

# University of Bayreuth Centre of International Excellence “Alexander von Humboldt”

*Sponsorship Programmes for Excellent International Researchers: Prospectus 2023*





# Preface by the President

## **The University of Bayreuth Centre of International Excellence “Alexander von Humboldt” – Excelling at Internationalization**

Cosmopolitan campus, global networks, lived diversity – this is what the University of Bayreuth stands for, and what inspired the establishment of the Bayreuth Humboldt Centre in 2019.

As illustrated in the 2030 Internationalization Strategy, the university pursues internationalization as a strategic goal of future-oriented research and higher education as well as global cooperation in all areas of university life. We have therefore been striving to build strong connections in research as well as in its multilateral networks: connections that serve as a powerful catalyst for responsible and sustainable internationalization and scientific creativity.

The Bayreuth Humboldt Centre was founded to establish and further strengthen and deepen these ties by inviting outstanding international guest researchers to the University for research visits. The insights of creative minds from around the globe who dare to think differently and develop innovative and sustainable solutions are indispensable to meet the challenges of today’s world. The success of the Centre relies on the free and international discourse, on personal exchange: not only in video calls or online conferences, but more importantly, through direct encounters in labs, lecture halls and libraries.

Our Senior and Junior Fellows and Grantees with their Bayreuth hosts as well as our Strategic Scientific Workshop consortia are prime examples of international research collaboration and networking across borders. Since the foundation of the Humboldt Centre, they have come to Bayreuth from 30 countries around the world and from a broad spectrum of topical research areas.

This prospectus portrays researchers and collaborative efforts we have granted during the last year as well as some insights into collaborations that took place on our campus in 2022, and it invites you to take part in this endeavour to internationalize research at the University of Bayreuth.

The fruitful collaborations our sponsorship programme has made possible will not end after the research stay or the publishing of joint papers – they are designed to keep the promise of ongoing output and sustainable synergies to further promote creative, courageous and innovative solutions. As Alexander von Humboldt put it in a letter from Venezuela in 1799: “Ideas can only be of use if they start living in many minds” – and in many generations to come.



*Prof. Dr. Stefan Leible  
President of the University of Bayreuth*



*The heart of our university. From here, all paths radiate to the faculties on campus thus connecting quite literally research areas, administration and, of course, people.*



# Portrait of the University of Bayreuth

## **Creative, courageous, innovative, and liveable**

The green campus of the University of Bayreuth is a meeting place of people and ideas where academic life is more varied and personal than it is at Germany's large universities. Top-notch research, state-of-the-art teaching methods, international influences, diversity, and a springboard to a successful career – these are all things the University of Bayreuth stands for.

## **The University of Bayreuth in numbers**

Starting out relatively small in 1975 with 632 students, 22 endowed chairs, and three departments, the University of Bayreuth is now firmly anchored in the national and international university landscape. Today, we are one of the most successful young universities in Germany. The University of Bayreuth is ranked 58th out of the world's top 475 universities younger than 50 in the 'Times Higher Education (THE) Young University Ranking'. It is part of the top ten percent of 5,500 universities worldwide in THE World University Ranking.

Interdisciplinary research and teaching is the main feature of our more than 170 degree programmes offered at seven faculties in the natural sciences, food sciences, engineering, law and economics, as well as language, literature and cultural studies. The University of Bayreuth has about 12,500 students, 1,600 academic staff (270 of them professors) and 1,020 non-academic employees on the campus in Bayreuth and at the satellite campus in Kulmbach. This makes it one of the largest employers in the region.

## **Engaging in cutting-edge research**

The University of Bayreuth is making its mark in research: Our Cluster of Excellence "Africa Multiple" conducts cutting-edge research at an international level, the new Bavarian Center for Battery Technology (BayBatt) embarks on examining, inter alia, secure high-performance materials, interfacial phenomena and transport processes, and Bayreuth polymer and colloid research is an innovation driver of vital technologies for the 21st century. Thus, it is not surprising that the university has raised more than a quarter of its annual budget in third-party funding in 2021.

## **More than just a university**

The University of Bayreuth aspires to be more than just a university. And so, we consider it indispensable to constantly improve and examine each classic field of action, to see whether and how it can adequately address the four questions of our time – internationalization, digitalization, sustainability as well as equal opportunities and diversity. We therefore consciously perceive these areas as cross-cutting issues honing our profile in a new dimension.

# Board of Directors and Executive Board for the Selection of Short-Term Grants and Strategic Scientific Workshops

The Executive Board of the Bayreuth Humboldt Centre consists of the two-member Board of Directors together with the acting Vice President for Research and Junior Scholars and the Vice President for Internationalization, Gender Equality and Diversity.



**Anna Köhler** is Professor of Soft Matter Optoelectronics (Experimental Physics II) at the University of Bayreuth and the Executive Director of the Bayreuth Humboldt Centre. From 2013 to 2016, she was the Vice President for International Affairs and Diversity.



**Nina Nestler** is Professor of Law (Criminal Law III) as well as the acting Vice President for Internationalization, Gender Equality and Diversity of the University of Bayreuth.



The Executive Board selects the guest researchers applying for Short Term Grants and Strategic Scientific Workshops at the Humboldt Centre. They also advise and report to the University Governing Board.



**Thomas Scheibel** is Professor of Biomaterials as well as the acting Vice President for Research and Junior Scholars of the University of Bayreuth.



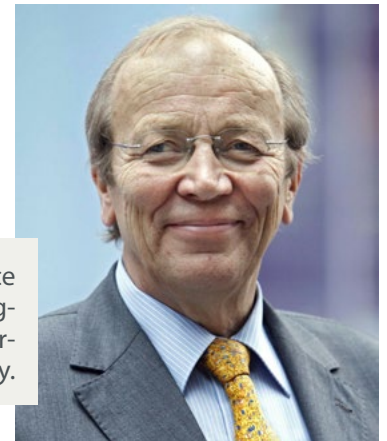
**Bernhard Herz** is Professor Emeritus of International Economics & Finance (Economics I) at the University of Bayreuth and the Deputy Director of the Bayreuth Humboldt Centre. He was the Vice President for International Relations from 2007 to 2010.

# External Advisory Board for the Selection of Senior and Junior Fellows

The Bayreuth Humboldt Centre has established a rigorous evaluation process to ensure a competitive selection of excellent international researchers and collaborative projects. Within the sponsorship programme “Senior and Junior Fellowships”, the Centre seeks expert reviews from qualified international peers who attest to the scientific achievements and broad recognition of each applicant within the research community. The final selection lies with an External Advisory Board of seven internationally distinguished external researchers and science managers, all highly renowned in their respective fields.



**Arndt Bode** is Professor Emeritus of informatics and former CIO at the Technical University of Munich and one of the leading researchers of computer architecture and computer engineering. He is the acting President of the Bavarian Research Foundation as well as the Vice President of the Bavarian Academy of Sciences and Humanities and member of the Advisory Board at the Leibniz Supercomputing Centre (LRZ) of the Bavarian Academy.



**Christian Bode** is the former Secretary General of the German Academic Exchange Service (DAAD). He currently serves as the chairman of the DAAD Alumni & Friends. For his long-standing commitment to internationalization he has received several honorary doctorates, awards and medals, including the Order of Merit of the Federal Republic of Germany.





