

Media release, 15 December 2023

Eleven SNSF Starting Grants for researchers at the University of Bern

Eleven award-winning research projects: of the 67 projects in this year's call for "Starting Grants" from the Swiss National Science Foundation (SNSF), eleven are being supported from Bern. The funding amount for the Bernese researchers is around 19 million Swiss francs in total.

Due to Switzerland's status as a non-associated third country in the Horizon Europe programme, the federal government mandated the SNSF to launch the funding scheme "SNSF Starting Grants 2023". This integrative call is a transitional measure covering the ERC Starting Grants 2023 as well as the former SNSF funding schemes Eccellenza and PRIMA. The scheme is open to all disciplines and topics; researchers of any nationality may apply. Applicants can request a budget of up to CHF 1.8 million for a period of five years.

Good conditions for cutting-edge research

More than 440 applications were submitted in this year's call for SNSF Starting Grants, of which a total of 67 projects will be funded with around CHF 115 million in total. With an SNSF Starting Grant, grantees will lead an independent research project and direct a team of researchers in Switzerland. Of the eleven projects funded at the University of Bern, eight are by women and five by researchers who are moving to Bern from another institution. "This is a great success - not only because we were able to acquire eleven of these highly competitive grants, but also because, thanks to our good research conditions, several outstanding young researchers are coming to Bern to carry out their projects," says Prof. Dr. Hugues Abriel, Vice-Rector Research at the University of Bern. It is also pleasing that the projects cover so many different areas of research.

The eleven award-winning projects deal with the water cycle, socio-economic development in the Mediterranean region in the 2nd millennium BCE, bacteriophages and their role in the development of antibiotic resistance, border violence, the strengthening of positive memories in patients with depression, incorrect medical diagnoses, the history of algebra in the Mediterranean region, the development of cardiac arrhythmias, therapeutic approaches to dangerous adhesions in the abdomen, the study of the ocean on Jupiter's moon Europa, and the immunological "memory" to intestinal bacteria.

Brief descriptions of the projects and contact details can be found on the following pages.

Detailed descriptions of the projects and short biographies of the researchers:

Leveraging water isotope observations to establish robust constraints for precipitation efficiency (PERISCOPE)

Project leader:

Franziska Aemisegger, Institute of Geography, University of Bern and Oeschger Centre for Climate Change Research, University of Bern; (currently Atmospheric Dynamics Group, Institute for Atmospheric & Climate Science, ETH Zurich)

Project description:

How much water vapor remains in the atmosphere after an intense snowstorm? And how much rain evaporates below a cloud? These are key open questions about the basic working principles of the atmospheric water cycle. Answering these questions will enable significant progress in the quality of precipitation predictions with socio-economic benefits from improved adaptation measures to the extremes of the water cycle. The aim of the PERISCOPE project is to answer these questions with a team of scientists and using a combination of new multi-platform observations with a hierarchy of numerical models.

More information: <https://data.snf.ch/grants/grant/218303>

About Franziska Aemisegger

Franziska Aemisegger is a climate researcher working on the dynamics of the atmospheric water cycle. Her scientific work is driven by a deep fascination for the complexity and diversity of the processes that a water molecule undergoes from the oceanic source of evaporation, to transport through weather systems, to cloud formation and infiltration as part of a raindrop in the soil. Given the interconnected nature of the water cycle with other Earth system components, she collaborates with experts in meteorology, hydrology, snow physics, remote sensing and chemistry. Her team's work serves as the basis for reliable forecasts of the rapid changes in the water cycle with global warming.

Contact:

Dr. Franziska Aemisegger, Institute for Atmospheric & Climate Science, ETH Zurich

Phone +41 79 694 00 65

E-mail: franziska.aemisegger@env.ethz.ch

Understanding Socio-Economic Complexity in Eastern Mediterranean Protohistory

Project leader:

Teresa Bürge, Department of Near Eastern Archaeology, Institute of Archaeological Sciences, University of Bern; (currently Austrian Archaeological Institute, Austrian Academy of Sciences)

Project description:

The project *Understanding Socio-Economic Complexity in Eastern Mediterranean Protohistory* will investigate processes of socio-economic development using the example of Cyprus in the 2nd millennium BCE. The island, which lies at the crossroads of Eastern Mediterranean cultures, is mainly known for its rich copper deposits, whereas little attention has been paid to other essential economic sectors such as pottery production, animal husbandry and agriculture. These areas will be used to shed light on the emergence of social and economic complexity using multidisciplinary approaches.

