

# Newsletter

## GRK 2046

March 2018

### Summary, Update and News

We bring to you the 5<sup>th</sup> edition of our GRK2046 newsletter! For most of us, we are at the final months of the third year and are approaching the end of the tunnel. This is made evident by a new assessment round launched at the beginning of this year to recruit the second generation of PhD students for our graduate school. Meanwhile, Benedikt Fabian is the latest associated member of GRK2046. The 28<sup>th</sup> annual meeting of the German Society of Parasitology is coming soon and our graduate community is engaged at different levels regarding organization and planned activities. A number of us will host a workshop on “Parasite – Microbiota Interaction” during the meeting. Big ups go to Susana Ferreira and Alice Balard (from Humboldt-Universität zu Berlin) for organizing the “Philosophy of Science and Epistemology” workshop that will be taking place this month. In this newsletter you can also find updates on what has happened the past few months. As usual, we hosted renowned scientists from different parts of the world in the context of the Berlin Parasitological Seminar and Role Model Seminar Series. A number of students presented their work at scientific conferences and meetings and will be sharing their experiences. Our annual scientific retreat took place from the 18<sup>th</sup> – 19<sup>th</sup> September 2017 at the Müggelsee and the highlight of this year’s retreat was a keynote lecture from our guest speaker Moritz Treeck from the Watson Crick Institute UK.

*Florence Awamu and Jonnel Jaurigue  
(doctoral researchers)*

### Student Profile

#### Ben Fabian

Studied Biology at the Ruhr-Universität Bochum and at the Freie Universität Berlin

**PhD topic:** “Oocyst-molecules of *Toxoplasma gondii*: Their role for survival in the environment and their diagnostic potential”

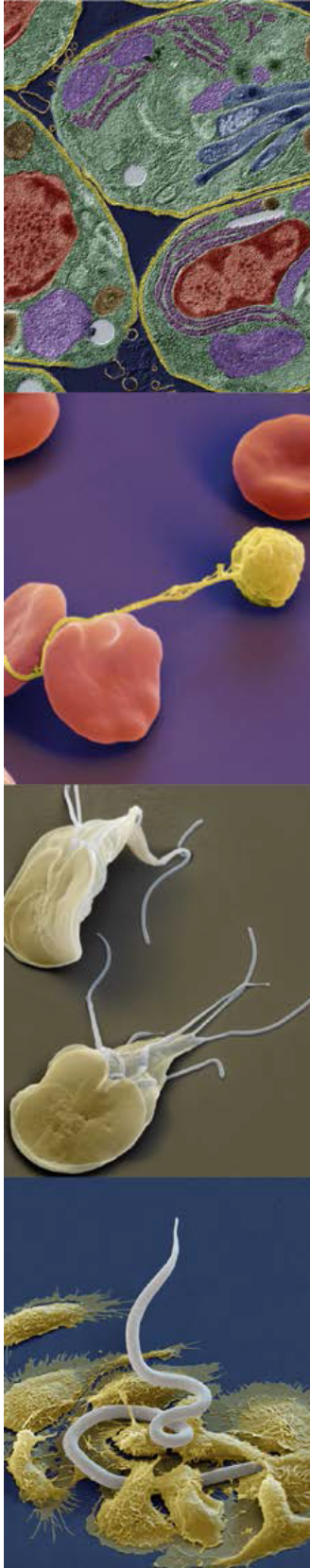
Freie Universität Berlin and Robert Koch-Institut, Berlin

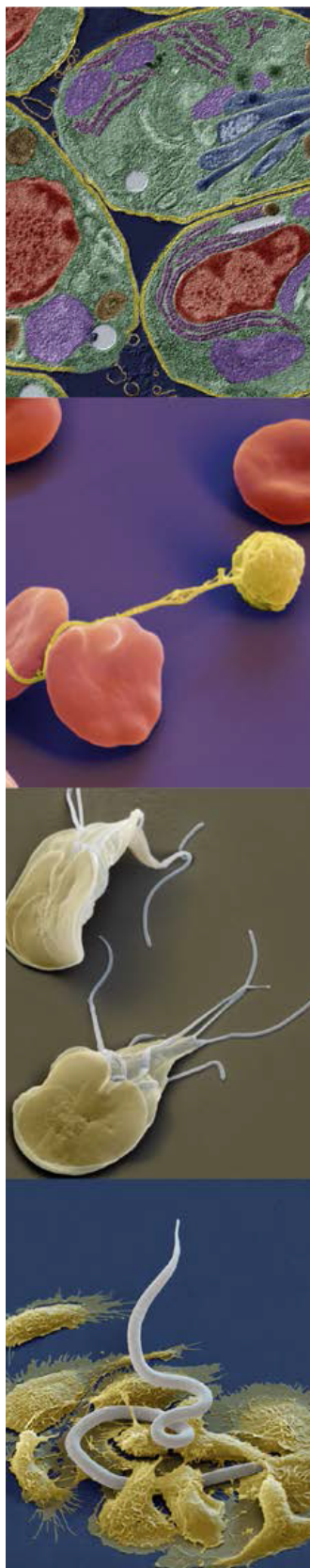
**Supervisor:** Prof. Frank Seeber

**Contact:** [FabianBe@rki.de](mailto:FabianBe@rki.de)



*Image Credit: Benedikt Fabian*





## GRK 2046 ANNUAL Retreat 2017

**18<sup>th</sup> – 19<sup>th</sup> September, 2017 at the Hotel Müggelsee**

The 2017 GRK2046 annual retreat took place at Hotel Müggelsee, situated right on the banks of the charming Großer Müggelsee in Berlin Köpenick, at the heart of the nature reserve.