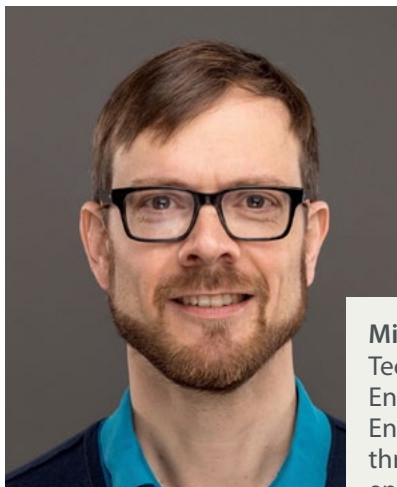
**Richard Cogdell FRS** holds the Hooker Chair of Botany at the University of Glasgow and was the Deputy Head of College of Medical Veterinary and Life Sciences at the University of Glasgow for nearly a decade. He is a Fellow of the Royal Society, has received the prestigious Alexander von Humboldt Research Award and is a frequent internationally sought-after advisory board member and reviewer, e.g. for the German Excellence Strategy.



**Julika Griem** is the Director of the Kulturwissenschaftliches Institut Essen (KWI) and, since 2016, Vice President of the German Research Foundation. Her previous positions include professorships for English Literature at Goethe University Frankfurt and Darmstadt University of Technology. She is a member of the steering committee of the Freiburg Institute for Advanced Study.



**Laura Rischbieter** is Professor of Global Economic History at the University of Konstanz. She teaches and writes about modern economic history in a global context, and won several awards for her work on the history of financial crisis after 1945. Laura Rischbieter held fellowships at Birkbeck College London, University of California (Berkeley and Irvine), the GHI Washington DC, and at the Boston University. Among other positions she is a member of the Historical Commission of the Federal Ministry of Finance.



**Michael Sander** is Professor of Environmental Chemistry at the Swiss Federal Institute of Technology (ETH) in Zurich. With comprehensive bachelor and master-level training in Environmental Sciences from the University of Bayreuth, he received a PhD in Chemical Engineering from Yale University in 2005. Michael Sander's research group has expertise in three major areas: redox biogeochemistry, environmental macromolecular chemistry and environmental chemistry of micropollutants.



**Natalie Stingelin FRSC** is a full Professor of Materials Science at the Georgia Institute of Technology, Atlanta. She held prior positions at Imperial College London, the University of Cambridge, Queen Mary University of London, the Philips Research Laboratories in Eindhoven, and ETH Zurich. She holds a Chaire Internationale Associée by the Excellence Initiative of the Université de Bordeaux since 2016 and is a former Senior FRIAS Fellow at the Freiburg Institute for Advanced Studies.

# Sponsorship Programmes for Excellent Research Across Borders

The University of Bayreuth Centre of International Excellence “Alexander von Humboldt” supports academic exchange across existing boundaries: across disciplines, different (research) cultures and countries, and between established and younger colleagues. To this end, the Centre invites outstanding international researchers for short and longer visits to the university, and it sponsors Strategic Scientific Workshops that are conducted by Bayreuth researchers in cooperation with international partners at UBT. Our funding formats at a glance:

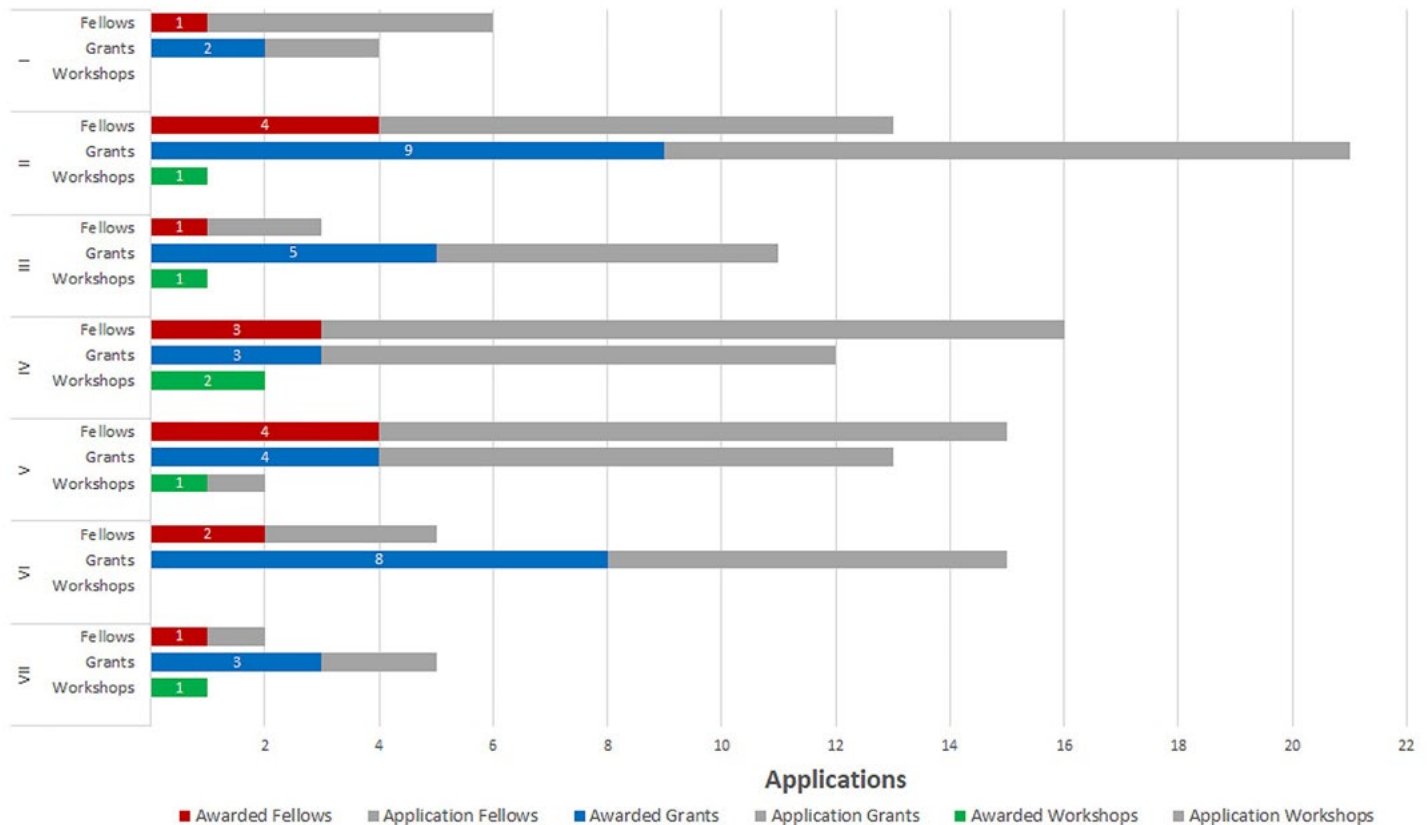
Senior and Junior Fellowships Seite 14 - 21	Short Term Grants Seite 22 - 30	Strategic Scientific Workshops Seite 31- 35
<p>Duration:</p> <ul style="list-style-type: none"> <li>Case-by-case (typically 3-6 months)</li> </ul> <p>Financial support:</p> <ul style="list-style-type: none"> <li>50,000 € (Seniors)</li> <li>30,000 € (Juniors)</li> </ul> <p>Host:</p> <ul style="list-style-type: none"> <li>1-2 Hosts</li> </ul> <p>Host subsidy for main host:</p> <ul style="list-style-type: none"> <li>500 € Humanities / Social Sciences</li> <li>800 € Natural Sciences / Engineering Sciences</li> </ul> <p>Call for applications and selection:</p> <ul style="list-style-type: none"> <li>Calls for proposals once a year</li> <li>Selection by External Advisory Board</li> </ul>	<p>Duration:</p> <ul style="list-style-type: none"> <li>1-3 weeks</li> </ul> <p>Financial support:</p> <ul style="list-style-type: none"> <li>Reimbursement of travel expenses to Bayreuth and back</li> <li>Accommodation costs in Bayreuth</li> <li>Visa fees (if applicable)</li> <li>Daily allowance</li> <li>Max. 3,500 €</li> </ul> <p>Host:</p> <ul style="list-style-type: none"> <li>1-2 Hosts (without host subsidy)</li> </ul> <p>Call for applications and selection:</p> <ul style="list-style-type: none"> <li>Calls for proposals twice a year</li> <li>Selection by Executive Board</li> </ul>	<p>Purpose:</p> <ul style="list-style-type: none"> <li>Workshops of UBT researchers in cooperation with international colleagues</li> <li>Mainly with privileged and strategic partner institutions from strategic destinations</li> </ul> <p>Financial support:</p> <ul style="list-style-type: none"> <li>Max. 20,000 € per event</li> </ul> <p>Call for applications and selection:</p> <ul style="list-style-type: none"> <li>Call for proposals once a year</li> <li>Selection by Executive Board</li> </ul>



