG-Fachgruppe "Parasitologie und parasitäre Krankheiten"

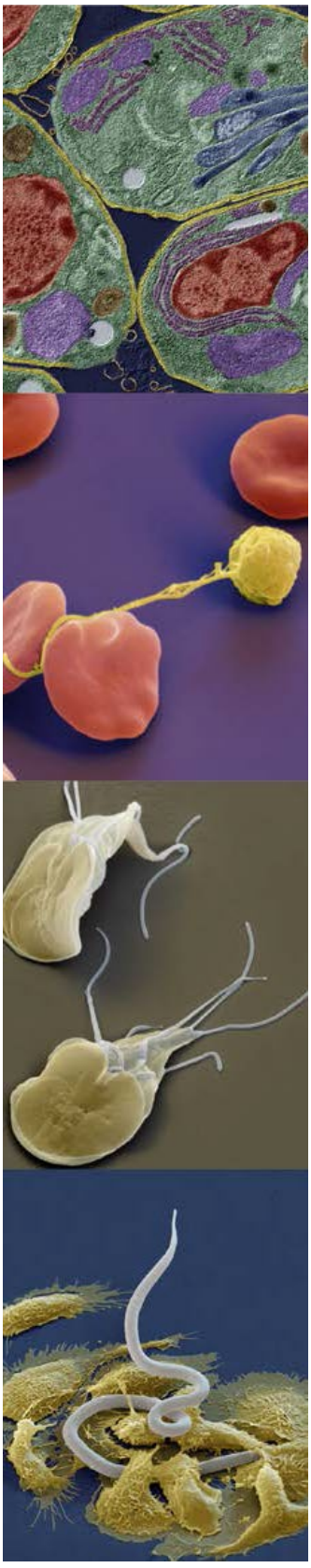
May 23-25, 2022, Berlin (Germany)

Deutsche Veterinärmedizinische Gesellschaft e.V.

Taken from https://www.dvg.net/tagungen/termine/tagung-der-dvg-fachgruppe-parasitologie-und-parasitaere-krankheiten-2022/

In 2022, the annual conference of the DVG section “Parasitology and Parasitic Diseases” was planned as a hybrid event: talks were presented online and in presence of the audience, in German or in English language and covered a broad spectrum of parasitology related topics. The first conference day started with interesting talks about protozoan diseases in ruminants and pigs as well as parasiticides and resistance to parasiticides and ended with a poster session that was organized as a nice get-together. The next day, all participants learned about current research on parasite infections in domestic and wild animals, complemented with a keynote lecture by Manuela Schnyder (University of Zurich) about the ‘successful’ nematode *Angiostrongylus vasorum*. In the afternoon, the focus was put on zoonotic diseases. Finally, all participants had the possibility to exchange in a relaxed atmosphere during a social evening in the restaurant “Fischerhütte am Schlachtensee”. On the last day, the first session started with talks about endoparasites in domestic horses and ended with a keynote lecture by Barbara Kohn (FU Berlin) that gave an update about the canine babesiosis in Germany. After a second poster session, the talk topics focused on tick-borne pathogens and helminthic infections in ruminants. The event ended with the awarding of the Thomas-Schnieder award for the three best posters and talks by speakers which gave their first conference talk. This award is a great opportunity for early researchers to honor their research topics in the field of parasitology. The SEMINARIS CampusHotel Berlin was a nice location for this conference, because it provided a lot of space for poster presentations, food breaks and enjoyable conversations during breaks.

- Maria Serocki (project C1)



Oxford-Berlin School on Molecular Basis of Inflammatory Diseases

June 9-10, 2022, Berlin (Germany)

Taken from drfz.de/aktuelles/veranstaltungen/ox-ber-mbid/

In June, I had the opportunity to present a poster here in Berlin at the Oxford – Berlin School, which is an event organized by the faculty of the Kennedy Institute of Rheumatology, Charité – Universitätsmedizin Berlin, and DRFZ. In this event, cellular and molecular processes relevant to human inflammatory diseases were addressed. It was a nice experience for me since apart from having a fully packed schedule of really interesting lectures, highly dynamic poster sessions allowed a lot of interaction among the attendees. I would recommend this event to people interested in gaining experience in poster presentation as well as in gaining knowledge related to immunological events leading to inflammatory diseases.

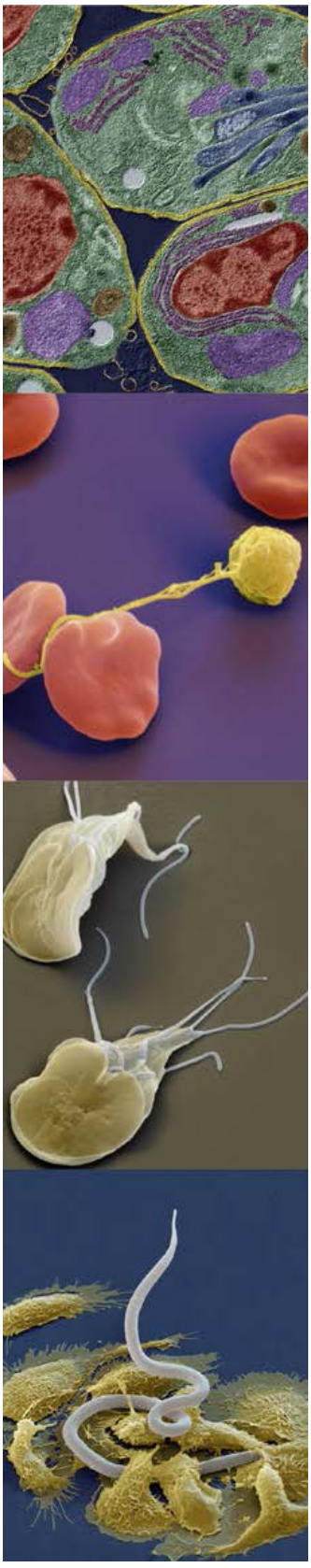
- Luis Elizalde (project B4)

Recent insights into Immuno-Oncology

June 16-17, 2022, Leuven (Belgium)

In summer, I participated in this interdisciplinary conference on the interplay of the immune system and cancer. It was a very nice experience, especially to be in the historical university of the beautiful city Leuven and hear talks from leading experts in the field. But the best was to finally meet people in the first conference that I attended in presence.

- Jost Lühle (project A3)



VI[th] International Mouse Meeting

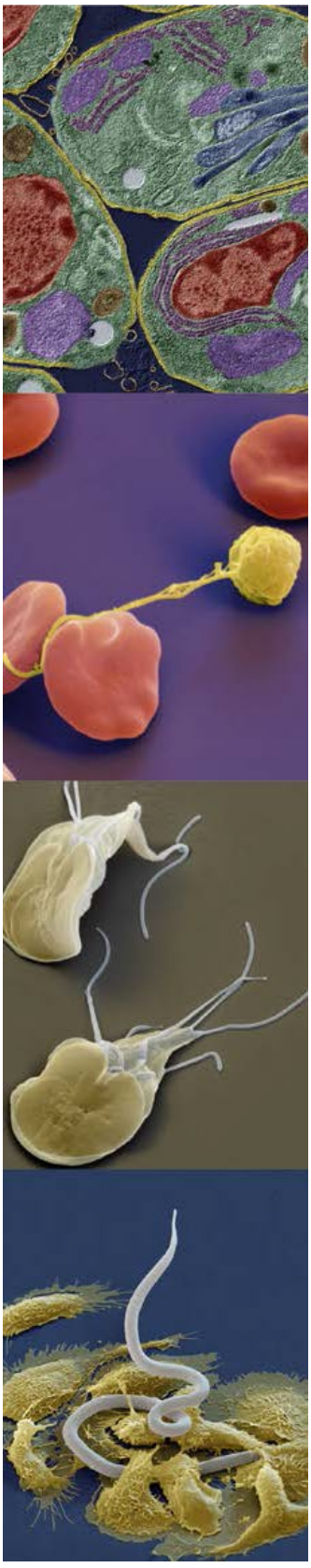
June 20-23, 2022, Montpellier (France)

Taken from https://isem-evolution.fr/en/evenement/vith-mouse-symposium/

In June 2022, Emanuel and I joined the Vth mouse symposium in Montpellier. It was a very educative experience, where I had the opportunity to extend my knowledge on my research topic. I learned a lot about the mouse in terms of its reproduction, behaviour, and genetics. One of my highlights was a presentation about the sexist bias in science concerning the voice of female mice. Another interesting fact was the involvement of mice genetics in the history of humanity: The evolutionary tale of the house mouse can infer the history of the human colonisation movement. It was very stimulating to learn about the work of pioneer researchers on the topic, such as Prof. Diethard Tautz and Prof. Pierre Boursot. The symposium was small and intimate. Therefore, it was easy to get to know everyone. I genuinely enjoyed some activities, such as visiting the heart of Montpellier during the “Fête de la Musique“. A celebration of live music which immerses the streets of the medieval city of Montpellier in beautiful melodies and colours.

Taken from https://isem-evolution.fr/en/evenement/vith-mouse-symposium/

- Fay Webster (project C8)

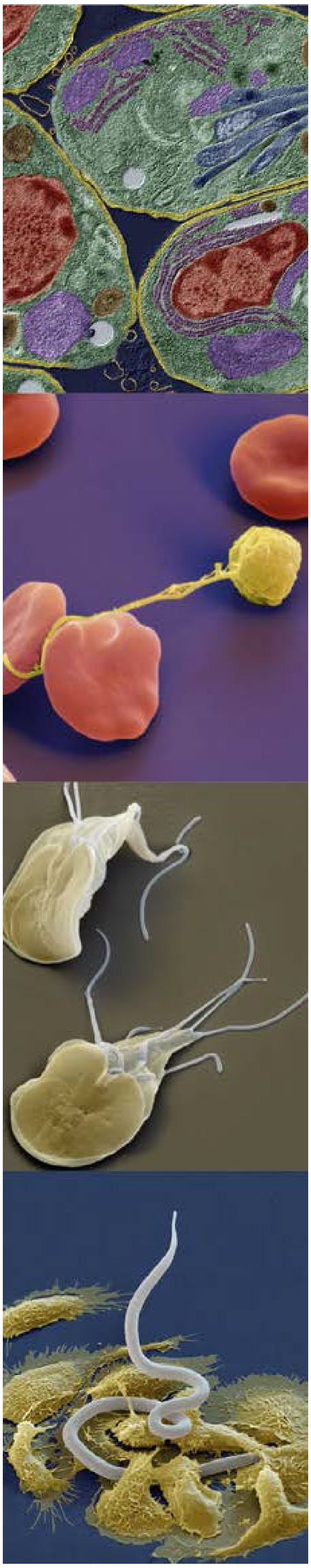


PhD student Symposium "Parasite Infections"

August 3-5, 2022, Gut Klostermühle (Germany)