The two days events saw the participation of 16 PhD students who gave oral presentations on their respective projects. The major highlight of this retreat was the keynote lecture from our guest speaker Moritz Treeck from the Francis Crick Institute United Kingdom. He presented his work on immune evasion mechanisms of *Toxoplasma* and *Plasmodium*. Students also had the opportunity to learn more about his career and personal experiences him during the career briefing session.

*Florence Awamu  
(doctoral researcher)*

## BPS since last news letter

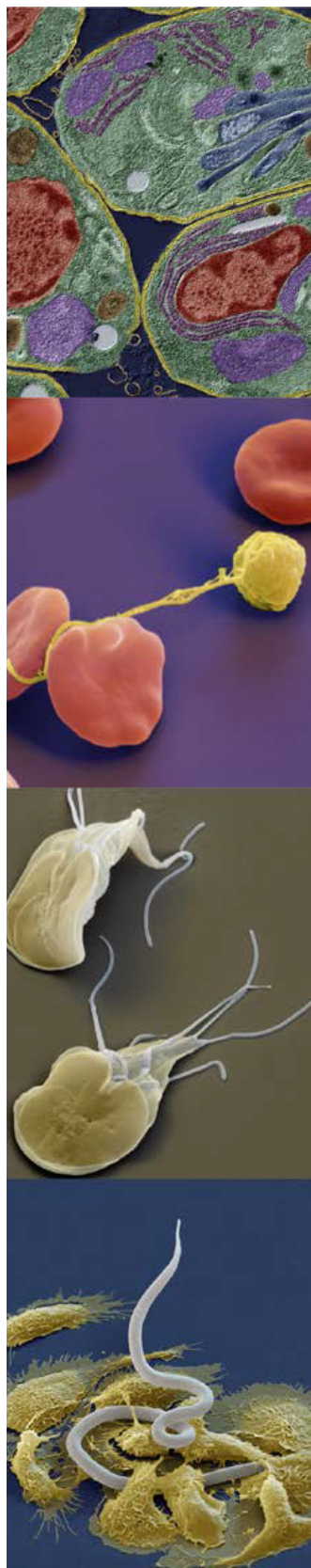
**12<sup>th</sup> September – David Sibley (University in St. Louis Washington)**

In September 2017 I had the pleasure to host one of the most eminent researchers in the *Toxoplasma gondii* research field: Prof. David Sibley from the Washington University in St. Louis (USA). Prof. Sibley –worthy heir of the *Toxoplasma* godfather John Boothroyd in Stanford where he developed his post doc research– has contributed for 20 years with high-ranking discoveries in the field and has recently being elected fellow of the prestigious National Academy of Sciences. Prof. Sibley joined us in Berlin for three days filled with stimulating discussions with students and PIs and delighted us with a comprehensive excursus about the discoveries on *Toxoplasma* virulence effectors. His knowledge and experience were absolutely a BPS highlight of 2017!

*Francesca Torelli  
(doctoral researcher)*

**10<sup>th</sup> October 2017 – Prof. Ivaylo Ivanov (Columbia University, USA)**

The work of Prof. Ivanov has a major focus on the regulation of mucosal immune responses by commensal bacteria in the small intestine. His group has conducted excellent work on how different components of the intestinal microbiota, and more specifically Segmented Filamentous Bacteria (SFB), regulate the balance between pro-inflammatory Th17 cells (protective against extracellular pathogens like *Giardia*) and regulatory T-cells. In his BPS talk, Prof. Ivanov gave important novel insights into bacteria-induced endocytosis



mechanisms through which SFB adhering to intestinal epithelial cells potentially exert an immunological effect on Th17 and AMP induction. Further discussions with Prof. Ivanov highlighted a few potential experimental ideas related to the on-going projects of a number of GRK2046 students. After the traditional pretzel-and-beer happy hour, a number of students joined Prof. Ivanov for a lovely dinner at “La Gondola Due” in Zehlendorf.