# Statistics

Since the foundation of the Humboldt Centre in 2019, all of the seven high-achieving faculties of the University of Bayreuth have welcomed our Fellows, Grantees and the participants of Scientific Strategic Workshops: the Faculty of Mathematics, Physics & Computer Science (I), the Faculty of Biology, Chemistry & Earth Sciences (II), the Faculty of Law, Business & Economics (III), the Faculty of Languages & Literature (IV), the Faculty of Humanities & Social Sciences (V), the Faculty of Engineering Science (VI) and the Faculty of Life Sciences: Food, Nutrition & Health in Kulmbach (VII).

## Distribution by Faculties 2019-2022



# Map

A total of 174 applicants from all over the world aspired to come to the University of Bayreuth in the framework of one of our sponsorship programmes: the Fellowships (red), the Short Term Grants (blue) and the Strategic Scientific Workshops (green).



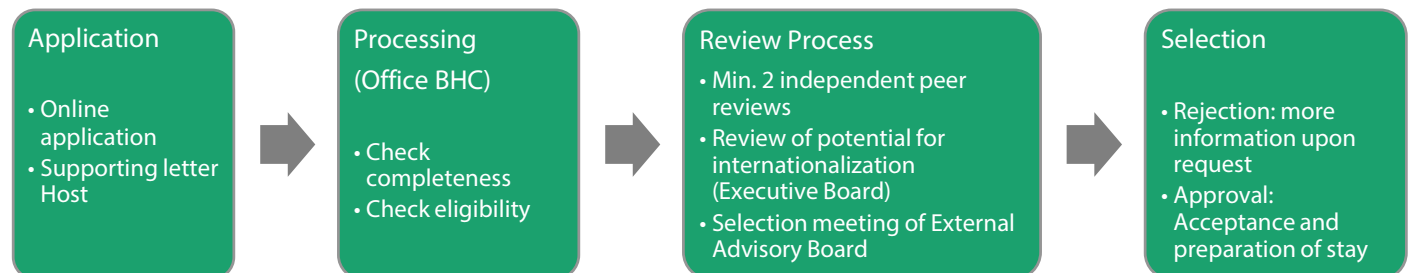
Image: Google Maps

# Senior and Junior Fellowships 2022

Junior and Senior Fellowships are awards to renowned scientists who work at research institutions abroad. They will carry out a research project in close cooperation with researchers in Bayreuth. The fellowships are meant to establish and strengthen structural and individual ties to researchers at the University of Bayreuth.

The awards are presented once a year as the result of a competitive selection process. The selection is strictly merit-based and the selection criteria are the academic excellence of both the applicant and the cooperative project.

- All fellows spend typically **three to six months of cooperative research** at the University of Bayreuth together with their host(s). The research stay can be divided into several stages.
- We advise researchers who have completed their PhD and have up to **four years** of post-doctoral experience to apply for Junior Fellowships. We expect applicants with a minimum of **eight years** of post-doctoral experience or a tenured professorship or an equivalent permanent position to apply for Senior Fellowships. Researchers between four and eight years of post-doctoral experience can apply for a Junior or a Senior Fellowship.
- The **Senior Fellowship** value totals €50,000. Fellows may use the awarded amount to cover costs in the context of the collaborative research project. Candidates need to submit a budget plan with their application.
- Senior fellows may use part of the award to include junior researchers from their research group in the cooperative research project.
- The **Junior Fellowship** totals €30,000. Fellows may use the awarded amount to cover costs in the context of the collaborative research project. Candidates need to submit a budget plan with their application.
- For the duration of their stay, the host of a fellow receives a monthly subsidy of €500 in the humanities and social sciences, and €800 in the natural sciences and engineering to compensate local costs.





# Testimonials

„This fellowship was the key to a new research field and experimental methods. My time spent at the University of Bayreuth broadened my perspectives, equipped me with new experimental methods and research techniques and contributed greatly to my development as a researcher and academic.“

**Junior Fellow Dr Marilize Everts**

„The fellowship period was very rewarding. My host, Prof. Tim Dorlach, made my research activities stimulating. The University library has a lot of research resources that were relevant to my study. The fellowship also made it possible for me to participate in the activities of the newly established Peace and Conflict Research Network of UBT. The experiences I gained during the fellowship are useful to my university in Nigeria. The staff of the Humboldt Centre and Welcome Services were very helpful and made my stay in Bayreuth very interesting.“

**Junior Fellow Professor Nathaniel Umukoro**

„I highly value the opportunity to come to the Bayreuth campus and collaborate with my host, Professor Kuhn, one of the leading experimentalists in the area of planarian regulation and small RNAs. This provides a great impetus to my lab’s computational work and further insights into their intricate mechanisms.“

**Senior Fellow Professor Andrey Grigoriev**

„I am delighted and humbled to have been awarded the Senior Fellowship and I am thrilled to collaborate with Profs Lippitz and Herink on quantum terahertz photonic systems. This is a fantastic opportunity to gain from each other’s complementary expertise and combine forces to produce new scientific knowledge and develop innovative applications.“

**Senior Fellow Professor Jean-Michel Ménard**

Senior Fellow

**Professor Andrey Grigoriev**

Rutgers University, New Jersey, USA

**Disciplines:**

Computational Biology

**Project:**

Predictive Models of Small RNA-directed mRNA Surveillance in Planarians

**Host:**

Professor Claus D. Kuhn,  
RNA Biochemistry



This Senior Fellowship supports a collaboration of an experienced computational biologist interested in small RNAs, Prof. Andrey Grigoriev, with the UBT host, Prof. Kuhn, who studies the regulation of planarian regenerative ability by piRNAs. The joint project combines experiments and computation to expand this research to the entirety of planarian small RNAs, and to employ computational methods of artificial intelligence in this dynamic area of study for predicting small RNA targets in a stem cell system. Given the complementary skillsets

and matching interests of Profs. Kuhn and Grigoriev, the proposed collaboration is timely and likely to significantly advance research on small RNA regulation of planarian stem cells and to result in a high-profile joint publication. On the applied side, this cooperation also significantly contributes to the development of stable transgenics in planarians and studies of regeneration in humans.