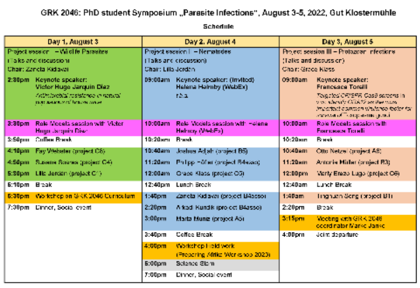
Photo private

When the elite of the GRK2046 junior scientists jointly entered the resting area of the country hotel Gut Klostermühle after the first project session, in which the topic of wildlife parasites was presented and discussed, I felt happy because it became obvious that the location Marta, Fay and I had picked was just the right one for us GRK-PhDs to hold a three-day scientific symposium by PhDs for PhDs in midsummer 2022. Prof. Hartmann gave the initial impetus for organizing a symposium for the 3rd generation GRK students during a feedback discussion with Marta. Marta then motivated Fay and me for the cause, and the organization took its course with great support from our PhD coordinator Marko. All 3rd Gen PhDs loved this idea. The goals we aimed to achieve with this interdisciplinary symposium were finding overlapping scientific interests, initiate and/or strengthen collaborations between institutes and provide an opportunity for a general academic exchange. The entire organization ran smoothly. Marta, Fay and I conducted a Doodle survey among the students about possible event times. When the dates of the event were set, we sought for suitable locations in and around Berlin. We then contacted and asked the preferred locations for quotes and discussed together with Marko the pros and cons of the venues including the budget. Furthermore, we sought for guest speakers with our preferred background and invited them for a role model talk. Understandably, not all invited scientists were able to honor the invitation because our event dates overlapped with the summer breaks. Nevertheless, our symposium was enriched with two former GRK members who are currently pursuing their successful academic careers as postdocs. Many thanks from my side to Victor Hugo Jarquín Díaz and Francesca Torelli for the great presentations and the subsequent role model talks. It was a great benefit for us to have them both at the symposium since we all received a lot of scientific input for our project from them. Worth mentioning is the time we all had for our project presentations and for the Q&A session afterwards. Finally, there was enough time to discuss each project explicitly, which helped tremendously to understand the single topics in more detail. I was



amazed that the scientific conversation continued even after the official part of the day during and after dinner. I remember that we had a growing enthusiasm for working together and for joining parts of our work together to answer questions that came up during the talks. We also had the idea to prepare a shared list of the skill sets and devices of individual groups we are working in, to provide a database with particular know-how that we could refer to and ask for help if it is needed for a project. Overall, the symposium was a great and enriching experience for me. I recommend every PhD student to have this experience, which is surly not only beneficial for the individual scientific work but also is helpful for expanding social skills. Finally, I would like to thank the DFG and all senior scientists of the Research Training Group 2046 for making this symposium possible.

- Arkadi Kundik (project B4 associated, organizing committee)



GRK 2046: PhD student Symposium „Parasite Infections", August 3-5, 2022, Gut Klostermühle

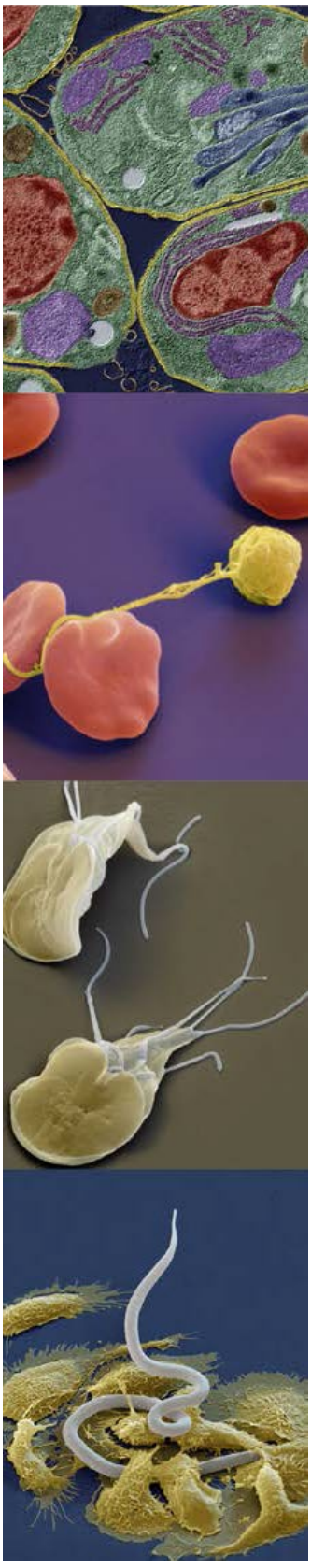
Schedule

Day 1, August 3	Day 2, August 4	Day 3, August 5
Project session I – Wildlife Parasites (Talks and discussion) Chair: Zaneta Kidiavai	Project session II – Nematodes (Talks and discussion) Chair: Lilli Jordan	Project session III – Protozoan infections (Talks and discussion) Chair: Grace Klass
2:30pm Keynote speaker: Victor Hugo Jarquin Diaz [illegible]	09:00am Keynote speaker: (invited) Helena Helmby (WebEx) t.b.a.	09:00am Keynote speaker: Francesca Torelli [illegible]
3:30pm Role Models session with Victor Hugo Jarquin Diaz	10:00am Role Models session with Helena Helmby (WebEx)	10:00am Role Models session with Francesca Torelli
3:50pm Coffee Break	10:20am Break	10:20am Break
4:10pm Fay Webster (project C6)	10:40am Joshua Adjah (project B5)	10:40am Otto Netzel (project A8)
4:50pm Susana Soares (project C4)	11:20am Philipp Höfer (project B4asso)	11:20am Antonia Müller (project B3)
5:30pm Lilli Jordan (project C1)	12:00am Grace Klass (project C5)	12:00pm Marly Erazo Lugo (project C6)
6:10pm Break	12:40pm Lunch Break	12:40am Lunch Break
6:30pm Workshop on GRK 2046 Curriculum	1:40pm Zaneta Kidiavai (project B4asso)	1:40am Tinghuan Song (project B1)
7:30pm Dinner, Social event	2:20pm Arkadi Kundik (project B4asso)	2:20pm Break
	3:00pm Marta Muniz (project A5)	3:15pm Meeting with GRK 2046 coordinator Marko Janic
	3:40pm Coffee Break	4:00pm Joint departure
	4:00pm Workshop Fieldwork (Preparing Afrika Workshop 2023)	
	6:00pm Science Slam	
	7:00pm Dinner, Social event	

Planned Symposium schedule

This year featured a novel extracurricular activity initiated and co-organized by Marta, and organized by our students' representatives, Fay and Arkadi. For two days, the students moved to a laid-back hotel without their PIs in Brandenburg to discuss the progression of their work, their problems, and future expectations. Our mornings began with guest talks by the former GRK students Victor Hugo Jarquín Díaz and Francesca Torelli who spoke about their time during the PhD as well as their carrier progression since they graduated. In a role model-like session, we were able to ask them about their experience with finding a new position and possibilities to look for external funding.

The bulk of the day we spent presenting our own work in longer presentations, highlighting not only the successes but also complications and problems. It was actually quite interesting to be able to really understand the experimental setup of our peers and discuss future alterations in depth. Even though this meant we often took more time than planned, we gained a much greater understanding of the other projects in our cohort. Besides our presentations, we spent much time together at the dinner table as well as during the breaks, which helped us to get to know each other a good deal better. Especially considering our first year was still partially affected by the covid pandemic, it was helpful



to spend this much time together in a more relaxed setting. I think I speak on behalf of all participants by thanking our student representatives as well as Marko for the organization. Furthermore, I think we all showed our desire to repeat this different type of symposium in the second half of our PhD projects.

- Otto Netzel (project A6, participant)

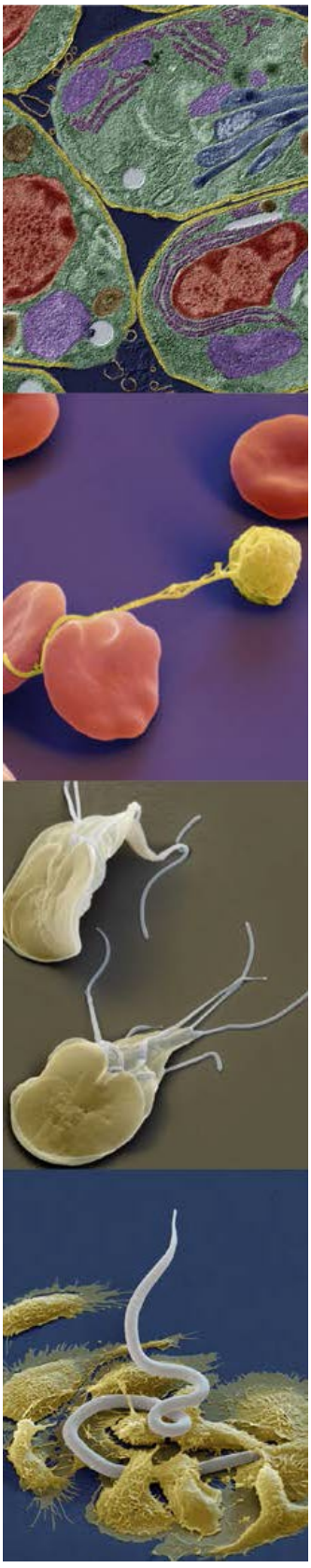
15th International Congress of Parasitology (ICOPA)

August 21-26, 2022, Kopenhagen (Denmark)

I had the opportunity to attend the 15th international congress of parasitology ICOPA, which is a congress of the world federation of parasitology that took place in Copenhagen between the 21st and 26th of August. Here, I had the chance to present some of my data on parasite-organoid interactions and had the opportunity to interact with other researchers working on a similar topic, who work on Helminths and Cryptosporidium. This was a great chance to see the current state of organoid-parasite research and create a network. Moreover, this congress gave me the opportunity to interact with amazing researchers from around the globe that focus on parasites beyond the toxoplasma field, which was great because it is rare to see so many parasite species represented in a single place. The program covered a spectrum of topics that ranged from human and animal diseases (including fish), as well as epidemiology, strategies against resistance and better diagnostic tools in form of oral and poster presentations. I got to meet some familiar faces and also some new ones, and was really happy to see a big representation of researchers from institutions of countries from Latin-American and African nations that are not often represented in such venues. Overall, I recommend this congress to really get immersed in the world of parasitology!

ICOPANHAGEN
2022 | World Federation of Parasitologists
21-26 | August Copenhagen, Denmark
Taken from https://icopa2022.org/

- Estefanía Delgado Betancourt (project C3, attendance in person)



In the last days of August, I attended virtually the congress (ICOPA) organized by the World Federation of Parasitologists. Because of the really well-structured program and virtual platform offered by the organizers, it was possible to attend many different lectures live, but also recorded sessions throughout the duration of the congress. It was an enriching experience despite I just could followed the sessions online. Many scientists from many different countries, shared their latest findings related to distinct parasitic infections. Moreover, as a virtual witness it was enjoyable to hear the variety of scientific approaches the scientific community has already thought about to study with further detail the most prevalent parasites around the world. Scientific talks also related to benefits from a parasite infection brought relevant discussions about the actual immunomodulatory activity parasites in inflammatory diseases. All in all, despite in person attendance could have been even more enriching, I would definitely recommend to join next ICOPA if not possible in person at least online and enjoy such an interesting event.