*Ivet Yordanova*  
(doctoral researcher)

#### **14<sup>th</sup> November – Will Wood (University of Edinburgh)**

Prof. Will Wood showed us in a very interesting talk that, although not involving parasites, working with *Drosophila* can also be amazing and very insightful. His lab couples confocal live imaging with powerful tools in experimental genetics that are available in *Drosophila*, to study molecular mechanisms by which hemocytes are able to sense, prioritize and respond to immune or other cues in the organism. He explained us the mechanisms in which hemocytes get primed during development, in order to be able to react to infections and wounding in later stages of life. Besides the very interesting hemocyte story, he presented us very new and fascinating results showing that fat body cells (which the scientific community always thought were sessile) are actually motile, react to infection and injury cues, and help healing. Prof. Wood’s lab recently moved from University of Bristol to Medical School of University of Edinburgh.

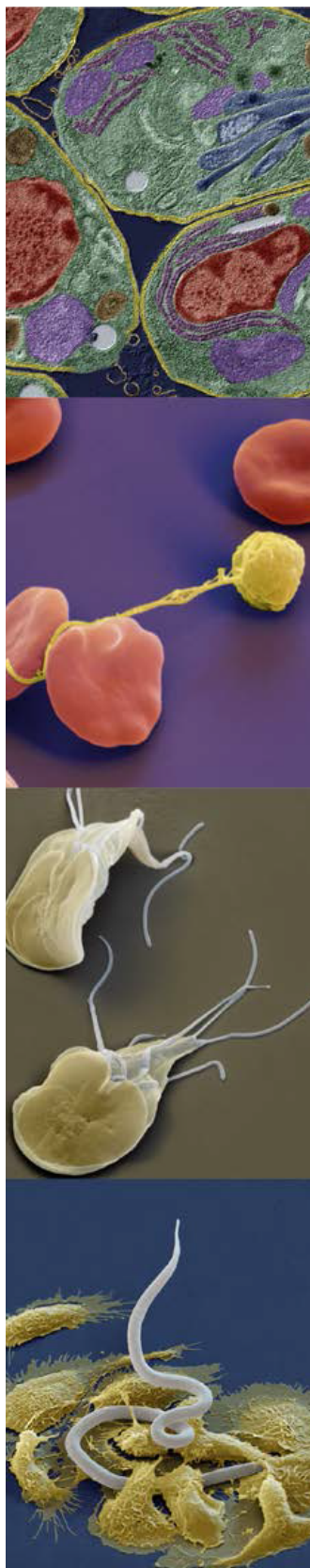
*Suzana Zaković*  
(doctoral researcher)

#### **28th November 2017 – Mike Blackman (Francis Crick Institute, UK)**

Prof. Mike Blackman presented his work in a talk entitled “ Breaking out: egress of the malaria parasite from its host red blood cell”. His engaging talk focused on the involvement of Sera 5&6 in *Plasmodium* egress from the red blood cell (RBC). In particular, he talked about the lack of importance of motility for parasite egress and sub sequential roles of SUB1 and SERA6 in parasite vacuole membrane and RBC. The seminar was followed by a lively and involved discussion and a well-visited informal get together after the talk.

*Oriana Kreutzfeld*  
(doctoral researcher)





## 12<sup>th</sup> December – Jonathan Ewbank (Centre d'Immunologie de Marseille-Luminy, France)

Prof. Jonathan Ewbank joined us for our last BPS talk of 2017. His talk, entitled "Defense and counter-defense in *C. elegans* antifungal immunity", highlighted the recent focus of his lab: how free-living *Caenorhabditis elegans* nematodes defend themselves against fungal infectious threats. His lab has elucidated multiple components of nematode defense in the face of microbial threats, including escape/evasion mechanisms and inducible defense systems resulting in the release of compounds possessing antimicrobial and tissue-repair activities. In this talk, recent advances in understanding how *C. elegans* responds to infection by the fungal pathogen *Drechmeria coniospora* were showcased. Following the talk, we enjoyed an informal discussion, accompanied by lebkuchen, stollen, and Glühwein to mark the holiday season.

Ankur Midha  
(doctoral researcher)

## Role Models Seminar Series

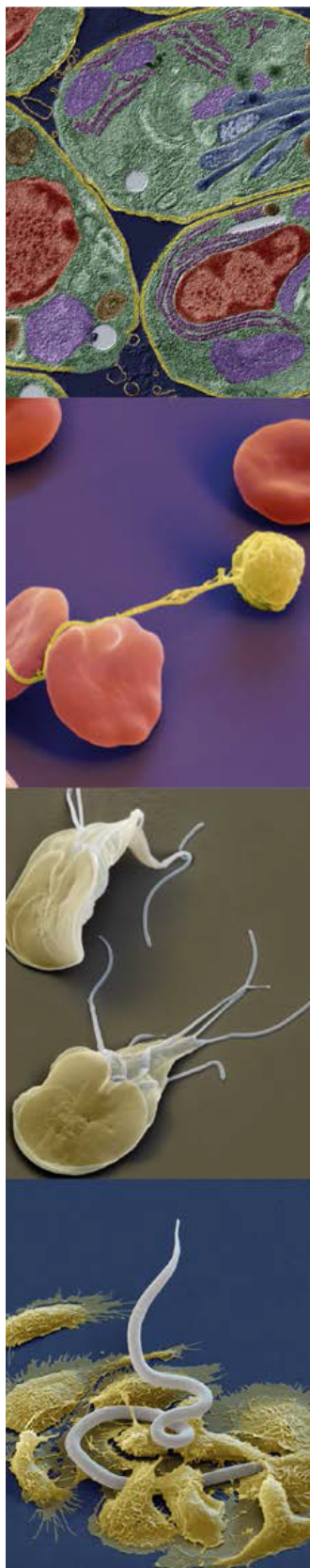
### 7<sup>th</sup> November 2017 – Isabelle Coppens (Johns Hopkins Bloomberg School of Public Health)