Andrey Grigoriev is a Full Professor at Rutgers University (New Jersey, USA), where he started a Center for Computational and Integrative Biology in 2010 as its founding Director. He studies various aspects of genome organization across multiple organisms and at multiple scales, from rearrangements affecting whole chromosomes to properties of tiny RNA fragments. His pioneering work in deducing functionality and mechanisms of small RNA regulation using computational tools has significantly advanced the field and opened novel avenues for theoretical and experimental research of these complex processes.

Senior Fellow

**Professor Jean-Michel Ménard**  
University of Ottawa, Canada

**Disciplines:**  
Physics

**Project:**  
Quantum THz Photonics:  
Using Strongly Coupled Vibrations to Modulate Optical Absorption

**Host:**  
Professor Markus Lippitz,  
Experimental Physics III, and  
Professor Georg Herink,  
Ultrafast Dynamics



The interaction between the vibration of a molecule and a confined optical field can lead to the formation of an intriguing quantum state. This new state, half-light half-matter, has unique physical and chemical properties that recently captivated the interest of the scientific community. This collaborative project explores such a quantum system composed of a metallic metasurface resonator coupled with a molecular vibrational resonance in the deep-infrared terahertz region. We focus on the changes occurring to the optical absorption of molecules as they

enter a quantum state. Our research helps to refine the general understanding of quantum systems and potentially lead to new applications in quantum information, computation, and chemical sensing. Notably, we aim to develop a means to perform complex infrared spectroscopy of vibrational levels with a simple absorption measurement in the visible region.

Jean-Michel Ménard is Associate Professor in the Department of Physics at the University of Ottawa where he started in 2016 the Ultrafast THz laboratory hosting photonics systems for materials characterization. Dr Ménard received his Ph.D. from the University of Toronto in 2011 before completing postdoctoral research positions at the University of Regensburg and the Max Planck Institute for the Science of Light. He is an Alexander von Humboldt Fellow, a fellow of the Joint Centre for Extreme Photonics, a fellow of the uOttawa-Max Planck Centre, and a recipient of the Early Researcher Award of Ontario. His research lies at the crossroads of THz photonics, quantum materials and nonlinear optics.



Junior Fellow

**Dr Marilize Everts**

University of Pretoria, South Africa

**Disciplines:**

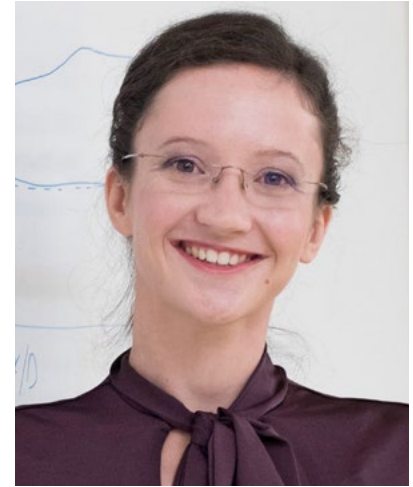
Mechanical Engineering

**Project:**

Pool Boiling Characteristics to Investigate Single-Phase Flow Through Tubes with a Constant Surface Temperature

**Host:**

Professor Dieter Brüggemann,  
Engineering Thermodynamics and Transport Processes



The seventh Sustainable Development Goal (SDG) is to ensure access to affordable, reliable, sustainable, and modern energy for all, but unfortunately, South Africa is facing an energy crisis. Renewable energy technologies have been prioritized and the aim is to contribute 42% of the country's energy mix by 2030. Accurate design information and correlations are key to optimize the heat exchangers and contribute to achieve this goal. Extensive research has been done on single-phase flow through tubes heated with a constant heat flux, but gaps in literature exist when it comes to tubes with a constant sur-

face temperature. Nucleate pool boiling is known for its high heat transfer coefficients and can be implemented to maintain a constant surface temperature boundary condition. However, the prediction of pool boiling mechanisms remains complex due to the bubble growth being very fast, the interaction of bubbles with the surface and liquid, as well as the interaction of bubbles with each other. This research aims to experimentally investigate the bubble dynamics during pool boiling in order to maintain a constant surface temperature along the length of a submerged tube.

Dr Marilize Everts obtained her PhD from the University of Pretoria and is currently a Senior Lecturer in the department of Mechanical Engineering. Her research thus far led to new insights, perspectives and an improved fundamental understanding of mixed convection and transitional flow. She has an H-index of 13 and published 16 journal articles, two book chapters and 37 conference papers (including 11 international keynotes). Her performance and contribution to science have been recognised by 30 awards and she has been acknowledged as an outstanding researcher nationally (Department of Science and Technology) and internationally (L'Oréal-UNESCO For Women in Science Foundation).

Junior Fellow

**Professor Nathaniel Umukoro**  
Western Delta University, Nigeria

**Disciplines:**  
Security Studies

**Project:**  
Food and Welfare:  
Assessing Nigeria's Food Security Policies from a Social Policy Perspective

**Host:**  
Professor Tim Dorlach,  
Junior Professor of Global Nutrition and Health Policy



It is a very concerning situation that over 100 million people in Africa are facing catastrophic levels of food insecurity. Although it is a global problem, the situation in Nigeria is very worrisome. In the 2020 Global Hunger Index, Nigeria ranks 98th out of 107 countries. Consequently, a careful assessment of existing social policy framework for food security in Nigeria will help identify areas of strength and weakness in order for improvements to be made. Nigeria is strategically significant for the study of challenges

confronting Africa because of the population and new challenges created by the COVID-19 pandemic. The study utilizes the case study design and a mixed method data collection and analysis approach. The research project will provide useful insights on how the COVID-19 pandemic influenced social policy responses to food security in a Global South country.

Dr Nathaniel Umukoro teaches at the Department of Political Science and Sociology at Western Delta University in Nigeria. He is also the Director of Research, Innovation and Internationalization. He completed a PhD programme at the University of Ibadan in 2015. During the programme, he was a fellow of the Next Generation Social Sciences in Africa program of the Social Science Research Council, New York. In addition to his postgraduate studies, he received training in Education in Emergencies (2017) and Peace Education and Transitional Justice (2015) from the Georg Eckert Institute, Germany. He specializes in African Studies, Social Policy, Security and Development Studies.

# Meet the Fellow: Professor Violeta Radovich

International ocean governance beyond national jurisdiction – towards an environmental integrative approach based on participation of indigenous peoples and local communities

Junior Fellow Violeta Radovich came to Bayreuth in 2022 to investigate the ocean - far from the ocean, but next to her host, Professor Eva Lohse, Public Law III, with whom she collaborated on topics like sustainability and participation on the high seas.

What are the foci of your joint research funded by the Fellowship?

**Violeta Radovich:** The focus of the research is to study the indigenous and local communities (IPLCs) participation provisions in the Draft Agreement of an international legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ) under the United Nations Convention on the Law of the Sea (UNCLOS). The main objective is to discuss whether these provisions may lead to sustainability on the high seas. We employ different criteria to evaluate them - mainly democratic features of environmental participation and decisions of human right bodies concerning participation. One vivid example of our collaboration is that the evaluation criteria that I am using to study these draft provisions are described in the books concerning participation edited by Professor Lohse. Moreover, a recent publication of the Microplastics Group of BayCEER stated that rainfall causes microplastics transport into the atmosphere, which allowed me to justify when IPLCs state that everything is connected in nature. I have written a chapter that will be published in the book edited by Professor Lohse on the topics sustainability and participation.