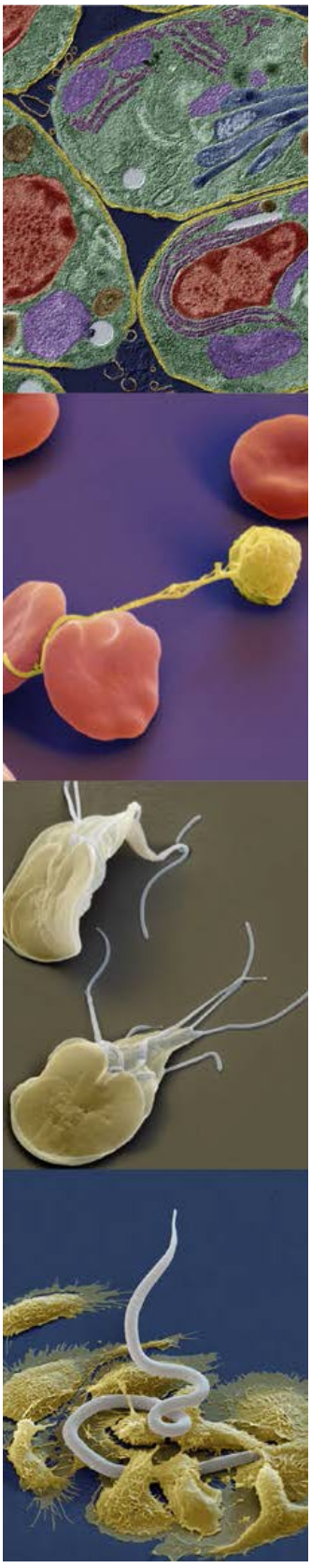
- Luis Elizalde (project B4, attendance virtual)

74th Annual meeting of the Deutsche Gesellschaft für Hygiene und Mikrobiologie e.V. (DGHM)

September 5-7, 2022, Berlin (Germany)

The 74th annual meeting of the German Society for Hygiene and Microbiology (Deutsche Gesellschaft für Hygiene und Mikrobiologie - DGHM) took place in September as a strict in-person event and was hosted at the Henry Ford Building of the Freie Universität Berlin. This conference allows medical scientists, microbiologists, hygienists and clinicians to unite and learn from each other during poster sessions and oral presentations focusing on infectious diseases in a basic as well as clinical research context.
It was a pleasure to present and discuss my own research data on the influence of *Giardia duodenalis* attachment on infection-induced epithelial barrier breakdown, thereby gaining valuable input from the audience. I'm already looking forward to attend next years' 75th DGHM conference, taking place from the 18th to the 20th of September in Lübeck.

- Antonia Müller (project B3)



Meeting of the Study Group Veterinary Immunology (VIA) of the German Society for Immunology (DGfI)

September 6-7, 2022, Hannover (Germany)

Taken from https://dgfi.org/arbeitskreise/ak-veterinaerimmunologie/meeting/

The institute of immunology at the Freie Universität Berlin attended the VIA meeting in Hannover. This meeting took place from 06.09. to 07.09.2022 at the University of Veterinary Medicine Hannover. The VIA meeting is organized as a satellite meeting of the DGfI meeting in Hannover. This is a meeting that brings together veterinary immunologist from the international community to share and discuss their findings. The focus for this year's meeting was on new methods and techniques for studying veterinary immunological issues. As has being the tradition of the conference, enough space and time for young scientists to present their research results and ideas was provided. GRK 2046' 3rd generation students from the institute attended the meeting to present their work both in oral and poster presentations. Students had a lot of inputs from experts and other PIs which would go a long way to improve their research. Fortunately, two GRK 2046 3rd generation students from our institute were awarded the 3rd and 4th place for best oral presenters. I will highly recommend this workshop for PhD student. The participation for the conference was fully funded by GRK 2046 for all students.

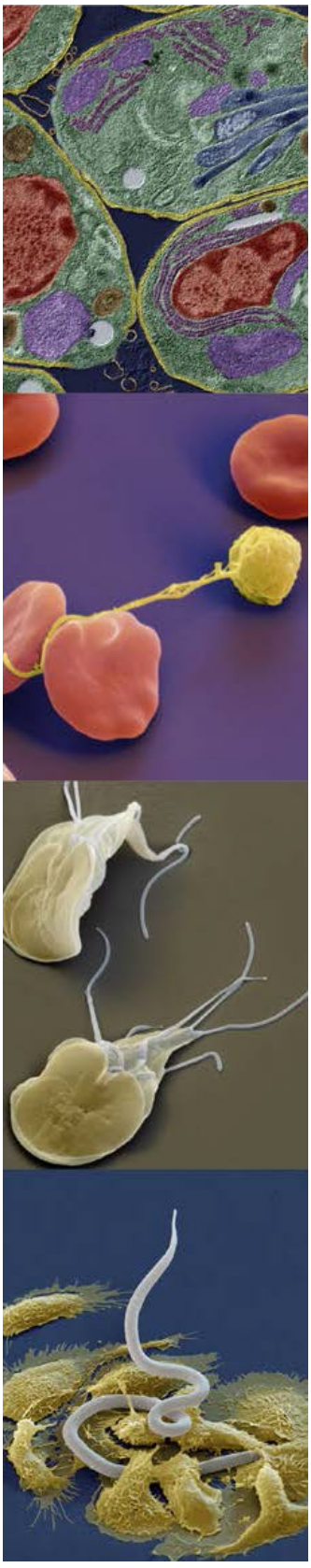
- Joshua Adjah (project B5)

4th International Congress on Parasites of Wildlife

September 11-15, 2022, Kruger National Park (South Africa)

Taken from https://www.wfpnet.org/uncategorized/4th-international-congress-on-parasites-of-wildlife-icpow/

September I had the opportunity to attend the 4th International Congress on Parasites of Wildlife, held at the Kruger National Park in South Africa. The conference welcomed students and researchers from 21 different countries. Two parallel sessions covered everything wildlife parasitology



– from freshwater and marine systems, through parasite vectors and methodology, to the human-livestock-wildife interface. In-between sessions we could view the poster section and discuss them over a coffee and a muffin. Here, I also got the chance to present my poster on the relationship between *Ancylostoma* infection and movement behavior in cheetahs. As there was no designated time for individual posters, we could interact with other participants throughout the whole conference, which allowed for many opportunities for poster discussions.

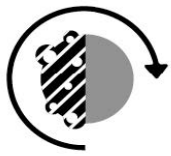
After the densely packed sessions, the organizers made sure to leave a couple of hours of free time in the afternoon to explore the camp and go on game drives in the park. During an organized drive on the last day, we all had the chance to experience some of the breathtaking flora and fauna of Kruger National Park.

In addition to the outstanding and diverse talks and posters, the warm and friendly atmosphere and the unique location of the conference made it a great experience to attend as my first conference during my PhD.

- Lilla Jordán (project C1)

Berlin School of Integrative Oncology (BSIO) Conference "Tissue Damage and Healing"

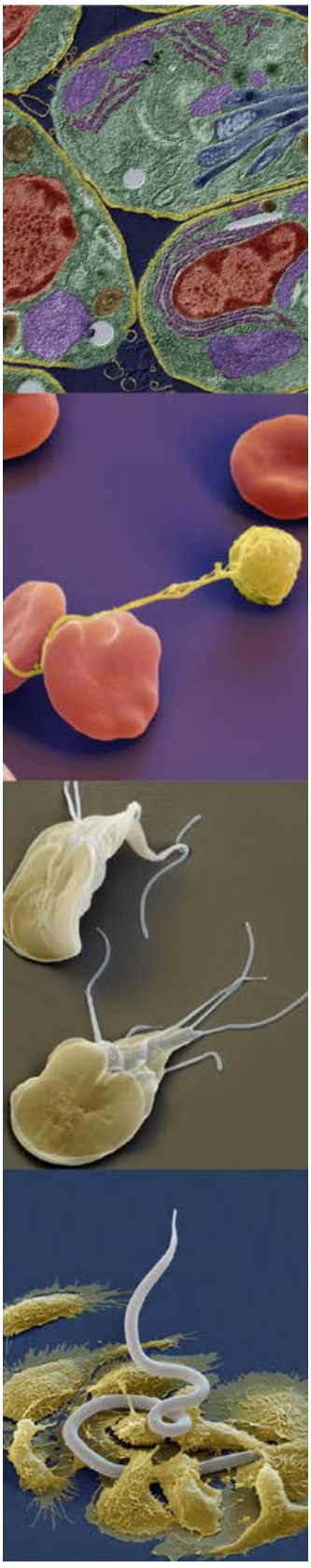
September 23-24, 2022, Berlin (Germany)



Taken from https://www.bsio-cancerschool.de/fileadmin/user_upload/bsio_program_tissue_damage_and_healing_in_cancer.pdf

Together with my PI Oren Moscovitz, I attended the BSIO conference on tissue damage and healing in cancer taking place in the Harnack house in Dahlem. It was an interesting experience, because the conference was mainly organized by clinicians and many topics were quite new to me. Because of this I learned a lot, especially about translational medicine but also, more specifically, about the interplay of infectious diseases and cancer.

- Jost Lühle (project A3)



5th Annual International Glycoscience Meeting – Glycobasque 5

November 18-19, 2022, San Sebastián (Spain)

Taken from https://glycobasque.es/; in addition, there was a scientific program, really…☺

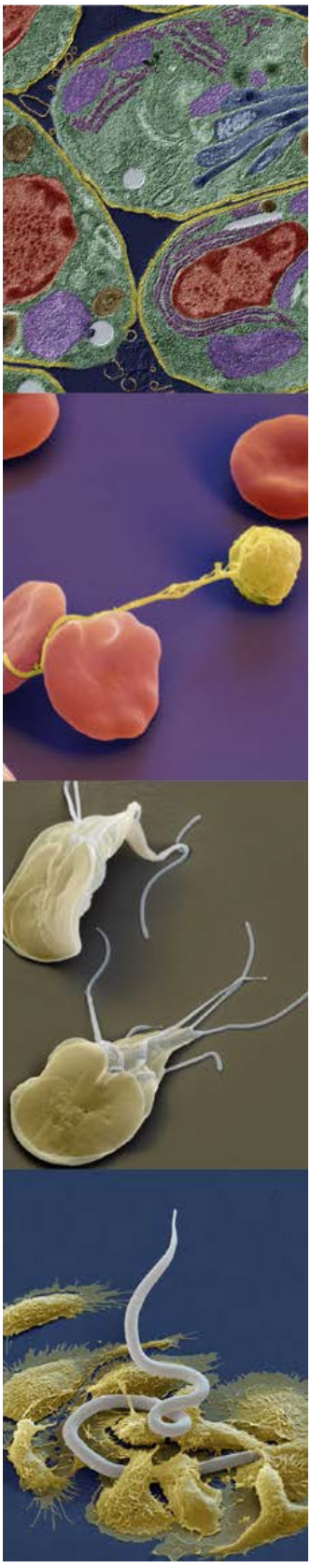
Since most of my PhD time coincided with the COVID pandemic, I was very excited to join this year's glycobiology conference in San Sebastián literally in my last month as PhD student. Thanks to the generous support of the RTG2046, I enjoyed many inspirational talks about glycoscience. The speakers had a diverse scientific background, ranging from organic glycan synthesis to biological applications of glycans or glycan-binding proteins against cancer and infectious diseases. I very much enjoyed the coffee breaks and poster sessions between the talks, giving me a great opportunity to network and get to know other scientists from the field. In addition, the talks and posters sparked many fruitful discussions and I went home with a lot of new ideas. After several years with virtual conferences only, these two days really showed me how important it is to meet in person again!