Prof. Isabelle Coppens from the Johns Hopkins Bloomberg School of Public Health presented her work about „the secret of the intracellular tenure of the human parasite *T. gondii*.” Besides presenting her findings, she also discussed various ongoing projects at the Department for Molecular Parasitology, Humboldt-Universität zu Berlin, and Robert Koch Institute, Berlin. With members of the GRK2046 RTG she discussed and shared her career and personal experiences in science during a career briefing session.

Laura Thurow  
(doctoral researcher)

## 28<sup>th</sup> Congress of the German Society for Parasitology

The 28<sup>th</sup> Annual Meeting of the German Society for Parasitology will be held from 21<sup>st</sup> to 24<sup>th</sup> March 2018 on the main campus of the Freie Universität Berlin in Dahlem. The Henry-Ford building will be the conference centre hosting over 175 talks and many poster presentations including talks or poster presentation of many GRK 2046 students! We will cover a diverse range of parasitological fields, from epidemiology of emerging infections to parasite-host interactions. In addition, several interesting workshops will be offered, namely "[Successful Publishing and Grant Writing in Parasitology](#)", "[Tungiasis](#)", "[Satellite Workshop I AVIAGIS](#)", "[Satellite Workshop II Artificial tick feeding](#)", the symposium



[“Emerging vector-born parasitic zoonoses”](#) and notably, a GRK 2046 organised workshop (for information see below).

Many GRK 2046 affiliates are engaged in the organisation of this year’s DGP, including Prof. Dr. Georg von Samson-Himmelstjerna as the conference chair, and many GRK 2046 students that have taken the initiative to contribute to shaping the face of the conference.

The vibrant city of Berlin will provide further exciting opportunities for a post-conference weekend of cultural exploration and a world-famous nightlife, so invite your friends for a scientific roller coaster through the newest trends in parasitology research.

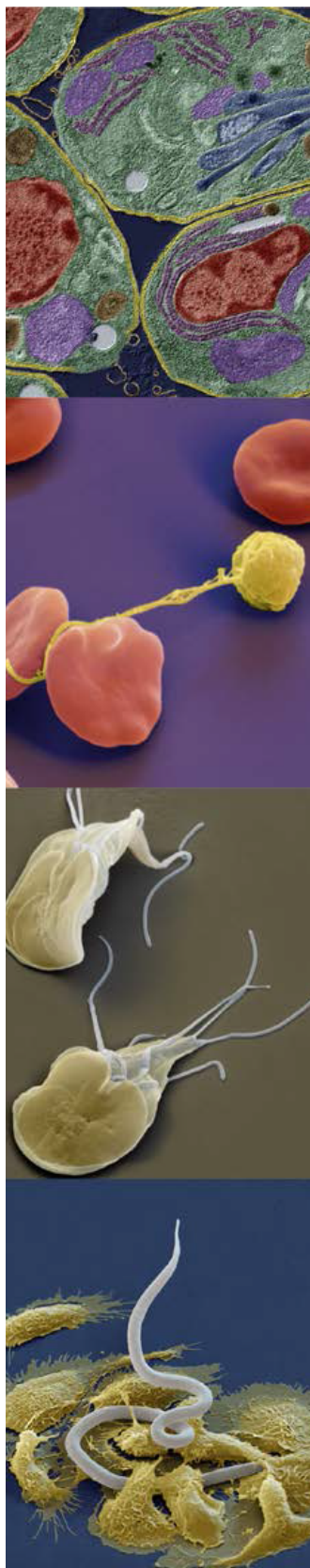
*Alexander Gerhard*  
(doctoral researcher)

### “Parasite-Microbiota Interactions” Workshop (DGP 2018)

**22<sup>nd</sup> March 2018 as part of the 28<sup>th</sup> Annual Meeting of the German Society for Parasitology (Berlin, Germany)**

At the Meeting of the German Society for Parasitology, a number of GRK2046 students have been given the opportunity to host a special student-led workshop session entitled “Parasite-Microbiota Interactions”. The workshop hosted two keynote guest speakers: Dr. Cinzia Cantacessi (University of Cambridge, UK) and Prof. Scott Dawson (UC Davis, USA), as well as a number of student-contributed talks. The research of Dr. Cantacessi mainly explores the tripartite interactions between gastrointestinal parasites, their mammalian host, and host commensal microbiota, and she will give a talk entitled “Of worms, germs and men – from nature to the clinic”. Prof. Dawson, on the other hand, conducts research into a myriad of cellular and metabolic mechanisms, evolutionary cell biology and interactions with the host gut microbiota of the gastrointestinal protozoan parasite *Giardia*. His talk for this workshop bears the title “Metabolism and early encystation of high-density *Giardia* foci in the mouse small intestine”. We look forward to the DGP meeting and to hosting our own GRK2046 session!

