Joint Retreat

RTG 2158 & RTG 2408

Program

24. – 26.04.2024

Hotel Appelbaum
Neuenkirchener Str. 59, 33332 Gütersloh

RTG 2158

Natural products and natural product analogs against therapy-resistant tumors and microorganisms: new lead structures and modes of action

The global challenges due to the spread of multidrug-resistant infectious agents and tumor diseases generates a constant need for new types of resistance-breaking drugs. **The elucidation of resistance mechanisms and the search for new active substances, which can overcome intrinsic or acquired resistance**, are thus among the core topics of pharmaceutical research.

This important topic **is being scrutinized within the framework of RTG 2158** using chemoresistant tumors and infections with chemoresitant microbial pathogens as model systems. Both forms of the disease are characterized by a multitude of resistances against established drugs, which severely limit therapies or even abrogate them. There are clear parallels between the known mechanisms of resistance of tumors and microbial pathogens. Sharing insights into antitumor activity and antimicrobial activity therefore promises to yield a scientific surplus value.

Natural substances and analogs from stress-exposed and so far insufficiently investigated marine organisms or fungal endophytes serve as a pool for new, potentially active compounds in order to elucidate the modes of action and overcome resistance at the molecular level.

The RTG 2158 has a **marked interdisciplinary character** in that it unites biomedical, medicinal-chemical/organic-synthetic, and structural-biological modeling expertise from the subjects of pharmacy, chemistry and medicine. That way, its PhD students will obtain **essential, fundamental and practical knowledge in all aspects of modern preclinical drug development**, which will qualify them for their future ambitious professional activity. The RTG 2158 strengthens the research areas of infection research, oncology, and drug discovery at Heinrich-Heine-Universität.

Structured training of PhD students is provided through the integration of the RTG curriculum with already existing graduate schools at HHU and includes the acquisition of job-related key qualifications. In all, RTG 2158 aims at training a new generation of experts in the field of molecular drug research, who have a paradigmatic interdisciplinary education and for whom there is a high demand in academic or industrial pharmaceutical research as well as in administration.

More information about RTG 2158 is available here: https://www.grk2158.hhu.de/

RTG 2408

Maladaptive processes across physiological barriers in chronic diseases

Chronic diseases constitute a major health threat and pose an increasing burden on health systems. Central mechanistic aspects in chronic diseases are **cellular maladaptation** and **misdirected cellular communication** at **physiological barriers**. Highly specialized cells, such as **endothelial** or **epithelial cells**, define physiological barriers. Dysregulation and –function of these cellular barriers may result in a **disease-promoting micromilieu**. The latter is characterized by a specific secretome and the activation and maladaptation of local and inflammatory cells. Moreover, important to disease **chronification** is the perpetuation of the maladaptive process. Mechanistically, perpetuated disease processes depend on altered cellular signalling, resulting in molecular fixation of the disease process. Currently, our understanding of the molecular changes underlying maladaptation at physiological barriers and leading to chronic diseases is limited.

Within our RTG we aim to characterize disease-defining maladaptive processes at endothelial and epithelial barriers. In systematic approaches, we analyze **gene expression**, **molecular signalling** and **molecular networks** (e.g. NF-κB system) in endothelial and epithelial cells and their impact on barrier function.

The comparative studies of these two barrier-defining cell-types provide the opportunity to exchange ideas and to combine **experimental tools** (e.g. animal models, organoids, co-culture systems) and **technical approaches** (e.g. high resolution 3D-imaging, intravital 2-photon-microscopy, mass spectrometry), thus, generating an added value for the young researchers. Additionally, the involvement of medical students and clinicians generates an environment fostering **translational research**. Thus, we train young scientists in a highly relevant research area and by exposing them to timely methodology and state-of-the-art approaches our RTG prepares the young scientists for their independent research careers.

More information about RTG 2408 is available here: http://grk2408.ovgu.de/

Program

April 24th, 2024 | Day 1

Time	Speaker	Topic
11:30	Arrival	
12:00	Lunch	
13:15	Come Together	
13:30	Holger Gohlke & Michael Naumann	Opening and Welcome
13:45	PhDs of RTG 2158 & RTG 2408	Introduction of both RTG 2158 and RTG 2408
14:45	Holger Gohlke & Michael Naumann	Short Introduction to “Proposal Writing for a Research Proposal” (Day 2)
15:15	Coffee Break	
15:45	Poster Session Part I	
15:45 – 18:00	PhDs of RTG 2158	Poster Pitch of RTG 2158 Cluster 1 *Characterization and optimization of apoptosis- and autophagy-modulating natural products and derivatives for the elimination of therapy-resistant tumor cells*
	PhDs of RTG 2408	Poster Pitch of RTG 2408 Cluster 1 *Allergic responses at the barrier*
	PhDs of RTG 2158	Poster Pitch of RTG 2158 Cluster 2 *Natural product/HDAC inhibitor-mediated modula-tion of immune responses and cytostatic-induced stress responses for resensitization of therapy-resistant tumors*
	PhDs of RTG 2408	Poster Pitch of RTG 2408 Cluster 2 *Inflammation across the epithelial barriers*
	Short Break	
	PhDs of RTG 2158	Poster Pitch of RTG 2158 Cluster 3 *Characterization of the mechanism of action and medicinal chemistry optimization of antimicrobial natural products*
	PhDs of RTG 2408	Poster Pitch of RTG 2408 Cluster 3 *Leukemias at physiological barriers*
	PhDs of RTG 2158	Poster Pitch of RTG 2158 Cluster 4 *Nisin as a model system to overcome lantibiotic resistance in bacterial pathogens*
	PhDs of RTG 2408	Poster Pitch of RTG 2408 Cluster 4 *Cellular fitness across barriers*
18:30	Dinner	
19:30	Informal Discussion & Get Together	

Program

April 25th, 2024 | Day 2

Time	Speaker	Topic
09:00	Poster Session Part II Discussion of scientific data on posters. First half RTG 2158 posters, second half RTG 2408 posters.	
10:15	Coffee Break	
10:45	RTG “Discuss & Debate” Round Tables RTG related topics will be discussed in groups. *(PI meeting in parallel)*	
12:45	Lunch	
14:00	Proposal “From first ideas to first draft to pitch” In this session, doctoral researchers will work in groups to develop their own ideas for a research proposal. The relevant questions will be discussed under guidance of the PIs. Finally, the developed research proposal will be presented in a pitch. All participants will elect the “best proposal idea”.	
	Coffee Break in between	
17:00	Presentation of the proposal pitches	
19:00	Dinner	
20:00	Informal Discussion and Announcement of Election Results	

April 26th, 2024 | Day 3

Time	Speaker	Topic
09:00	Discussion of the Round table results	
11:30	Lunch	
12:30	Departure	

Travel information & Accommodation

Hotel Appelbaum

Neuenkirchener Straße 59
33332 Gütersloh
Phone: 05241 - 95510
Email: appelbaum@hotel-appelbaum.de
Website: https://www.hotel-appelbaum.de/

General Information

Check-in starting at	14:00 on day 1
Check-out until	11:00 on day 3
Breakfast	from 6:30 until start of the sessions

Both RTG 2158 & RTG 2408 are funded by