Further information: <https://data.snf.ch/grants/grant/218052>

About Teresa Bürge

Teresa Bürge is currently a postdoc funded by an APART-GSK fellowship at the Austrian Archaeological Institute of the Austrian Academy of Sciences (ÖAW) in Vienna and will carry out her SNSF Starting Grant project at the Institute of Archaeological Sciences (IAW) at the University of Bern. After completing her doctorate at the University of Vienna, she carried out postdoctoral research at the Austrian Academy of Sciences and at the Universities of Gothenburg and Bern. Her field of research covers the Bronze and Iron Ages in the Eastern Mediterranean. As co-director of the Swedish excavations at Hala Sultan Tekke, Cyprus, and head of ceramic studies at this Bronze Age harbour city, her research interests include the remains of rituals and feasts, the production and provenance of pottery, mobility and migration, and trade and the exchange of goods between Cyprus and other regions of the Mediterranean.

Contact:

Dr. Teresa Bürge, Austrian Archaeological Institute of the Austrian Academy of Sciences (ÖAW), Vienna

Phone: +43 1 51581-6128

E-mail: teresa.buerge@oeaw.ac.at

Range of influence of staphylococcal bacteriophages in bacterial populations

Project leader:

Elena Gómez-Sanz, Institute of Veterinary Bacteriology, Vetsuisse Faculty, University of Bern; (currently Department of Infectious Diseases and Hospital Epidemiology of the University Hospital Basel)

Project description:

While bacteriophages are the most abundant entities on Earth and the most prolific bacterial killers, antimicrobial resistance bacterial infections continue increasing worldwide. Contradictory enough, bacteriophages can arm bacteria to make them more virulent and to survive antimicrobial treatment. This double-edged sword encumbers bacteriophages as major actors in bacterial evolution and adaptation. This project builds on the necessity to solve this important paradigm in Biology encompassed with the urge to graze innovative actions to tackle the antimicrobial resistance pandemic.

More information: <https://data.snf.ch/grants/grant/218285>

About Elena Gómez-Sanz

Elena Gómez-Sanz is a Senior Research Associate at the Department of Infectious Diseases and Hospital Epidemiology of the University Hospital Basel, Switzerland. Her primary goal lies in defining the pathways for transmission and persistence of bacterial antimicrobial resistance, from a One-Health perspective. She integrates experimental analyses with computational approaches at individual, population and community level including eco-epidemiological aspects to delineate the molecular basis by which bacteria become resistant to antibiotics, unveil emerging mechanism of resistance and define the interconnected forces driving dissemination of antimicrobial resistance genes. Her approach involves the depiction of unknown aspects of staphylococcal phage biology and their contribution to antimicrobial resistance spread. In addition, she undertakes advisory and reviewing activities on the field for several scientific editorials as well as for national and European public bodies. She is member of several specialized scientific societies in the field of antimicrobial resistance and infectious diseases.

Contact:

Dr. Elena Gómez-Sanz, Department of Infectious Diseases and Hospital Epidemiology of the University Hospital Basel

E-Mail: elena.gomezsanz@usb.ch

The Circumference of Violence - Tracing the normalisation and brutalisation of violence across Europe's shifting external borders**Project leader:**

Charles Heller, Institute of Social Anthropology, University of Bern, and Graduate Institute Geneva

Project description:

In the context of increasing practices of border violence and their normalisation across the external borders of the EU, this transdisciplinary project explores the following overarching question: How do the practices of different actors at the border, as well as political and legal processes across different scales – local, national and European – shape changing modalities of border violence? To answer this question, the project focuses on four case studies located across the circumference of the EU external borders which it analyses comparatively and relationally through anthropological and geographic approaches and critical forensic investigative methods.

More information: <https://data.snf.ch/grants/grant/218288>

About Charles Heller

Charles Heller is presently the director of Border Forensics, a research and investigation agency based in Geneva. He is a Research Associate at the Geneva Graduate Institute and the University of Bristol. He has been visiting lecturer at the University of Bern since 2022. Heller's research has a long-standing focus on the entangled politics of migration, borders, mediation and the law. Heller have developed a transdisciplinary approach that combines anthropology and geography with art and architecture-based methods to analyze the changing modalities of violence inflicted on as a result of the management of Europe's borders.

Contact:

Dr. Charles Heller, Institute of Social Anthropology, University of Bern, and Graduate Institute Geneva

Phone +41 31 684 89 95

E-mail: charles.heller@unibe.ch

CoMind: Improving diagnoses by understanding the collaborative and cognitive processes of medical teams

Juliane Kämmer, Department for Emergency Medicine, Inselspital, Bern University Hospital

Project description:

Incorrect medical diagnoses are unfortunately common and some of them can have serious consequences for patients. However, there is limited understanding of the circumstances under which such errors occur and how effective collaboration within the diagnostic team can help to prevent them. The CoMind project will provide a clearer understanding of how decision making in medical diagnostics and other high-risk areas can be improved to help improve diagnoses in the long term.