*Ivet Yordanova*  
(doctoral researcher)



## The Philosophy of Science and Epistemology workshop

On the 14<sup>th</sup> and 15<sup>th</sup> of March we will host our first workshop in 'Philosophy of Science for Biologists'. The aim of the workshop is to develop the critical thinking of scientists and gain an understanding of what science and the scientific method are with a focus in evolution. We will learn about the theory of science, examine how science has developed and how philosophy shaped the concepts of evolution. We will also discuss biases in science and how to improve research in an interactive environment where discussions are promoted. The workshop will take place at the Leibniz Institute for Zoo and Wildlife Research and we will be joined by a diverse group of speakers covering a variety of topics including:

- Heribert Hofer - Leibniz Institute for Zoo and Wildlife Research
- Stephanie Meirmans - University of Amsterdam
- Sabine Oertelt-Prigione - Charité; Radboud University Medical Center
- Marion East - Leibniz Institute for Zoo and Wildlife Research
- Abdelaziz Heddi - Institut national des sciences appliquées de Lyon
- Rodrigo J. De Marco - Max Planck Institute for Medical Research

Susana Ferreira  
(doctoral researcher)

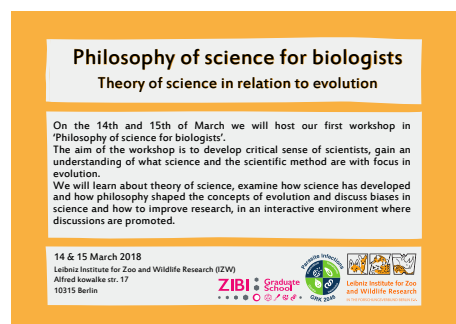


Image Credit: ZIBI Berlin

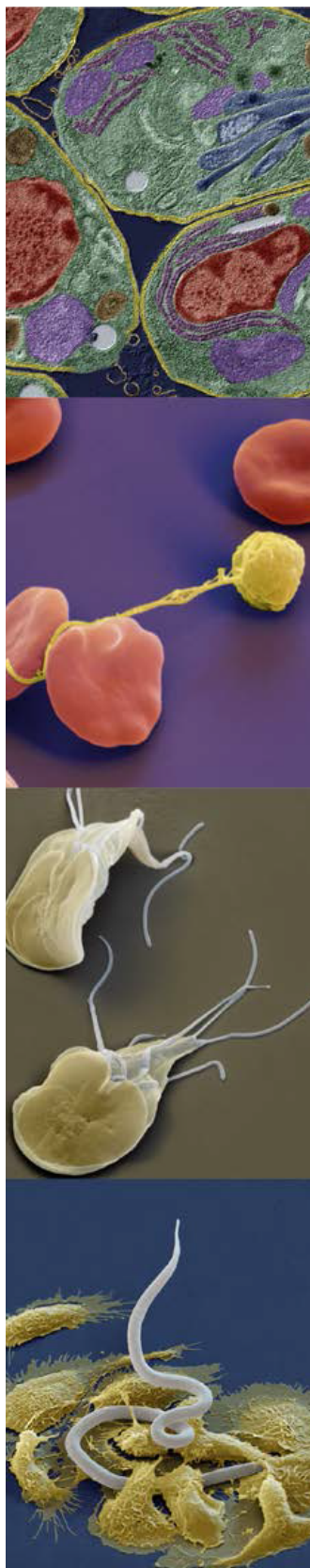
## Publications

Recombinant IFN- $\gamma$  from the bank vole *Myodes glareolus*: a novel tool for research on rodent reservoirs of zoonotic pathogens

**Francesca Torelli**, Steffen Zander, Heinz Ellerbrok, Georg Kochs, Rainer G. Ulrich, Christian Klotz, Frank Seeber, Sci Rep. 2018 Feb 12;8(1):2797.  
<https://dx.doi.org/10.1038%2Fs41598-018-21143-0>

Rodent species like *Myodes glareolus* and *Microtus* spp. are natural reservoirs for many zoonotic pathogens causing human diseases and are gaining increasing interest in the field of eco-immunology as candidate animal models. Despite their importance the lack of immunological reagents has hampered research in these animal species. Here we report the recombinant production and functional characterization of IFN- $\gamma$ , a central mediator of host's innate immune responses, from the bank vole *M. glareolus*. Soluble dimeric recMgIFN- $\gamma$  was purified in high yield from *E. coli*. Its activity on *M. glareolus* and *Microtus*