*Professor Violeta Radovich and the President of the University of Bayreuth, Professor Stefan Leible*

In what way is your work interdisciplinary, and what does interdisciplinarity mean to you in academic work and life?

**VR:** My work is totally interdisciplinary. I research on environmental conservation of the ocean. One cannot investigate the ocean without resorting to other sciences. Ocean regulation needs an integrative approach, a circular approach as claimed by IPLCs. My Co-Director in CONICET (Argentine Council on Scientific and Technical Research) is an oceanographer. I am a Professor and Researcher at the Navy War School, Argentine Defense University, where I lead interdisciplinary research projects and work with

oceanographers, sociologists, politicians, economists and historians. Interdisciplinarity is rewarding because you get the whole picture of the problem and therefore you may propose an integrative solution.

**What is, in your opinion, the future of your field? In what way can research in your field contribute to meeting the urgent challenges of our time?**

**VR:** I believe the ocean is the future. It occupies 70 percent of the planet, it is the place where life started. The moon has been more investigated than the ocean. The ocean provides several ecosystem services: provisioning services (food, hydrocarbons, genetic resources, minerals), regulation services, cultural services. The ocean is the most important sink of dioxide carbon, so its role to combat climate change is essential.

**What does international research mobility mean to you?**

**VR:** International mobility is essential to researchers. We need to travel, open our minds, benefit from reading and talking with knowledge generators in other countries. Travelling from Argentina with my family in Covid times was an adventure that will mark our lives forever. But what is life if not an adventure? It is not only about gaining research insights, but also about living daily in another culture, what makes these experiences so moving and rewarding.

**Dr Violeta Radovich** is a Bayreuth Humboldt Centre Fellow 2021. She is a Researcher at CONICET (Argentine Council of Technical and Scientific Research) and holds a PhD in Maritime Law and a LLM in Environmental Law from the University of Buenos Aires (UBA). She studies marine space regulation to mitigate and adapt global climate change impacts. She leads interdisciplinary research projects related to ocean conservation. Dr Radovich is a tenured Associate Professor of Environmental Law at UBA, Senior Professor and Researcher at Universidad Nacional de la Defensa (UNDEF), and Associate Professor of International Organizations at Universidad Nacional de San Martín (UNSAM).



# Short Term Grants 2022



*Dr Eric Nyarko and the President of the University of Bayreuth, Prof. Dr Stefan Leible*

**With its Short Term Grants, the Bayreuth Humboldt Centre invites scientists and scholars working abroad to spend a short research stay of one to three weeks at the University of Bayreuth in order to engage in dialogue with a host scientist from the University of Bayreuth.**

The reasons for coming to Bayreuth by means of a Short Term Grant are manifold: International researchers may initiate joint projects with Bayreuth researchers to explore potentials for collaboration just as much as they may continue and deepen promising, yet existing innovative endeavours.

## Overview Short Term Grants

The Short Term Grants include the reimbursement of travel costs between the place of work outside of Germany and Bayreuth, accommodation costs in Bayreuth, as well as additional costs such as visa fees and a daily allowance. Costs will be reimbursed upon request up to a maximum of €3,500.

The selection of all Short Term Grants is made by the Executive Board of the Bayreuth Humboldt Centre.

On the next pages, we present the Short Term Grantees selected in 2022.



*Dr Aruna Kunhiraman Kalasapurayil and President Prof. Dr Stefan Leible*

### **Dr Nishar Hameed**

Associate Professor and Group Leader at Swinburne University of Technology, Hawthorn, Australia

**Disciplines:** Materials Engineering

**Project:** Fabrication of Customisable Graphene Sensors for Biomedical Applications

**Host:** Professor Franz Konstantin Fuß, Chair of Biomechanics, and Professor Oliver Sass, Geomorphology



It is estimated that current biosensor materials would need to be significantly more efficient to be suitable for accurate early stage diagnosis of irreversibly progressive neurodegenerative health conditions. Novel sensor designs using graphene offer feasible solutions to construct extremely sensitive and rapidly responsive materials to exceed the required performance. Driven by our recent developments in hybrid material design, process control and sensor fabrication, with this collaborative grant we further establish experimental verification of designs of customisable graphene sensors with high accuracy for biomedical applications.



### **Dr Aruna Kunhiraman Kalasapurayil**

Associate Professor at Rathinam Technical Campus, Coimbatore, India

**Disciplines:** Energy research and Electrochemistry

**Project:** Synthesis and Characterization of Iridium-decorated Titanium Oxynitride Supported on Nanocarbon (Ir/TiON<sub>x</sub>@NCF) for Water Splitting

**Host:** Professor Mukundan Thelakkat, Chair of Macromolecular Chemistry

Hydrogen is regarded as the future fuel and global production currently stands at 70 million ton/year. A proton exchange membrane water electrolyzer, which has the ability for fast load change, high power and energy efficiency and high gas purity uses expensive catalysts at the anode (OER) and the cathode (HER) side. The OER is a complex four electron process which requires a very high thermodynamical potential (1.23 V) during water splitting and thus highly precious Iridium-based metal catalysts are used at the anode side. Since Iridium used for OER are either metallic Ir nanoparticles or IrO<sub>2</sub>, during OER it gets oxidized to amorphous IrO<sub>x</sub>. Ir with 3+ oxidation state was found to be more active. Hence, catalyst design with a greater number of Ir(III) will enhance the reaction rate. But the stability of Ir(III) based catalysts is questionable. This issue can be addressed by incorporating a proper support material, which will enhance the stability and durability of the catalyst. Thus, the project was to fine tune Iridium-based electrocatalysts with carbon nanostructures to arrest the corrosion during continuous operation and to improve the stability and activity during OER electrocatalysis.

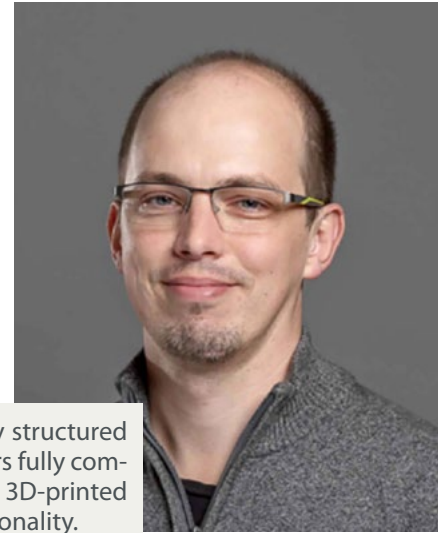
### Dr Antonín Minařík

Associate Professor, Department of Physics and Materials Engineering,  
Tomas Bata University in Zlín, Czech Republic

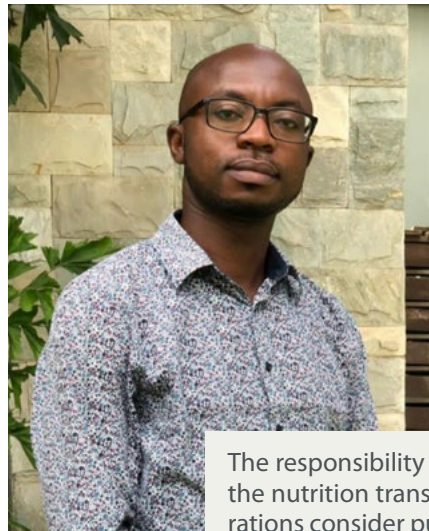
**Disciplines:** Biomaterials, Surface structuring, Additive manufacturing

**Project:** Nano- and Microstructuring of 3D-printed Biocompatible Scaffolds

**Host:** Dr Martin Humeník,  
Chair of Biomaterials



The project aims at developing new approaches for the preparation of hierarchically structured porous 3D-printed objects based on advanced additive manufacturing of biopolymers fully compatible with tissue engineering purposes. We are studying the modification of the 3D-printed fibroin scaffolds with self-assembling DNA-spider silk hybrids with cell binding functionality.