- Felix Goerdeler (project A3)

Workshops / Courses

Negotiations & Conflict Management (Schiller & Mertens)

June 30 – July 1, 2022 (ZIBI – IMPRS-IDI)



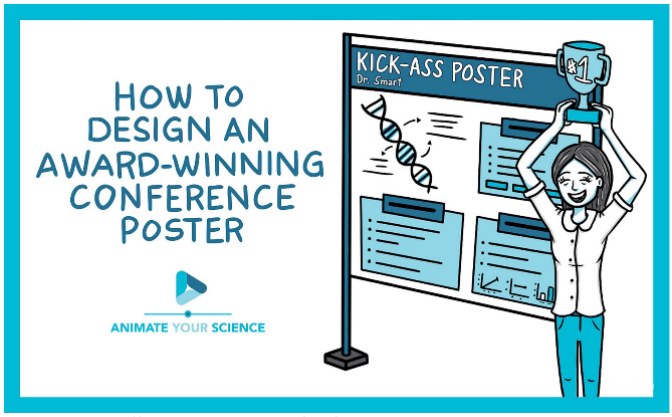
„All problems in science arise from miscommunication, egocentric leadership and immature self- and conflict management!“, is Alex Schiller's answer to why this course is worth your time. Starting with a long look in the mirror (introspection), this course provides a basic understanding of communication and concepts for making it to the other side of challenging conversations. If you were expecting a prosaic portrayal of the "ten golden rules of how to get what you want", you will be disappointed. Instead, this workshop provides an interactive opportunity to get to know yourself, your perceptions and habits, and how to work with them to achieve your goals. The core message of this course is "If you want to improve communication, you have to work on yourself. You are the only person you can change.".

Taken from Slideshare.net

- Grace Klass (project C5)

Poster Design (BioScript – Ruth Willmott)

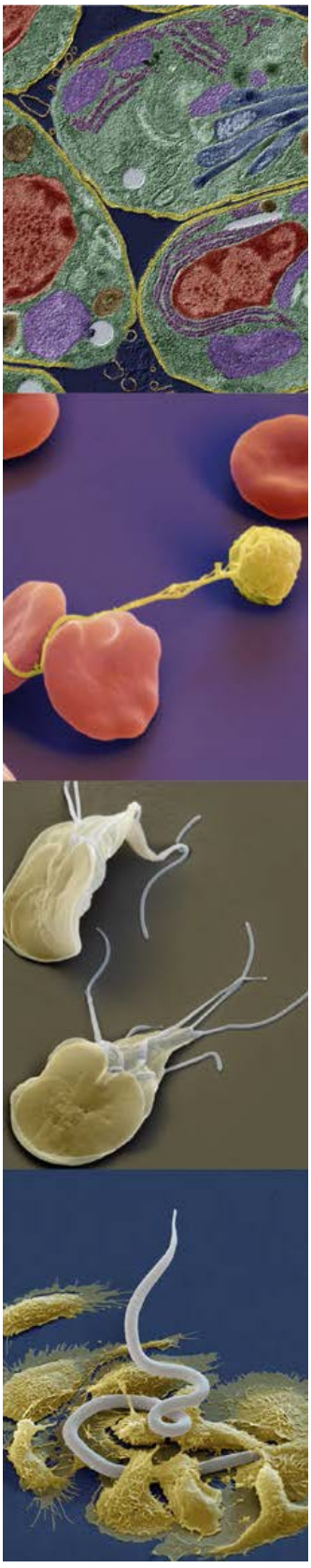
August 16-17, 2022 (BSRT - Charité)



Taken from Animateyour.science

https://www.animateyour.science/post/how-to-design-an-award-winning-conference-poster

In the middle of August, I could participate in the workshop Designing & Presenting a Poster. Luckily, this workshop was carried out in person, which made it actually more enriching. The variety of research topics from the PhD students attending the workshop allowed great

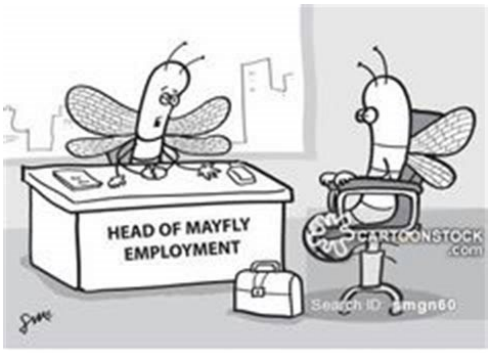


discussions of how different layouts fit better with a certain topic. Moreover, we could define specific aspects of the poster that can make it more attractive and, of course, more understandable for the audience. During the second day, the workshop focused more in presenting a poster professionally and how it would be professional to take advantage the attendance of a congress to not just present your research, but actually do networking. I definitely would recommend this workshop, it was worth to be physically there and interact with other PhD students.

- Luis Elizalde (project B4)

Career Orientation (BioScript – Ruth Willmott)

August 22, 2022 (BSRT - Charité)

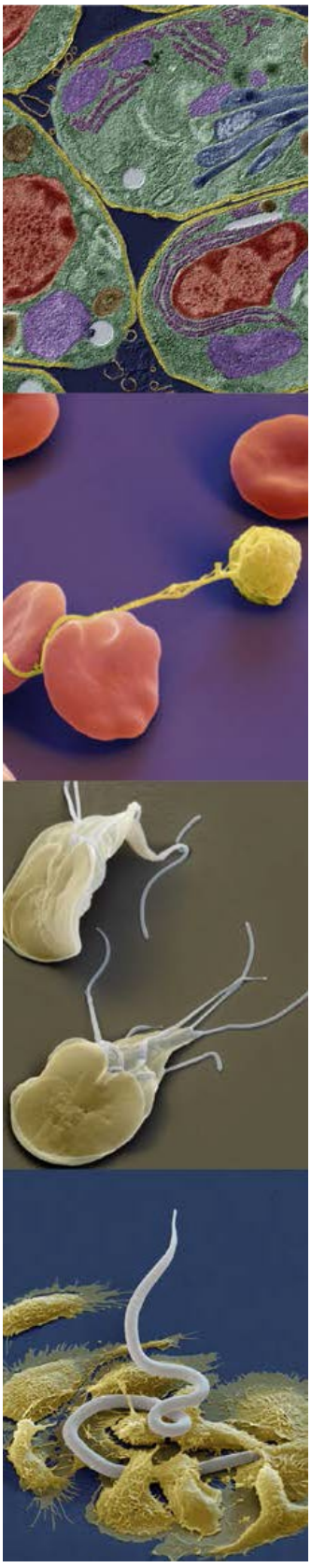


"So... where do you see yourself in 5 minutes time?"

Taken from pinterest.com

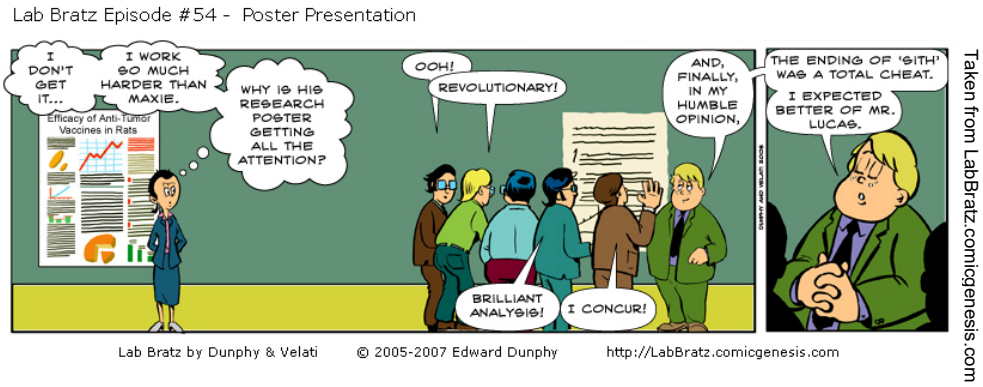
Ruth has a captivating style of teaching, that makes it hard to get a spot in any of her courses. While this course subject is mandatory, here's why you should want to do it: I try not to think too much about my future career, because it scares me a little. There are so many options and I am worried about making the wrong choice. I prefer to focus on finishing my PhD and hoping that things will fall into place. Does this sound familiar, fellow procrastinator? In any case, this course provides a guided space for you to think about your personal and professional goals and what career options are a good fit for you. I still don't have a 10-year-plan. But I have a much better idea of what is actually important to me, what kind of fields would suit me and how I can work towards them. This course is a great place to start being proactive about your own path.

- Grace Klass (project C5)



Poster Presentation (Marc Edwards)

September 12-13, 2022 (ZIBI)



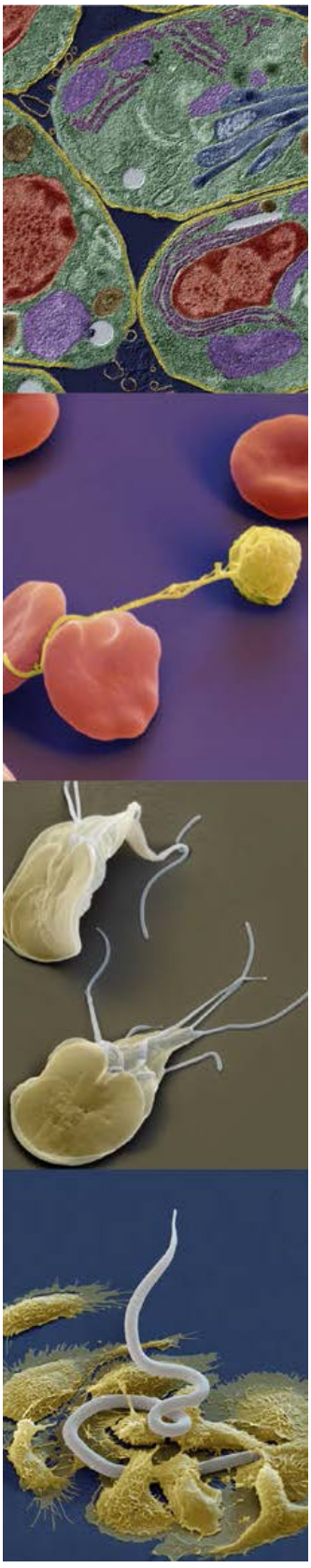
The workshop 'successful poster presentation' by Mark Edwards not only focused on in-presence poster presentation but also online poster presentation, which became a norm during the corona crisis. It was intense yet quite informative and interactive. Poster presentation can be quite 'horrific' when not well prepared. Mark Edwards provided a few tricks and tips on how to go about it. One of the tricks included; multi-tasking whilst presenting e.g., folding laundry or going about house chores as you present from the top of your head. This allows you to deliver the presentation calmly with breath control as well as coping with the distraction from the active surrounding. We all know how poster presentations happen all at once during coffee break with a time limit of about 5-7minutes. One of the tips he mentioned was preparing a poster that is easy for your 'mother' to understand (the assumption is that she is from a different field of course). Word play was another area of focus to allow for proper articulation of mouthful words at a fast pace especially in an international environment where accents do play a role in communication. I, for sure, would highly recommend the course.