*arvalis* kidney cell lines was assessed by immunofluorescent detection of nuclear translocation and phosphorylation of the transcription factor STAT1. RecMgIFN- $\gamma$  also induced expression of an IFN- $\gamma$ -regulated innate immunity gene. Inhibition of vesicular stomatitis virus (VSV) replication in vole cells upon recMgIFN- $\gamma$  treatment provided further evidence of its biological activity. Finally, we established a recMgIFN- $\gamma$ -responsive bank vole reporter cell line that allows the sensitive titration of the cytokine activity via a bioluminescence reporter assay. Taken together we report useful tools for future investigations on the innate immune response against zoonotic pathogens in their natural animal hosts, which might foster the development of novel animal models.

## Student Conferences

### Molecular Parasitology Meeting XXVIII

10<sup>th</sup>-14<sup>th</sup> September, 2017, Woods Hole, MA, USA

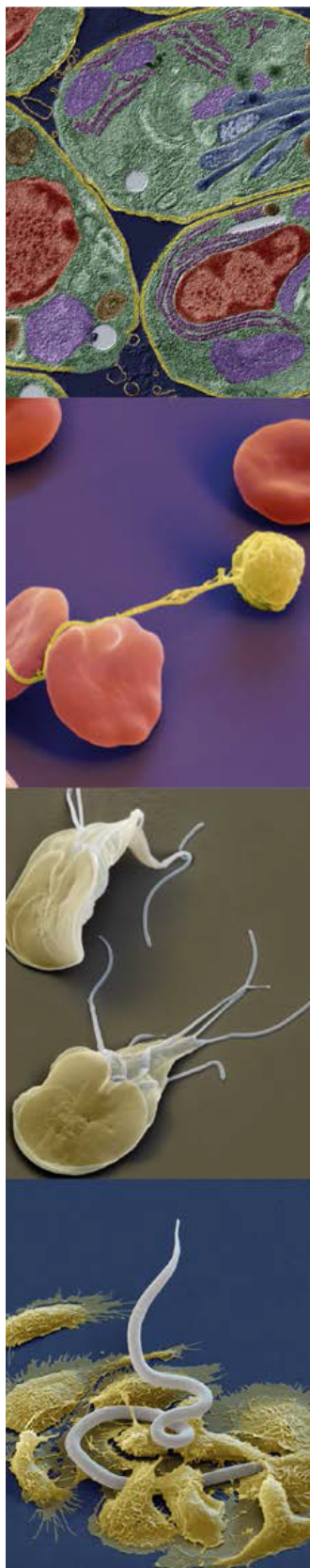
The annual Molecular Parasitology Meeting in Woods Hole, USA, is one of the most renowned meetings for parasitology focusing on new innovations and outstanding findings in the field of parasitology, particularly in *Plasmodium*, *Toxoplasma*, *Trypanosoma*, and *Leishmania* research. Woods Hole is located on the east coast of the USA in close proximity to Boston. The beautiful and tranquil town of

Woods Hole harbours the world famous Institute for Marine Biological laboratory which is hosting the lively annual parasitology meetings and the well-known BOP course. Key topics during the 28<sup>th</sup> Molecular Parasitology Meeting were improved imaging

techniques and CRISPR/Cas9 gene editing systems, calcium-dependent signalling in a diverse set of parasites, new drug targets and drug target identification methods, protein export and a major focus on factors inducing gametocyte switch in *Plasmodium falciparum*. However, the conference also offered some exiting new topics including work on *Cryptosporidium* and *Babesia*. The highlight of the conference was the exiting and stimulating keynote lecture by Isabel Roditi on a new sexual reproduction in trypanosomes.



Image Credit: Oriana Kreutzfeld



This highly motivating and engaging meeting profits from the stimulating environment of the small but scientifically active town of Woods Hole and should be on the agenda of every molecular parasitologist.

*Oriana Kreutzfeld*  
(doctoral researcher)