### Dr Eric Nyarko

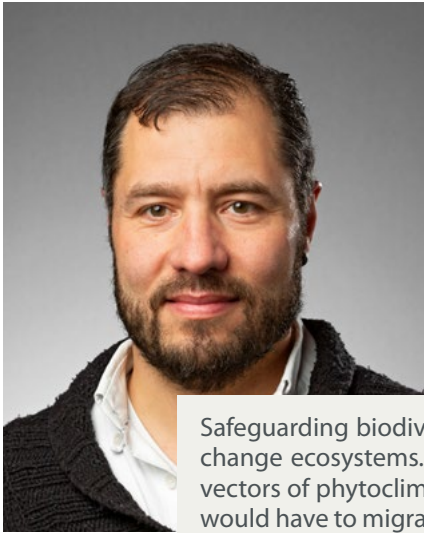
Lecturer at the Department of Statistics and Actuarial Science, School of Physical and Mathematical Sciences, University of Ghana, Ghana

**Disciplines:** Food, Nutrition and Health, Experimental designs and modelling

**Project:** Responsibility and Impact of Multinational Food Corporations on Public Health Nutrition in Ghana

**Host:** Junior Professor Tina Bartelmeß,  
Faculty of Life Sciences: Food, Nutrition & Health

The responsibility and impact of multinational food corporations in emerging economies, particularly on the nutrition transition, has long been an important public health issue. The extent to which food corporations consider public health and nutrition issues in emerging economies as part of their corporate social responsibility initiatives and their potential impact is a neglected area of research. This interdisciplinary research aims to assess how food corporations understand and implement their role and responsibility for food, nutrition, and health in developing countries, using Ghana as an example, and will develop a conceptual model that identifies different impact areas. The study will further demonstrate and critically assess the impact of food, health, and nutrition-related corporate social responsibility measures on public health nutrition in Ghana using experimental designs, and to derive concrete action measures for business, public health nutrition policy and society.



Photographer:  
Michael Johansen

**Dr Alejandro Ordonez**  
Assistant Professor, Aarhus University, Denmark

**Disciplines:** Macro-Ecology, Global Change Biology, Vegetation Modeling

**Project:** Climatic Forcing of Global Ecosystem Changes from the Last Glacial Maximum to the End of the 21st Century

**Host:** Dr Timo Conradi,  
Chair of Plant Ecology

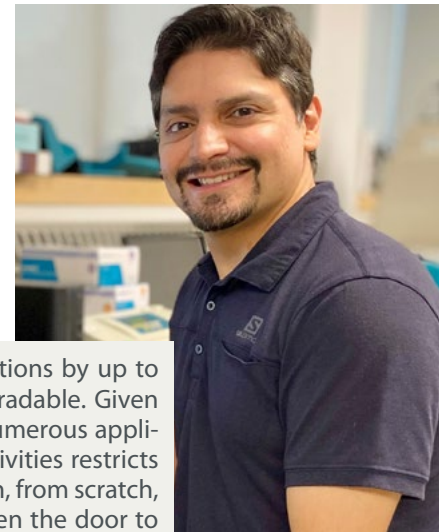
Safeguarding biodiversity during the Anthropocene requires robust forecasts of how climatic changes will change ecosystems. The project addresses this by developing new metrics of ecosystem change: velocity vectors of phytoclimatic change. These new metrics of ecosystem change represent how fast growth forms would have to migrate to assemble the same ecosystem elsewhere in a future climate. We are building these new metrics by combining modelling work done by the researchers at plant sciences at Bayreuth, translating climatic combinations into phytoclimates (e.g., the climate's suitability for plant growth forms that characterize ecosystem identity), and the statistical tools developed by Dr Ordonez for computing climatic velocity and its components driving ecosystem disaggregation and reassembly. We are using these metrics of ecosystem change to assess when and how novel vegetation assemblages emerged over the late Pleistocene climate transition and where these will arise by the end of the 21st century.

**Professor Roberto Chica**  
Professor of Chemistry, University of Ottawa, Canada

**Disciplines:** Chemistry, Biochemistry

**Project:** Computational Design of Artificial Enzymes from De Novo Protein Scaffolds

**Host:** Professor Birte Höcker,  
Department of Biochemistry



Enzymes are the most efficient catalysts known. They can accelerate chemical reactions by up to 26 orders of magnitude, display unmatched selectivity, and are completely biodegradable. Given their incredible potential for chemical synthesis, enzymes are in high demand for numerous applications in industry. However, the finite repertoire of naturally occurring enzyme activities restricts their applicability to only a small fraction of all desired applications. If we could design, from scratch, artificial enzymes that could catalyze any reaction with high efficiency, it would open the door to highly valuable biotechnologies. The goal of this short-term visit is to establish a research collaboration that will combine Prof. Birte Höcker's expertise in de novo protein design with my expertise in ensemble-based enzyme design to create more efficient artificial enzymes than previously possible.

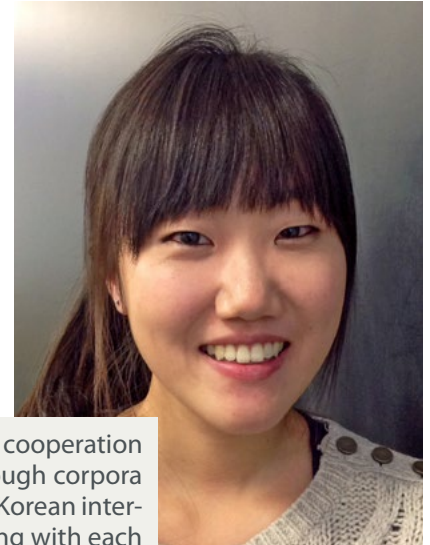


**Dr Hanwool Choe**  
School of English, University of Hong Kong, Hong Kong

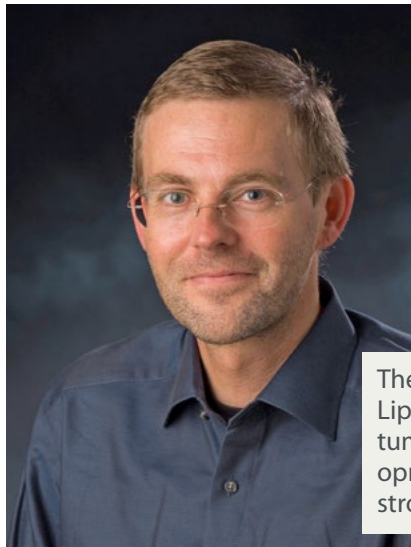
**Disciplines:** Discourse Analysis, Corpus Linguistics

**Project:** The Meta-Discourse of Online Eating in the News

**Host:** Dr Sofia Rüdiger,  
Department of English and American Studies



Bringing together corpus linguistics and qualitative discourse analysis, the aim of this cooperation is to study the meta-discourse of online eating, commonly known as mukbang, through corpora of newspaper articles reporting on this phenomenon. Mukbang, originated from the Korean internet, is a livestream where a host eats and viewers watch them eating, while interacting with each other in real time. The project investigates how the news talks about and disseminates mukbang, and what constitutes the meta-discursive context of mukbang. The collaborative work will thus put forward the idea that mukbang is a discursive construct of food experience in the digital age.