- Zaneta Kidiavai (project B4 associated)

Self- and Time Management (Sabine Lerch)

October 17-19, 2022 (ZIBI)

I participated in the online Self- and Time Management workshop of Sabine Lerch, organized by the ZIBI, from October 17th to 19th. In three half-day sessions Sabine created a safe and welcoming environment



where we could learn just as much about the dos and don’ts of time management as about our own needs and why we ignore them.

Sabine Lerch . soft skills for science

Taken from https://sabinelerch.de/

We talked about the importance of (self)reflection on our time management, goals and plans. After a couple of introductory excercises and identifying our individual working styles, we brainstormed about the intrinsic and extrinsic factors affecting our motivations, concentration and all-in-all time management. Throughout the course we used an online mindmapping tool for the group and individual excercises. We created mindmaps for our values, priorities and, of course, for an overview of our PhD projects and the major tasks involved. Sabine also introduced a probably lesser known method, the GANTT chart, for estimating and following the time needed and spent on our different projects and tasks.

The workshop had a good balance of presentation, group work and breaks, which made it easy to follow and the group stayed engaged and enthusiastic throughout. One of the most lively discussions was on the topic of procrastination, and it seemed like everyone had a new thought or realization to ruminate on after the course.

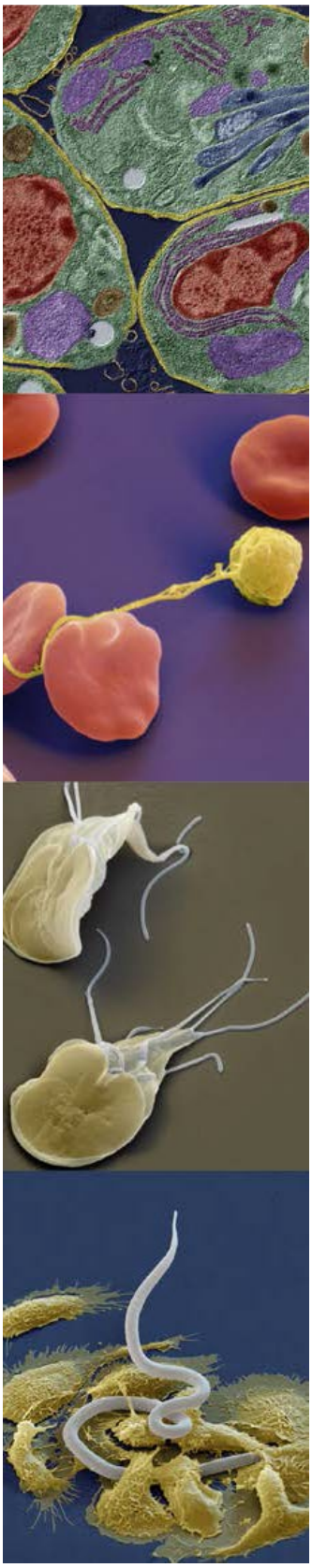
I can really recommend this workshop if you would like to spend 3 chill half-days on self-reflection, and learn about how you can improve your time management (and a bit of self care) in a safe and constructive environment.

- Lilla Jordán (project C1)

Science Communication (Marc Edwards)

October 24-25, 2022 (ZIBI)

I attended the scientific communication workshop 24th - 25th October organized by Mr. Mark Edwards. The two-day workshop covered a lot of topics – targeting your messages, developing a structure and editing, the flow of the languages, grammar and styles, press and newsletter, diversity-aware languages and so on. The most impressive topic for me was “principles of plain English”. In academia, we tend to use complicated and sometimes pedantic words to explain simple stuff. It



creates distance from public readers and everyday life. The workshop reminded me of using plain and more understandable English to avoid confusing readers.

- Tinghuan Song (project B1)

Networking (GOLIN WISSENSCHAFTSMANAGEMENT)

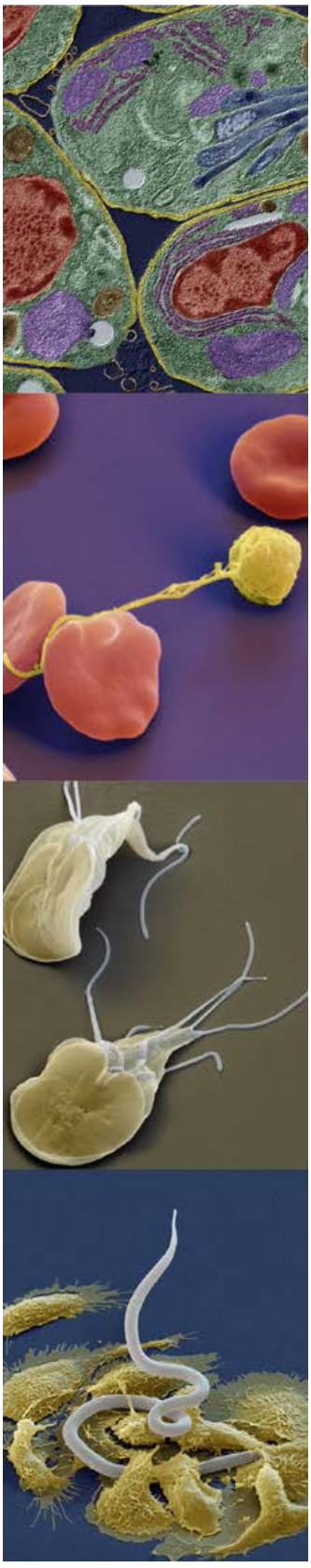
November 8, 2022 (ZIBI)

The network course was a very helpful seminar organized be the ZIBI graduate school. Cornelia Altenburg held this course as an online one day event and there was not much preparation needed. The topics were focusing on challenges in networking, being confident with your own competences, holding a science pitch and how to build your own network. It was interesting for me as a beginner to get an impression on how important networking is and how to achieve strategies to get better in it. In the course we had to give various short talks that mimicked real situations at conferences or in other professional situations for example. In addition to that we always had to give feedback to the others also from the perspective as a colleague, as employer from an industrial company or professor. For me this created a safe environment to show my skills without being shy and learn how to manage networking situations.

In summary, I would recommend this workshop to anyone starting his or her PhD to gain experience and knowledge on how to communicate and network as it is so important in so many situations.

Taken from gmsciencein.com

- Philipp Höfler (project B4 associated)



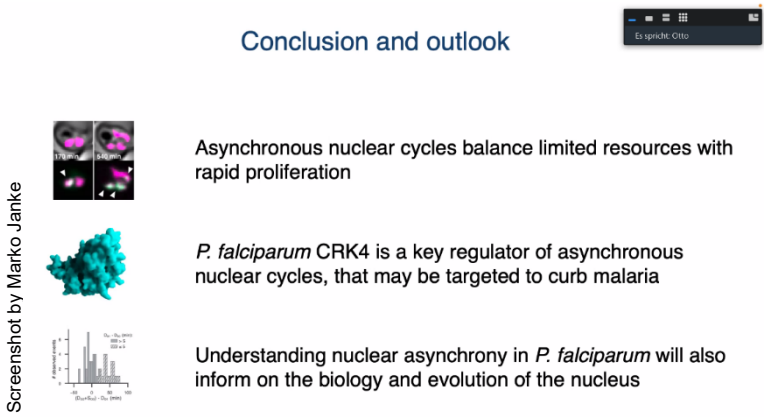
Berlin Parasitology Seminars (BPS)

Markus Ganter
Heidelberg University Hospital, Heidelberg, Germany

September 13, 2022 (hybrid)

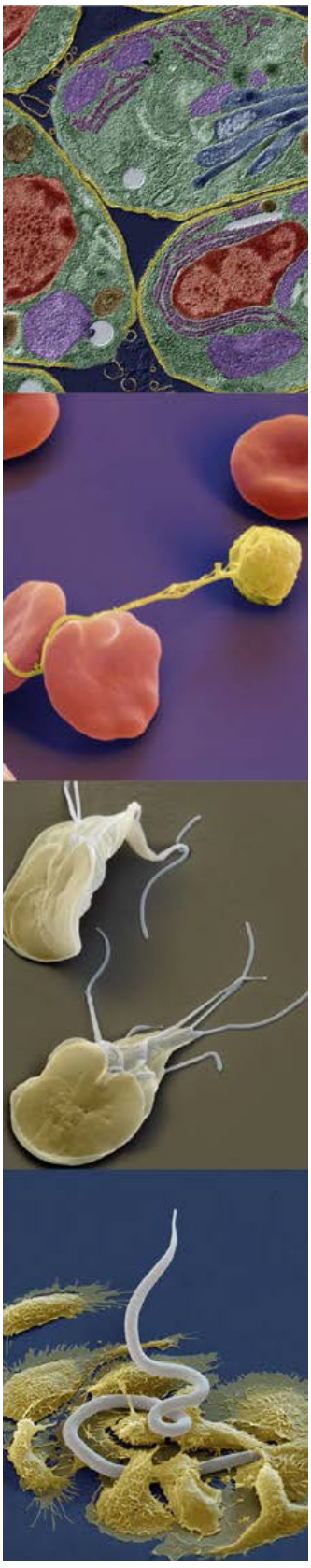
Photo by Marko Janke

After a longer summer break, we resumed our Berlin Parasitology Series with Markus Ganter from the University Hospital Heidelberg. His talk was titled "*Plasmodium* proliferation in the blood: how, why and who?" and featured work during his time at Harvard School of Public Health as well as the latest findings of his group in Heidelberg. We heard about the lack of cell cycle control of the blood stage of *Plasmodium falciparum* and its peculiar nuclear division strategy. His latest project looked into the exact mechanisms involved and proposed a model of how nuclear multiplication could be controlled. Through super-resolution microscopy, his group demonstrated the automony of individual nuclei which conclude one round of blood stage division through a final coordinated cytokinesis step. Even though we heard a lot of new information, his talked demonstrated the necessity of improving our understanding of how the parasites orchestrate their efficient replication in erythrocytes of their hosts.