### **APICOWPLEXA 2017: 4th International Meeting on Apicomplexa in Farm Animals, 11-14 October 2017 - Madrid, Spain**

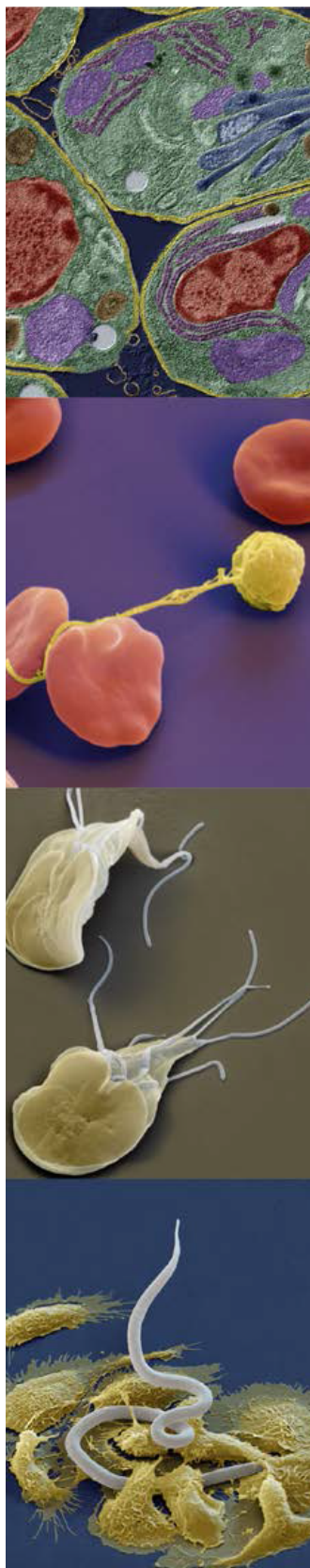
The 4th edition of ApiCOWplexa took place in the middle of the astonishing landscape of The Royal Site of San Lorenzo de El Escorial. This scientific meeting, organized by the Universidad Complutense de Madrid, was a forum for researchers working with apicomplexan parasites in farm animals from different fields such as epidemiology, diagnostic, phylogeny, vaccine or drug development, host-parasite interactions, and so on. This edition of the congress counted on participation of young and senior researchers from different continents and with 30 oral and 61 poster presentations; all sessions were a friendly framework for knowledge exchange and discussion, allowing the creation of a network of multidisciplinary work. Projects related to *Toxoplasma gondii*, *Eimeria* spp. and *Neospora caninum* were the most frequent. Nonetheless research related to other parasites like *Cryptosporidium* spp., *Theileria* spp., and *Babesia* spp. not only remarked on the importance of studying these organisms that cause important diseases and economic losses around the globe every year, but also the lack of knowledge in many fields and at different levels. This opened a window of opportunity to study them deeply in order to provide alternatives and new strategies in the prevention and control of these pathogens.



Image Credit: APICOWPLEXA 2017

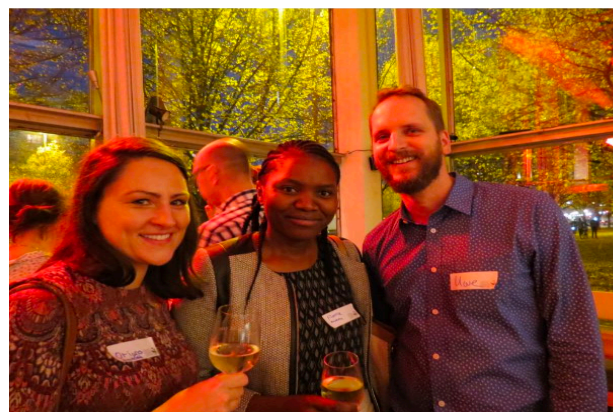
*Victor Hugo Jarquín*  
(doctoral researcher)





### **The World Health Summit October 15-17 2017 Berlin, Germany**

The World Health Summit is a healthcare conference on global health policy development held annually in Autumn in Berlin. It gathers experts from academia, industry, politics and civil society. This provides the platform for a joint search for effective response to public health challenges.



*Image Credit: Florence Awamu*

Central topics of the World Health Summit 2017 included: Vaccine Research and Development - Challenges and Opportunities, Strengthening Innovation and Health Systems in Africa, Global Health Security - Policy Responses to Planetary Challenges, and others. The conference brought together almost 2000 people and the panels of discussion were great opportunities for knowledge exchange and networking. For people in academia, this conference provides the platform to interact and collaborate with people from the field of public health in order to improve global health through implementation of science-driven public health programs.

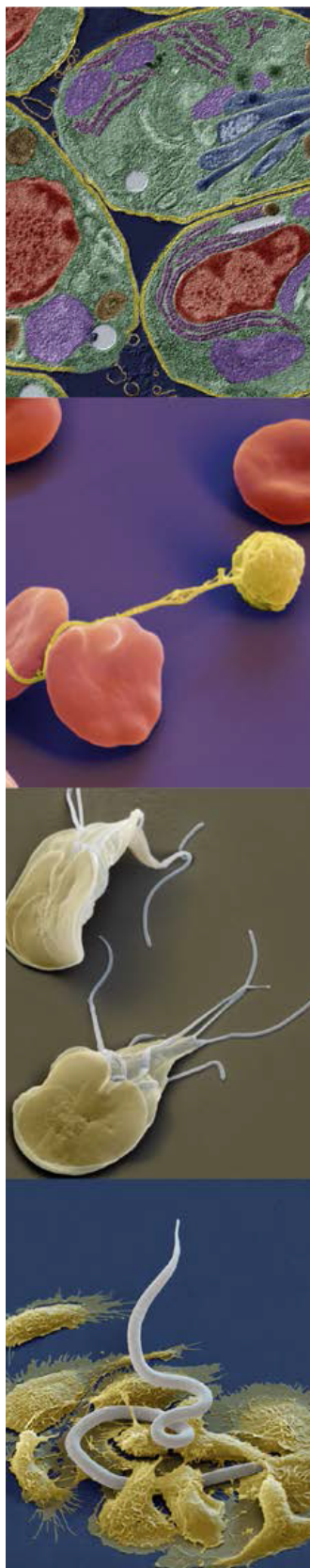
*Florence Awamu  
(doctoral researcher)*