**Professor Markus Raschke**  
Professor of Physics, University of Colorado, Boulder, USA

**Disciplines:** Quantum Physics

**Project:** Pico-Cavity QED

**Host:** Professor Markus Lippitz,  
Department of Experimental Physics III

The goal of this project between the Raschke group at the University of Colorado and the Lippitz group (Experimental Physics III) at the University of Bayreuth is to develop quantum-coherent systems operating at room temperature, taking advantage of recent developments in both groups of pico-cavity quantum electrodynamics (cQED) in tip-enhanced strong coupling and with plasmonic nano-structures.



**Dr Nisa Salim**

Vice Chancellor's Initiative Senior Research Fellow,  
Swinburne University of Technology, Hawthorn, Australia

**Disciplines:** Materials Engineering, Additive Manufacturing, Sustainable Energy Storage

**Project:** 3D Printing of 2D Materials for Sustainable Electrochemical Energy Storage

**Host:** Professor Frank Döpfer,  
Department of Manufacturing and Remanufacturing Technology

Integrating 2D materials into nature inspired hierarchical 3D structures will create sustainable approaches to store energy. Driven by our recent developments in nature-inspired hierarchical materials and process control, this cooperation aims to establish experimental verification of 3D-printed structures for supercapacitor devices with sustainable electrochemical performance.

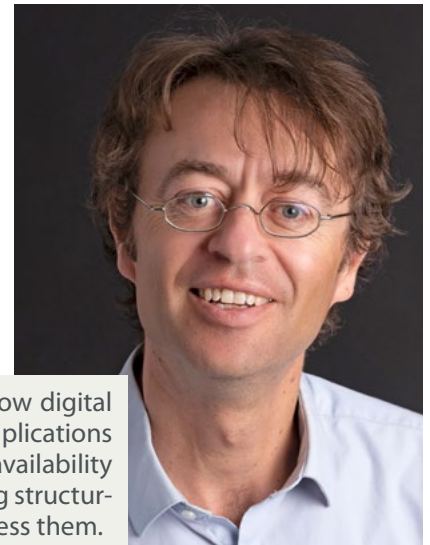
**Professor Richard Toye**

Professor of Modern History, University of Exeter, Exeter, United Kingdom

**Disciplines:** History, Digital Humanities

**Project:** Decolonising Digital History: Challenges and Opportunities

**Host:** Professor Astrid Swenson,  
Chair of European Historical Cultures



The aim of Professor Toye's short-term visit is to conduct preliminary research on how digital materials are used in the study of world history. This is a subject that has significant implications for the historical profession and for Higher Education more broadly. The widespread availability of digital sources creates opportunities for decolonising the discipline, i.e. overcoming structural inequalities, but also risks reinforcing those inequalities if care is not taken to address them.

*Photographer: Paula Fernley*

# Testimonials

„It gives me immense pleasure to state that my days at the University of Bayreuth were really fruitful and productive. The support provided by the Humboldt Centre and Professor Mukundan Thelakkat was tremendous. My short-term visit has opened avenues to collaborate with other research labs dealing with energy materials at the University of Bayreuth. I enjoyed the vast and beautiful campus and this visit has helped me to be more self-reliant. I believe that I will be able to conduct more application-oriented research work with faculty members of UBT in future. My sincere gratitude to the Humboldt Centre for providing me such a wonderful opportunity.“

**Dr Aruna Kunhiraman Kalasapurayil,  
Grantee 2022**

“This research stay for me constitutes a key stepping-stone to further develop my scientific career through the acquisition of important scientific, complementary and networking skills but it also provided me with a lifetime experience and the joy of exploring the beautiful city of Bayreuth and meeting with my hosts and members of the department. This was an enjoyable and fruitful experience for me specifically after the disruption in my initial travel plans for almost 2 years due to Covid-19 travel restrictions“.

**Dr Niloofar Karimian, Grantee 2019**

„I am honored to return to the university with which the beginning of my scientific career is associated. Twenty years ago, I completed my first research internship here as part of my doctoral studies. The inspiring leadership of Prof. Mathias Sprinzl at that time, the cooperation opportunities afterwards as well as the great university campus and the beautiful historical city have strongly influenced my further career development.“

**Dr Antonín Minařík, Grantee 2022**

„The grant gave me an opportunity to visit the Chair of Finance and Banking, Prof. Klaus Schaefer, and conduct a research project on sustainability and credit risk. I received generous support from the Chair and the Dean. Aside from work, I managed to see an opera performance (The Flying Dutchman) right before the end of my visit. I left the University of Bayreuth with fond memories of the well-designed campus, a beautiful Botanical Garden, and the hospitality that I had enjoyed during my stay.“

**Dr Huong Dieu Dang, Grantee 2021**

„For me returning to Bayreuth was like going home. I have worked and lived here before and Bayreuth hasn't disappointed this time either. The city is supremely liveable, the UBT campus is great and integrated with nature, the colleagues are wonderful, the level of scientific work is high. I have had a wonderful time in Bayreuth and I hope to return soon!“

**Professor Attila Tanyi, Grantee 2020**

# Meet the Grantee: Professor Becca Krukowski

Professor Becca Krukowski from the University of Virginia and her host Junior Professor Laura König met in Bayreuth in spring 2022 to study different forms of feedback, e.g. for consuming a healthy diet or being physically active, and their impact on possible changes in people's health behavior.

**What are the foci of your joint research funded by the Grant?**

**Becca Krukowski:** Not much is known about how feedback for health behavior change should be provided, even though providing feedback is pretty common. For example, many commercial devices provide graphs about our progress in getting minutes of physical activity or will vibrate when we are inactive. However, there are other possibilities for feedback, such as text that might either tell us about what we did well or alternatively what we might try to achieve in the future. There are also quite a few other questions to answer about how to provide feedback. For example, how often should feedback be provided? How long should the feedback messages be? Should feedback be human-generated or can feedback generated by a computer-algorithm work?

**Laura König:** For our work funded by the Humboldt Centre, we started with reviewing the existing scientific literature to learn as much as we could. Based on the existing literature, we designed a small study to examine the impact of some of these aspects of feedback in our Fake Food lab in Kulmbach, and we are currently recruiting participants for this study. Our next step will be to apply for funding to examine some of these questions about feedback on a larger scale.



*Professor Becca Krukowski and her host Junior Professor Laura König*

**What is in your opinion the future of Public Health? In what way can research on Public Health contribute to meeting the urgent challenges of our time?**

**BK:** Overweight/obesity, consuming a healthy diet, and staying active are very urgent challenges of our time throughout the world. Technology could create even more of a digital divide in access to health programmes. My research focuses on using any type of technology (including old technology like a telephone!) to improve access to health behavior change programs to people who may not live close to a university or may have other challenges to overcome (e.g., transportation, caregiving for children or elders).