Screenshot by Marko Janke

- Otto Netzel



Mathilde Gendrin
The Institut Pasteur, Paris, France

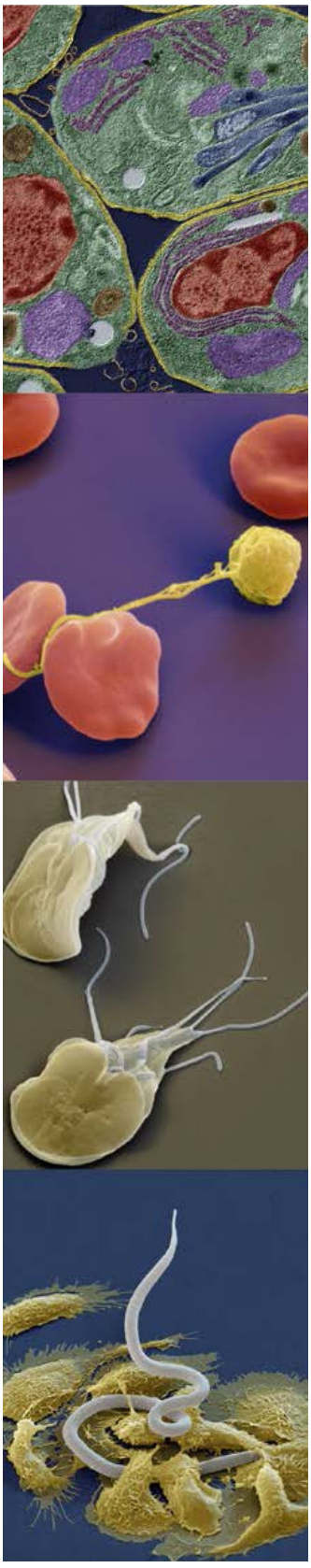
October 20, 2022 (hybrid)

Mathilde Gendrin, PhD from the Institut Pasteur de la Guyane, gave a presentation entitled: "A toolbox for the study of mosquito microbiota". Her research focused mainly on the interactions between microbiota and mosquitoes, specifically the local vectors of dengue and malaria, *Aedes aegypti* and *Anopheles darlingi* respectively. In her reserch group in Guyana, they have developed methods to investigate the composition of the microbiota and/or bacterial isolates of wild mosquitoes. In the lab, they applied a novel approach to produce germ-free mosquitoes without any developmental deficiency.


Photo by Marko Janke

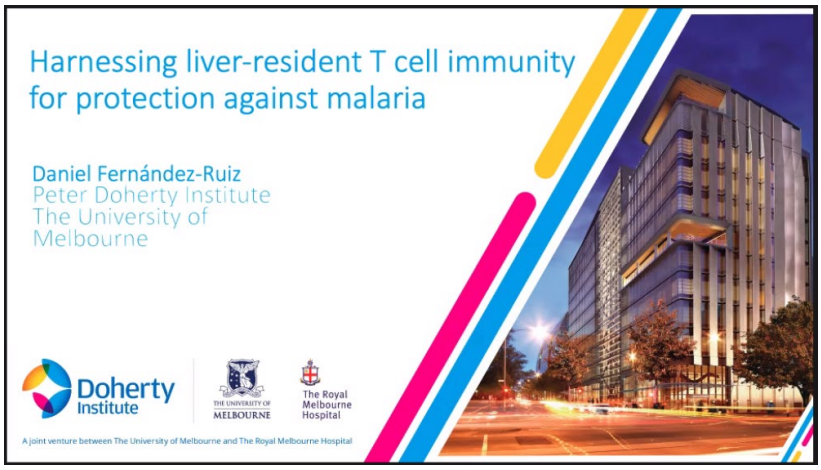
The method consists of transiently colonizing the larvae with bacteria that require specific dietary components and that can be lost at any chosen time in the mosquito's development with a simple change of diet. Hence, they found out the importance of bacterial biosynthesis of folate that favors the development of the larvae. After her talk we had a get-together with all participants with a very interesting scientific discussion eating delicious Pretzels...

- Marly Erazo Lugo (project C6)



Daniel Fernández-Ruiz
The University of Melbourne, Melbourne, Australia

November 8, 2022 (hybrid)

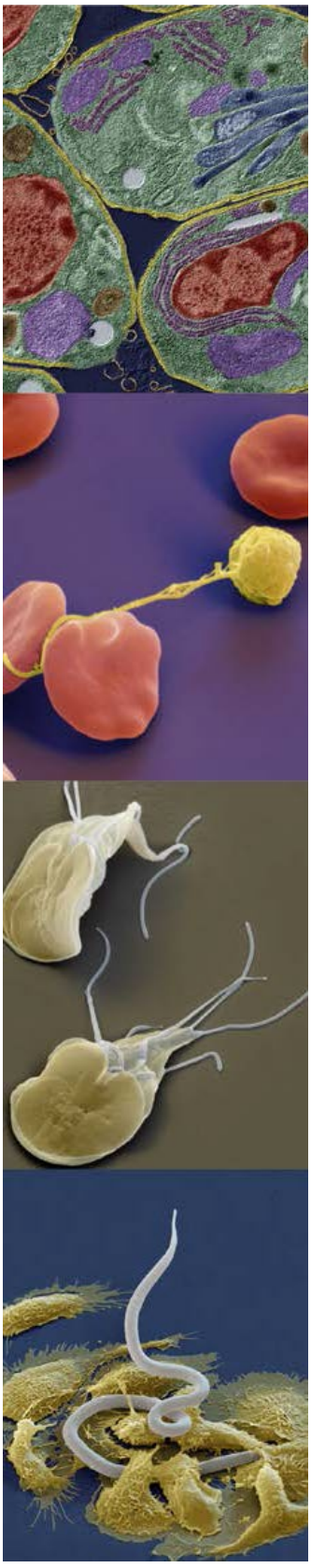


Screenshot by Marko Janke

Hooray - we finally had our first guest from Australia in Berlin! Dr. Daniel Fernandez-Ruiz works at Doherty Institute, the University of Melbourne focusing on liver-resident memory CD8 T cells as efficient mediators of immunity against malaria. I came across some of his amazing work last year and invited him to our BPS as a guest. Surprisingly, Daniel agreed to fly to Berlin almost right away. After half a year of waiting, I finally welcomed Daniel in Berlin. He is such an easy-going and humble person. Besides all the private scientific discussions with Daniel from different groups and institutes, some PhD students and I also had a mini-role model session with him. We were mostly curious about his career path from Germany to Australia, and how difference it is to work in another country. Then Daniel's whole trip to Berlin wrapped with an amazing talk and followed by networking. It was such a nice experience and I hope everyone enjoyed or benefited from Daniel's short visit to Berlin.

Photo by Marko Janke

- Tinghuan Song



Jennifer Keiser
Swiss Tropical and Public Health Institute, Basel, Switzerland

November 22, 2022 (hybrid)

Screenshot by Marko Janke

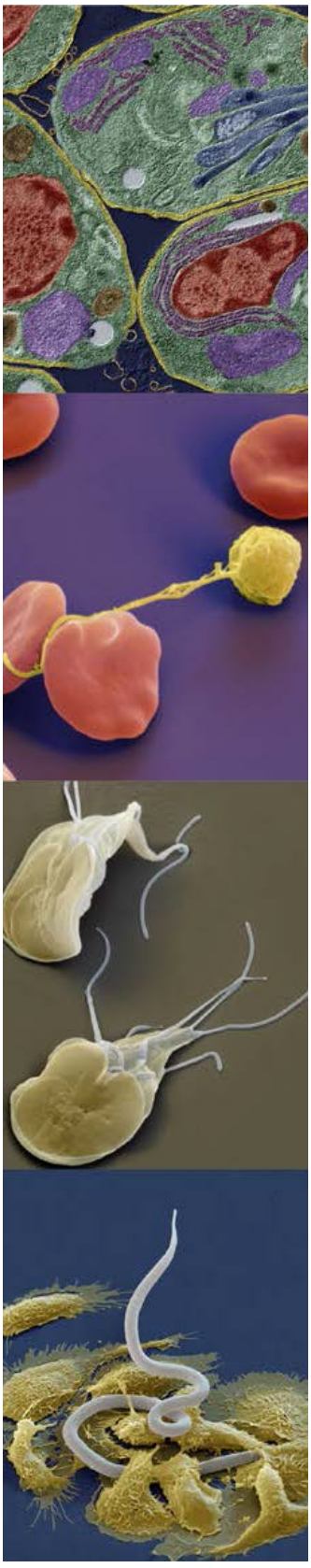
On November 22nd, I had the opportunity to host Assoc. Prof. Jennifer Keiser as our BPS guest. She is from the Swiss tropical and public health institute (STPH) located in Basel, Switzerland. Her research focus is on anthelmintic drug discovery and development with a main focus on schistosomiasis and partly soil transmitted helminths. She mainly carries out clinical trials in helminth endemic areas; in fact, she had just arrived from Pemba Island, Tanzania, a day before her arrival to Berlin.

Photo by Marko Janke

In her talk “Improved treatment options for helminth infections” she discussed possible anthelmintic drug combinations that were effective in worm elimination, mentioned a drug that showed 0 effects *in vitro* with 100% worm elimination effect after *in vivo* testing; a response that was a result of drug activation of NETosis. Also, interesting was the change in microbiome after drug exposure leading to a different response to worm elimination. All in all, it was a well welcomed change of pace; from ‘immunological response to parasite’ to ‘drug response against helminths’.

- Zaneta Kidiavai (project B4 associated)

GRK 2046 Newsletter
December 2022



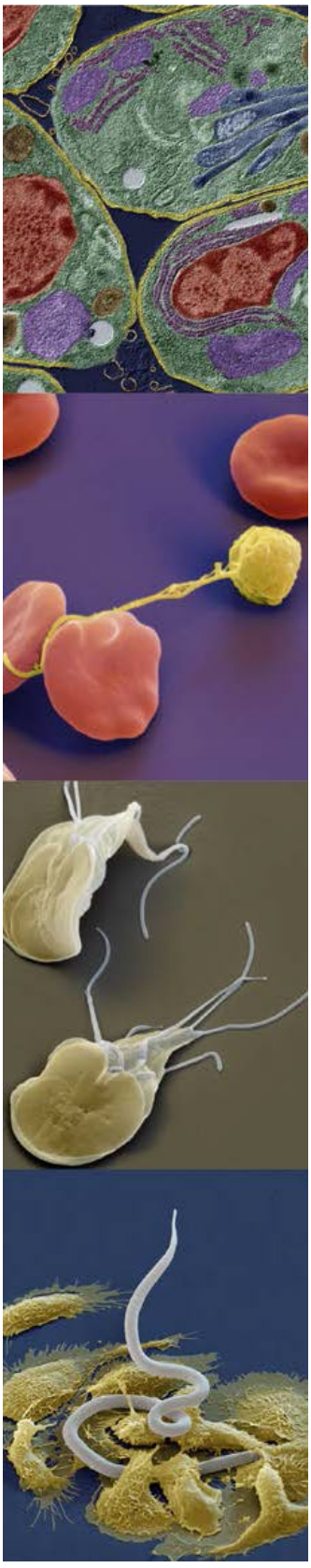
Retreat 2022

October 27-28, 2022 (Veterinarium Progressum, Düppel)

The annual GRK 2046 retreat took place on October 27th and 28th. It was really nice to see everyone again in the familiar atmosphere of the Veterinarium Progressum in Düppel. On the first day, the PhD students had the opportunity to present the progress of their projects, which led to fruitful discussions and valuable feedback. The day was rounded off with an amazing barbeque. The PIs took charge of the grill and prepared a delicious selection of grilled meats, as well as vegan and vegetarian options.