### **26<sup>th</sup> International Conference of the World Association for the Advancement of Veterinary Parasitology (WAAVP)**

**4<sup>th</sup>-8<sup>th</sup> September in Kuala Lumpur, Malaysia**

With the spectacular Petronas Twin Towers in the background, 2017's WAAVP took place at the Kuala Lumpur Convention Centre and offered an exceptional opportunity to exchange knowledge since the conference was very well attended with participants from all over the world. As always, the conference covered an exhaustive range of research fields relevant for veterinary parasitology while having a special focus on encouraging global collaborations in approaching parasitic diseases, hence the conference theme "Combating Zoonoses: Strength in East-West Partnerships".

*Esra Yilmaz  
(doctoral researcher)*



## 10<sup>th</sup> Summer School for Young Parasitologists Hamburg 7-11<sup>th</sup> August 2017

During a sunny week in Hamburg three GRK students – Oriana, Ankur and I – were selected to participate in an exciting Summer School at the Bernhard Nocht Institut for Tropical Medicine. We learnt how to dissect mosquitos, perform live-cell imaging, had



*Image Credit: Summer School for YP*

in-depth lectures about our favorite parasites and presented our work in front of students from different parts of Europe. We also discovered the history of the building with a beautiful view on the Elba river and listened to the outstanding seminar of the keynote speaker Volker Heussler from Bern. The week flowed smooth and delightfully with vivid discussions in and out of the lab. We also appreciated the informal conversations either with established PIs, like the organizers Tim Gilberger and Tobias Spielmann, as well with younger scientists, as Paul Burda and Markus Ganter. A sweet ending note for GRK was



*Image Credit: Summer School for YP*

the talk prize that I brought home back to Berlin! Thanks, DGP for supporting these precious initiatives!

Here attached is proof that sunny days in Hamburg exist and it's beautiful to enjoy them at the St. Pauli beach talking about parasites ☺

*Oriana, Ankur and Francesca  
(doctoral researchers)*

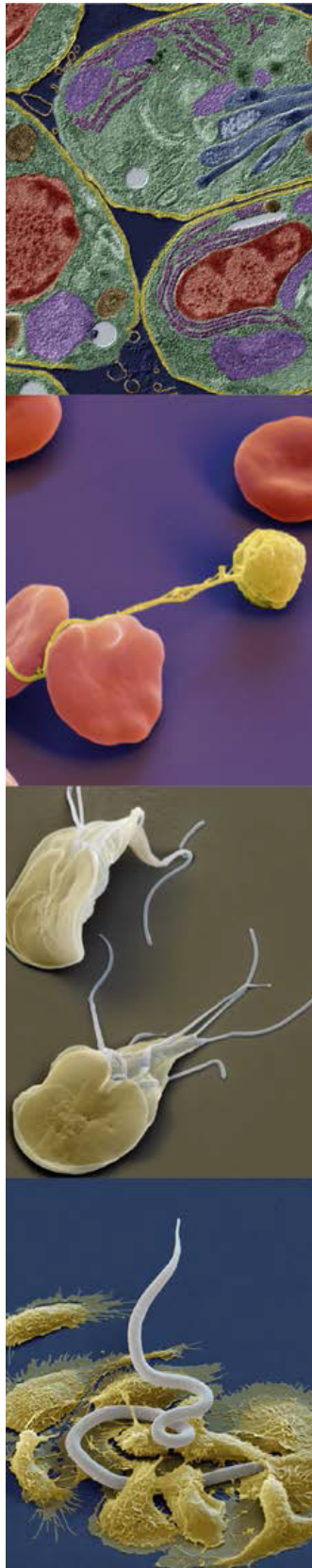
## Admin

### Students member area – GRK 2046

You can find all the nitty gritty details related to your life in the research training group in our students member area (requires a password). This includes cheat sheets on travel and how to host a guest speaker. Don't know where to find it? Search no more: <http://www.zibi-berlin.de/PM-students-intern/grk2046/index.html>

Don't know the secret password? Ask your fellows or Juliane.

*Juliane Kofer  
(scientific coordinator)*



### **Corporate Identity**

When you are attending a conference, please keep in mind corporate identity. We don't enforce a corporate design, as you first have to make sure to follow the corporate rules of your institute. If there is none, we are happy to provide a template. Always acknowledge funding (us and/or where applicable other funding sources) and scientific/technical support. If you haven't saved a high-resolution file of the GRK logo yet, we are happy to provide it once again. Lastly, if you want a GRK button, please contact Juliane.

*Juliane Kofer  
(scientific coordinator)*