**LK:** As psychologists, we are well aware of individual differences and needs. This also means that we know that technology is not for everyone. Although I personally am very interested in digital technology for health promotion and also study digital interventions, I like to remind myself and others that we should not dismiss good old „analog“ interventions as outdated. Instead, we need to think carefully about which intervention works best for whom and in which context.

#### **What does international research mobility mean to you?**

**RK:** Technology facilitates unprecedented international research mobility, with the ability to easily use videoconference programs or texting programs to communicate. International research mobility through technology allows me to easily start engaging in research in a new country, because all of my resources are mobile through my laptop, internet connection, and cloud resources. That said,

despite this technology, we are often not aware of what research others in different countries are conducting, when we do not meet in person. The Humboldt Centre’s Short Term Grant was a great opportunity for me to make connections in Germany and establish a foundation for a long-term research collaboration.

**LK:** I am still surprised how little connection there is between researchers on both sides of the pond in many fields, including health psychology and public health. This also leads to researchers in the US and Europe focusing on very different topics, for example when it comes to studying indicators for social inequality in healthcare – although the underlying mechanisms may not be that different, and we could learn a lot from each other.

Dr Becca Krukowski is Professor of Public Health Science at the University of Virginia. Her research focuses on using technology to increase to evidence-based behavioral program for adults in order to reduce cancer risk. She focuses in particular on behavioral weight management programs, self-monitoring behaviors, and increasing access to rural communities. She is funded by the US National Institutes of Health.

Her host Dr Laura König is Junior Professor of Public Health Nutrition at the University of Bayreuth.

# Strategic Scientific Workshops 2022

The Bayreuth Humboldt Centre supports Strategic Scientific Workshops by Bayreuth researchers in cooperation with colleagues working at universities or research institutions abroad.

All Workshops are expected to deepen existing or establish new ties with the clear objective to create sustainable pioneering research networks for the University of Bayreuth.

The Executive Board of the Bayreuth Humboldt Centre selects the Strategic Scientific Workshops once a year as the result of a competitive selection process which is strictly merit-based.

The overall selection criteria are the academic excellence of the participants and of the proposed workshop as well as its strategic significance.



Participants of the Strategic Scientific Workshop „Embodied Futurities“ with Professors Paulina Aroch Fugellie and Wolf-Dieter Ernst.  
Photographer: Henriette Kachel

The Workshop needs to take place at the University of Bayreuth for a minimum of two days. Eligible applicants are senior faculty members of the University of Bayreuth who cooperate with at least one international partner institution.

The Centre may grant support up to €20,000 for each workshop.

## Collaborating Partners:

**Professor Laura König**  
Junior Professor of Public Health Nutrition,  
University of Bayreuth

**Professor Emmanuel Kuntsche**  
Professor of Public Health,  
La Trobe University, Australia

**Professor Rebecca Krukowski**  
Professor of Public Health,  
University of Virginia, USA

**Dr Max Western**  
Lecturer in Behavioural Science,  
University of Bath, United Kingdom



**Project:**  
Understanding the Digital Divide in Health Promotion

Social inequalities are an important contributor to the global burden of disease. It has been initially assumed that digital health technology may increase access to high quality health care at low cost, however, first studies suggest that digital health risks to widen, instead of reducing, health disparities. This workshop aims to build an international network of public health researchers addressing social inequalities in digital health to synthesize the current state of research, assess underlying mechanisms of the digital divide, identify research gaps, and propose potential solutions to improve (digital) health for all.

## Collaborating Partners:

### Professor Astrid Swenson

Professor of European Historical Cultures,  
University of Bayreuth

### Dr Alison Carrol

Reader in European History,  
Brunel University London, United Kingdom



## Project:

Borders of Belonging: Historical and Creative Methods in Heritage and Placemaking

This workshop rethinks the role of borders in shaping ideas of heritage and belonging in Europe. While recent historical research has taken increasing account of transnational movements, debates often remain fragmented according to national lines and fail to consider the ways in which a wide set of European, imperial and global encounters and processes interacted. Bringing together scholars and creative practitioners, this workshop addresses this gap by analysing the shifting presentation of borders from the nineteenth to the twenty-first century, with attention to sites across Europe and Africa. These sites may have been on the peripheries of nation-states, but they were at the centre of a range of other processes that shaped notions of belonging. Thus, the workshop seeks to advance the fields of historical research, heritage studies and border studies by placing thinking about the role of fluid and closed borders at the heart of historical thinking and heritage practice.

## Collaborating Partners:

### Professor Gerhard Gebauer

Head of the BayCEER - Laboratory of Isotope Biogeochemistry, University of Bayreuth

### Professor Johanna Pausch

Junior Professor of Agroecology, University of Bayreuth

### Professor Martin Ignacio Bidartondo

Professor of Molecular Ecology, Imperial College London, United Kingdom

### Professor Vincent Merckx

Group leader, Naturalis Biodiversity Center, Leiden, The Netherlands



## Project:

Establishing a Publicly Accessible Global Online Database on Stable Isotope Abundance of Mycoheterotrophic Plants

The BayCEER – Laboratory of Isotope Biogeochemistry (BayCEER–IBG) collected more than 10,000 data on multi-element stable isotope abundance of more than 700 plant species from all over the world in an internal database over the past 20 years. The aim of this collection was to identify mycoheterotrophs, i.e. plants living heterotrophic on the cost of their mycorrhizal fungi partners, a unique type of nutrition that has long been completely underappreciated. This database served as tool for over 40 publications from the BayCEER–IBG with many international collaborators. Most of them were published in highly ranked journals and attracted interest worldwide. Research funding and publication policies request more and more access of research data for a broad forum of users in an open access mode. Following this trend, this Strategic Scientific Workshop in September 2022 was the successful first phase of the conversion of the internal database into a publicly accessible online database, which will subsequently be advertised among a wide suite of users.



# Workshop Report

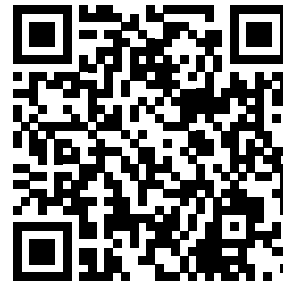
The small, but in its individual competence ideally complementary group of in total seven participants started the workshop discussion with essential basic topics: on the scheduled online database format, organization of the future database management, on quality control and on regulations for access authorisation. After agreements on these basic topics an intensive discussion followed on requirements for supporting information as part of the database. This second round of discussion was successfully finished with a detailed list of items to be included in the database. A third round of discussion addressed the advertising of the database. The participants agreed on envisaging a shared publication with database application examples in a highly-ranked international journal.

The workshop was finished with agreements by all participants on taking over individual explicit tasks for the further database development and agreements on a timetable for each step until publication of the database and an accompanying paper by all participants. The participants agreed to envisage the database publication until the end of 2023. Minutes on the major agreements of the workshop were circulated among all participants. A preliminary database name was established. Regular online meetings of all contributors were planned to report on the progress with the database.



All workshop participants explicitly appreciated the excellent working conditions in a cosy atmosphere in Schloss Thurnau that allowed a full-time focus on a densely filled two-day workshop program with a rather promising outcome. The workshop was finished by an excellently guided tour through the historical castle of Thurnau. All participants expressed their great gratitude to the Bayreuth Humboldt Centre for funding this workshop within the Strategic Scientific Workshop programme.

*Professor Gerhard Gebauer*



## Editing and Contact

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