More information: <https://data.snf.ch/grants/grant/218047>

About Juliane Kämmer

Juliane Kämmer is Senior Researcher at the Department of Emergency Medicine at Inselspital Bern and co-leader of the Diagnostic Quality Lab. She is also a member of the Virtual Inselspital Simulation Lab at the University of Bern. In 2013, she completed her doctorate in psychology at the Humboldt University in Berlin and the Max Planck Institute for Human Development. She then researched and taught at various German universities and most recently held the Chair of Social and Communication Psychology at the University of Göttingen. She has already conducted research as a Marie Skłodowska-Curie Fellow at the University of Bern from 2020 to 2022. In her research on team decisions under uncertainty and diagnostic quality, she combines theories and methods from psychology, cognitive science and medical education research. Her research provides insights that should lead to better team decisions, e.g. in the form of better medical diagnoses.

Contact:

Dr. rer. nat. Juliane Kämmer, Dipl.-Psych., Department for Emergency Medicine, Inselspital, Bern University Hospital

Phone: +41 31 632 24 42

E-mail: juliane.kaemmer@unibe.ch

Exploring the role of the prefrontal cortex in remembering and forgetting**Project leader:**

Jessica Peter, University Hospital of Old Age Psychiatry and Psychotherapy, Universitäre Psychiatrische Dienste, Universität Bern (UPD)

Project description:

Healthy people remember positive experiences better than negative. In patients with depression, however, this is exactly the opposite. Jessica Peter has used a non-invasive method, tDCS, to influence left frontal brain function so that healthy people form more positive new memories. In her project, she will do the same now in patients with depression. The left frontal brain is important for remembering, the right for forgetting. In addition to forming new positive memories, the project will also investigate how negative memories can be forgotten using tDCS. Finally, the project will explore how brain networks change with modulation of frontal brain function and whether this will depend on age.

Further information: <https://data.snf.ch/grants/grant/218252>

About Jessica Peter

Jessica Peter is Associate Professor and Head of Research at the Department of Old Age Psychiatry and Psychotherapy at the University of Bern. Her research focusses on a basic understanding of memory and on the development of non-pharmacological interventions to improve cognition. These interventions include mental strategies, reward, real-time fMRI neurofeedback or tDCS. In addition to her research, she is cofounder and chair of a network of female scientists at the University of Bern that aims to promote women in science.

Contact:

Prof. Dr. phil. Jessica Peter, University Hospital of Old Age Psychiatry and Psychotherapy, Universitäre Psychiatrische Dienste (UPD), Universität Bern

Telephone: +41 31 932 89 03

E-mail: jessica.peter@unibe.ch

Medieval and Early Modern Mediterranean Mathematics (MediMath)

Project leader:

Eleonora Sammarchi, Institute for Middle Eastern and Muslim Studies, University of Bern;
(currently Department of History and Philosophy of Mathematical Sciences, ETH Zurich)

Project description:

Medieval and Early Modern Mediterranean Mathematics (MediMath) is a project on the history of algebra and of its relations to arithmetic and geometry as they were developed in the Mediterranean world from the 9th to the beginning of the 17th century. By adopting a global and interdisciplinary approach, MediMath will show that, instead of being the product of pre-determined geographical or cultural distinctions, mathematics determines geographies and interconnects macro-regions. The project combines conceptual analysis and digital humanities with the study of the mathematical knowledge flows.

More information: <https://data.snf.ch/grants/grant/218295>

About Eleonora Sammarchi

Eleonora Sammarchi is a postdoctoral researcher at the Chair of History and Philosophy of Mathematical Sciences (ETH-Zürich). Her primary focus lies in the history of medieval and early modern mathematics, especially algebra in Arabic and Latin sources. She is currently studying how algebraic expressions were conceived in several textual traditions before the introduction of the term "polynomial". Her approach consists in combining philological studies with the history of ideas, as well as with global and social histories of science. In addition, she is associate researcher at the Laboratoire SPHERE (CNRS-Université Paris Cité), where she coordinates the seminar of the Center for the History of Science and Philosophy seen from Africa, Asia, and so on (CHPSAAA). She is also an active member of various international societies for the history and philosophy of science.