Photo by Marion Müller

On the second day, the PhD students participated in two workshops on good scientific practice and career development led by Dr. Janet Schmidt. The first workshop on good scientific practice covered important guidelines, documents and values that every scientist should be familiar with. In particular, we were introduced to the DFG regulations for safeguarding good scientific practice and scientific integrity. Prominent examples of scientific misconduct were discussed and we were made aware of predatory journals.
The subsequent workshop on career development helped us prepare for the time after our PhDs. After learning what employers look for in candidates, we got the chance to reflect on our individual strengths and competencies and could practice communicating them in many



interactive exercises. I think that this training and the hands-on tools that were taught will be very useful in planning one's career. In summary, it was a very stimulating two days in which I learned a lot and I am already very much looking forward to next year's retreat.

- David Warschkau

Upcoming Events

Berlin Parasitology Seminars

June 13, 2023, 5pm – Miguel Soares (Instituto Gulbenkian de Ciência, Oeiras, Portugal, hybrid)

Role Models in Infection Biology

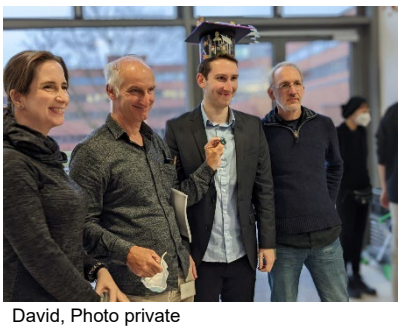
February 21, 2023, 9am – Sarah Benhaiem (IZW Berlin, hybrid)

Graduated GRK 2046 students

Vivian, Photo private

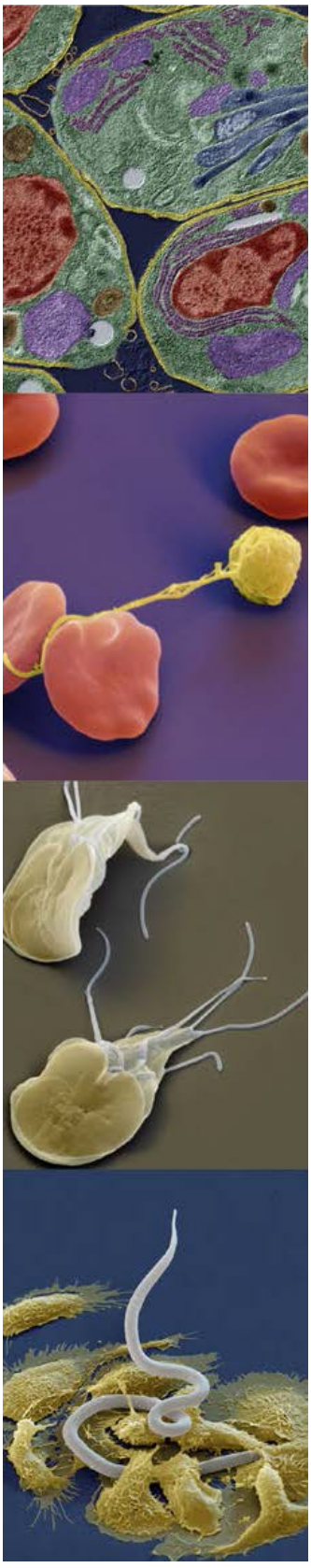
Congratulations to our PhD students Vivian Schüler (project C2, date of defense: 10.10.2022), Felix Goerdeler (project A3, date of defense: 30.11.2022) and David Holthaus (project B3, date of defense: 02.12.2022), Welmoed van Loon (project C7, date of defense: 12.12.2022).

Felix, Photo private



David, Photo private

Welmoed, Photo private



Publications

Transgenic Expression of *Haemonchus contortus* Cytochrome P450 Hco-cyp-13A11 Decreases Susceptibility to Particular but Not All Macrocyclic Lactones in the Model Organism *Caenorhabditis elegans*

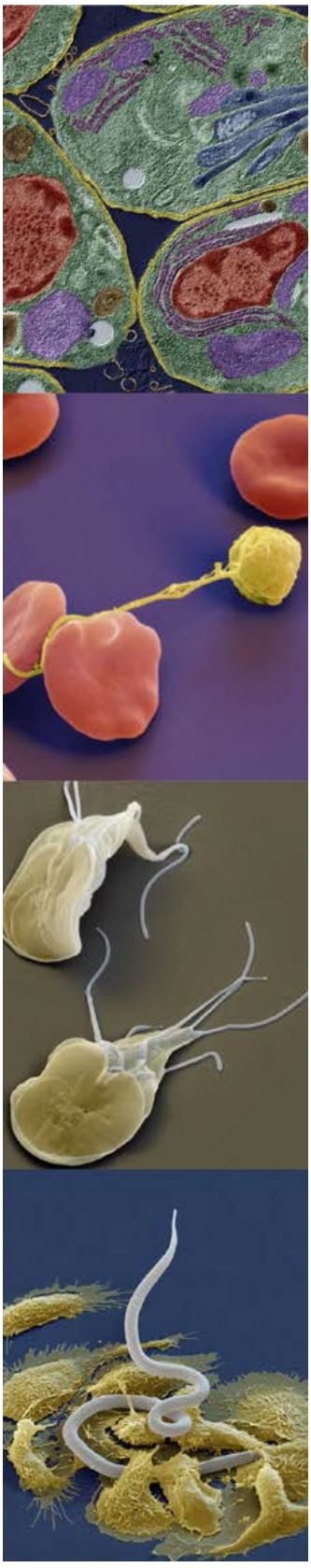
Jakobs N,Yilmaz E, Krücken J. (2022).
Int J Mol Sci 23:9155 doi: 10.3390/ijms23169155.

Abstract:
The number of reported macrocyclic lactones (ML) resistance cases across all livestock hosts is steadily increasing. Different studies in the parasitic nematode *Haemonchus contortus* assume the participation of cytochrome P450s (Cyps) enzymes in ML resistance. Still, functional data about their individual contribution to resistance or substrate specificity is missing. Via microinjection, transgenic *Caenorhabditis elegans* expressing HCON_00141052 (transgene-Hco-cyp-13A11) from extrachromosomal arrays were generated. After 24 h of exposure to different concentrations of ivermectin (IVM), ivermectin aglycone (IVMa), selamectin (SEL), doramectin (DRM), eprinomectin (EPR), and moxidectin (MOX), motility assays were performed to determine the impact of the *H. contortus* Cyp to the susceptibility of the worms against each ML. While transgene-Hco-cyp-13A11 significantly decreased susceptibility to IVM (four-fold), IVMa (2-fold), and SEL (3-fold), a slight effect for DRM and no effect for MOX, and EPR was observed. This substrate specificity of Hco-cyp-13A11 could not be explained by molecular modeling and docking studies. Hco-Cyp-13A11 molecular models were obtained for alleles from isolates with different resistance statuses. Although 14 amino acid polymorphisms were detected, none was resistance specific. In conclusion, Hco-cyp-13A11 decreased IVM, IVMa, and SEL susceptibility to a different extent, but its potential impact on ML resistance is not driven by polymorphisms.

Human duodenal organoid-derived monolayers serve as a suitable barrier model for duodenal tissue

Weiß F, **Holthaus D**, **Kraft M**, **Klotz C,** Schneemann M, Schulzke JD, Krug SM. (2022).
Ann N Y Acad Sci 1515:155-67. doi: 10.1111/nyas.148045.

Abstract:
Usually, duodenal barriers are investigated using intestinal cell lines like Caco-2, which in contrast to native tissue are limited in cell-type representation. Organoids can consist of all intestinal cell types and are supposed to better reflect the in vivo situation. Growing three-dimensionally, with the apical side facing the lumen, application of typical physiological techniques to analyze the barrier is difficult. Organoid-derived monolayers (ODMs) were developed to overcome this. After optimizing culturing conditions, ODMs were characterized

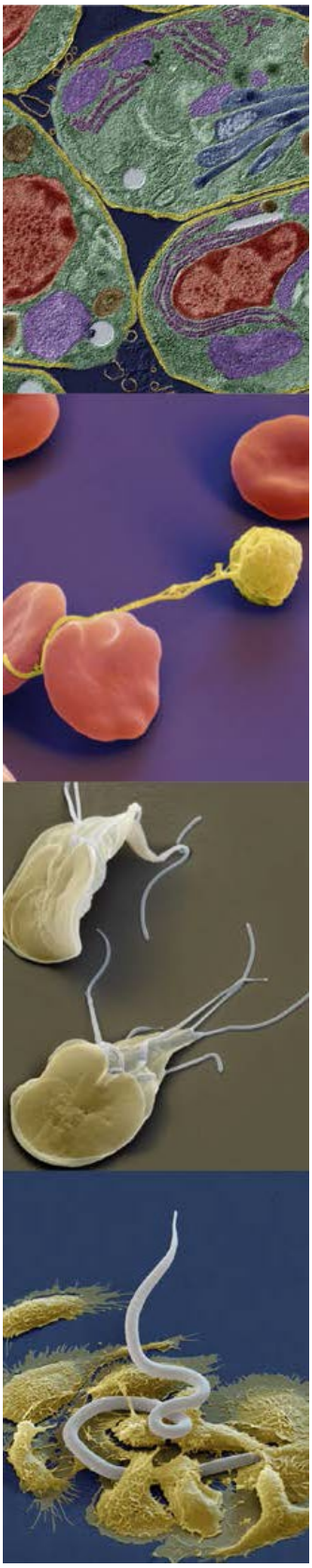


and compared to Caco-2 and duodenal tissue. Tight junction composition and appearance were analyzed, and electrophysiological barrier properties, like paracellular and transcellular barrier function and macromolecule permeability, were evaluated. Furthermore, transcriptomic data were analyzed. ODMs had tight junction protein expression and paracellular barrier properties much more resembling the originating tissue than Caco-2. Transcellular barrier was similar between ODMs and native tissue but was increased in Caco-2. Transcriptomic data showed that Caco-2 expressed fewer solute carriers than ODMs and native tissue. In conclusion, while Caco-2 cells differ mostly in transcellular properties, ODMs reflect trans- and paracellular properties of the originating tissue. If cultured under optimized conditions, ODMs possess reproducible functionality, and the variety of different cell types makes them a suitable model for human tissue-specific investigations.

NAD(P)H fluorescence lifetime imaging of live intestinal nematodes reveals metabolic crosstalk between parasite and host.

Liublin W, **Rausch S**, Leben R, Lindquist RL, Fiedler A, Liebeskind J, Beckers IE, Hauser AE, **Hartmann S**, Niesner RA. (2022).
Sci Rep 12:7264. doi: 10.1038/s41598-022-10705-y.

Abstract:
Infections with intestinal nematodes have an equivocal impact: they represent a burden for human health and animal husbandry, but, at the same time, may ameliorate auto-immune diseases due to the immunomodulatory effect of the parasites. Thus, it is key to understand how intestinal nematodes arrive and persist in their luminal niche and interact with the host over long periods of time. One basic mechanism governing parasite and host cellular and tissue functions, metabolism, has largely been neglected in the study of intestinal nematode infections. Here we use NADH (nicotinamide adenine dinucleotide) and NADPH (nicotinamide adenine dinucleotide phosphate) fluorescence lifetime imaging of explanted murine duodenum infected with the natural nematode Heligmosomoides polygyrus and define the link between general metabolic activity and possible metabolic pathways in parasite and host tissue, during acute infection. In both healthy and infected host intestine, energy is effectively produced, mainly via metabolic pathways resembling oxidative phosphorylation/aerobic glycolysis features. In contrast, the nematodes shift their energy production from balanced fast anaerobic glycolysis-like and effective oxidative phosphorylation-like metabolic pathways, towards mainly anaerobic glycolysis-like pathways, back to oxidative phosphorylation/aerobic glycolysis-like pathways during their different life cycle phases in the submucosa versus the intestinal lumen. Additionally, we found an increased NADPH oxidase (NOX) enzymes-dependent oxidative burst in infected intestinal host tissue as compared to healthy tissue, which was mirrored by a similar defense reaction in the parasites. We expect that, the here presented application of NAD(P)H-FLIM in live tissues constitutes a unique tool to study



possible shifts between metabolic pathways in host-parasite crosstalk, in various parasitic intestinal infections

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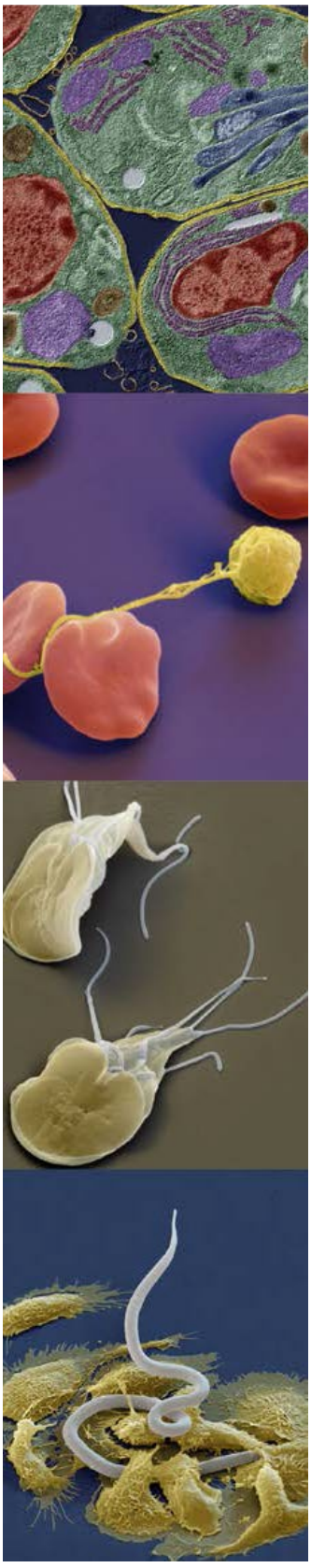
Early-life adversity predicts performance and fitness in a wild social carnivore.

Gicquel M, **East ML**, **Hofer H**, **Benhaiem S**. (2022).
J Anim Ecol 91(10):2074-2086. doi: 10.1111/1365-2656.13785.

Abstract:
Studies on humans indicate that encountering multiple sources of adversity in childhood increases the risk of poor long-term health and premature death. Far less is known about cumulative effects of adversity during early life in wildlife. Focusing on the spotted hyena *Crocuta crocuta*, a social mammal with small litters, extensive maternal care, slow development and access to resources determined by social rank, we determined the contribution of ecological, maternal, social and demographic factors during early life on performance and fitness, and tested whether the impact of early-life adversity is cumulative. Using longitudinal data from 666 female hyenas in the Serengeti National Park, we determined the early growth rate, survival to adulthood, age at first reproduction (AFR), lifetime reproductive success (LRS) and longevity. We fitted multivariate models in which we tested the effects of environmental factors on these performance measures. We then constructed a cumulative adversity index and fitted models to test the effect of this index on each performance measure. Finally, the value of cumulative adversity models was tested by comparing them to multivariate and single-effect models in which the effect of each environmental factor was considered separately. High maternal rank decreased the AFR of daughters. Singleton and dominant cubs had higher growth rate than subordinate cubs, and singletons also had a higher survival chance to adulthood than subordinates. Daughters of prime age mothers had a higher growth rate, longevity and LRS. Little and heavy rainfall decreased survival to adulthood. Increasing numbers of lactating female clan members decreased growth rate, survival to adulthood and LRS. Cumulative adversity negatively affected short-term performance and LRS. Multivariate models outperformed cumulative adversity and single-effect models for all measures except for AFR and longevity, for which single-effect models performed better. Our results suggest that in some wildlife populations the combination of specific conditions in early life may matter more than the accumulation of adverse conditions as such.

Th2 and metabolic responses to nematodes are independent of prolonged host microbiota abrogation.

Elizalde-Velázquez LE, Yordanova IA, Liublin W, **Adjah J**, Leben R**, Rausch S**, Niesner R, **Hartmann S** (2022).



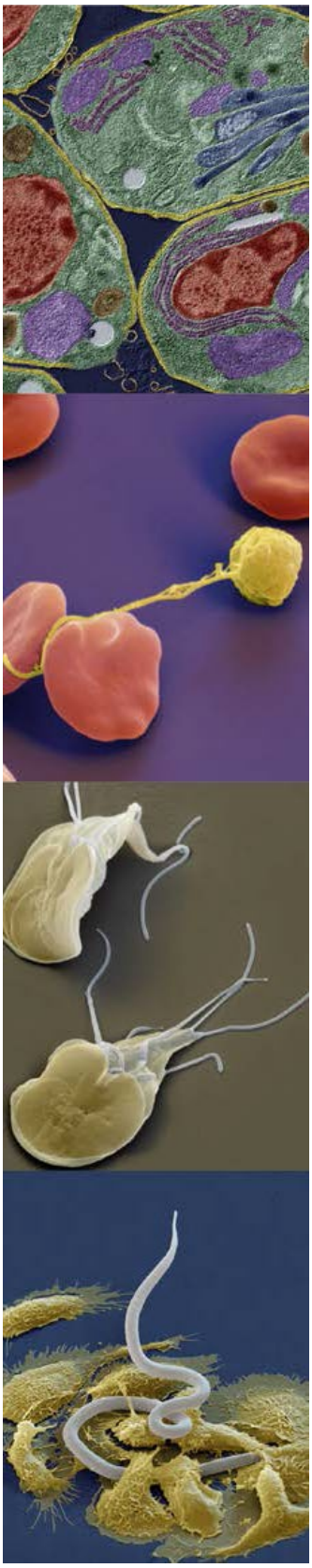
Parasite Immunol Nov 17:e12957. doi: 10.1111/pim.12957.

Abstract:
Antibiotic treatment can lead to elimination of both pathogenic bacteria and beneficial commensals, as well as to altered host immune responses. Here, we investigated the influence of prolonged antibiotic treatment (Abx) on effector, memory and recall Th2 immune responses during the primary infection, memory phase and secondary infection with the small intestinal nematode *Heligmosomoides polygyrus*. Abx treatment significantly reduced gut bacterial loads, but neither worm burdens, nor worm fecundity in primary infection were affected, only worm burdens in secondary infection were elevated in Abx treated mice. Abx mice displayed trends for elevated effector and memory Th2 responses during primary infection, but overall frequencies of Th2 cells in the siLP, PEC, mLN and in the spleen were similar between Abx treated and untreated groups. Gata3+ effector and memory Th2 cytokine responses also remained unimpaired by prolonged Abx treatment. Similarly, the energy production and defence mechanisms of the host tissue and the parasite depicted by NAD(P)H fluorescence lifetime imaging (FLIM) did not change by the prolonged use of antibiotics. We show evidence that the host Th2 response to intestinal nematodes, as well as host and parasite metabolic pathways are robust and remain unimpaired by host microbiota abrogation.

***Ascaris suum* excretory/secretory products differentially modulate porcine dendritic cell subsets.**

Hamid B, **Ebner F**, Bechtold L, **Kundik A**, **Rausch S**, **Hartmann S**. (2022). ***Front Immunol*** 13:1012717. doi: 10.3389/fimmu.2022.1012717.

Abstract:
Helminths produce excretory/secretory products (E/S) which can modulate the immune responses of their hosts. Dendritic cells (DC) are essential for initiating the host T cell response and are thus potential targets for modulation by helminth E/S. Here we study immunomodulation of porcine peripheral blood DC subsets following *ex vivo* stimulation with E/S from *Ascaris suum*, a common helminth of pigs with considerable public health and economic importance. Our data showed that the relative frequencies of DC subsets in porcine blood differ, with plasmacytoid DC (pDC) being the most prominent in healthy 6-month-old pigs. pDC are an important cytokine source, and we found that *A. suum* E/S suppressed production of the type 1 cytokines IL-12p40 and TNF-α by this subset following toll-like receptor (TLR) ligation. In contrast, conventional DC (cDC) are more efficient antigen presenters, and the expression of CD80/86, costimulatory molecules essential for efficient antigen presentation, were modulated differentially by *A. suum* E/S between cDC subsets. CD80/86 expression by type 1 cDC (cDC1) following TLR ligation was greatly suppressed by the addition of *A. suum* E/S, while CD80/86 expression by type 2 cDC (cDC2) was upregulated by *A. suum* E/S. Further, we found that IFN-γ production by



natural killer (NK) cells following IL-12 and IL-18 stimulation was suppressed by *A. suum* E/S. Finally, in the presence of E/S, IFN-γ production by CD4+ T cells co-cultured with autologous blood-derived DC was significantly impaired. Together, these data provide a coherent picture regarding the regulation of type 1 responses by *A. suum* E/S. Responsiveness of pDC and cDC1 to microbial ligands is reduced in the presence of E/S, effector functions of Th1 cells are impaired, and cytokine-driven IFN-γ release by NK cells is limited.

Merry Christmas!

Unavoidable, it's Christmas time, again. Safe some cookies for the one you love and be nice to your neighbor! See you all next year!

- Marko