Contact:

Dr. Eleonora Sammarchi, Department of History and Philosophy of Mathematical Sciences, ETH Zurich

Phone: +41 44 632 85 92

E-mail: eleonora.sammarchi@gess.ethz.ch

ACTT - Arrhythmogenic Cardiomyopathy: Investigation of new mechanisms and therapeutic targets

Project leader:

Camilla Schinner, Institute of Anatomy, University of Bern and Department of Cardiology, Inselspital, University Hospital Bern (currently Hannover Medical School)

Project description:

Arrhythmogenic Cardiomyopathy is a genetic disease manifested by cardiac arrhythmias. Although it is one of the main causes of sudden cardiac death in young adults, current treatment approaches only alleviate the symptoms. With the "ACTT" project, Camilla Schinner wants to better understand the underlying mechanisms of the disease and derive new therapeutic approaches. To this end, she is investigating early molecular processes using mouse disease models, patient samples and artificial heart tissue. The results should contribute to a better understanding of the development of cardiac scarring and arrhythmia.

More information: <https://data.snf.ch/grants/grant/218454>

About Camilla Schinner

Camilla Schinner is assistant professor of Cellular and Molecular Anatomy with a research focus on molecular cardiology. In particular, her group investigates the pathological and protective mechanisms of Arrhythmogenic Cardiomyopathy. The physician and anatomist completed her doctorate in 2019 at the Ludwig Maximilian University of Munich in the field of basic cardiovascular research and established a new disease model of Arrhythmogenic Cardiomyopathy at the Department of Biomedicine at the University of Basel. In March 2023, she was appointed as assistant professor at the Hannover Medical School. She has been awarded several prizes for her work, including the Rolf Becker Prize and the Young Scientist Prize of the Anatomical Society.

Contact:

Prof. Dr. med. Camilla Schinner, Institute for Functional and Applied Anatomy, Hannover Medical School

Phone: +49 511 532-80214

E-mail: schinner.camilla@mh-hannover.de

Plumes: Access to the Chemical Makeup of Europa's Presumed Habitats**Project leader:**

Audrey Vorburger, Space Research and Planetary Sciences Division, Institute of Physics, University of Bern

Project description:

Jupiter's moon Europa is one of the most promising places for the search for life beyond Earth. Hidden beneath a kilometer-thick layer of ice lies a global ocean that could theoretically harbor life. Two space missions, ESA/JUICE and NASA/Europa Clipper, plan to study Europa up close in the coming decade. Their mass spectrometers will attempt to take samples from active geysers during flybys and analyze them in situ. The aim of the project is to develop a numerical model that makes it possible to deduce the composition of the ocean water from the composition of these fountains.

Further information: <https://data.snf.ch/grants/grant/218336>

About Audrey Vorburger

Audrey Vorburger holds a Master's degree in electrical engineering from ETH Zurich and a Dr. phil. nat. in physics from the University of Bern. She is a senior lecturer at the Space Research and Planetary Sciences Division at the Physics Institute of the University of Bern. Her research focuses on the in situ exploration of the planets and moons of our solar system using mass spectrometry. High-precision measurements from these instruments provide valuable insights into our solar system's formation and evolution and enable us to search for extra-terrestrial life. She is intensively involved in a large number of space missions, for example the ESA/JUICE, ESA/BepiColombo, NASA/Europa Clipper and NASA/MESSENGER missions. She is also a member of various international expert teams, including the ESA L4 expert team and the ESA Solar System and Exploration Working Group.

Contact:

PD Dr. Audrey Vorburger, Space Research and Planetary Sciences Division, Institute of Physics, University of Bern

Phone: +41 31 684 44 16

E-mail: audrey.vorburger@unibe.ch

Engineered symbionts elucidate gut T cell memory and its (dys)regulation

Project leader:

Jakob Zimmermann, Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, and Department for BioMedical Research, University of Bern

Project description:

The human immune system is constantly activated by the multitude of benign bacteria in our gut. Whether the immunological T cell memory plays a role in this process, similar to the protection against infections, is still largely unexplored. The "GuT Memory" project uses an innovative approach to clarify whether and how the human immune system builds up a memory for our intestinal bacteria. The findings may help to correct the misregulation of T-cell memory in chronic inflammatory bowel diseases and to develop novel strategies for mucosal vaccines.

Further information: <https://data.snf.ch/grants/grant/218351>

About Jakob Zimmermann

Jakob Zimmermann is a scientist at the Department of Visceral Surgery and Medicine at Inselspital, Bern University Hospital, and at the Department for BioMedical Research at the University of Bern. He investigates how harmless intestinal bacteria interact with the immune system and what consequences this has for the host organism and its susceptibility to disease. To this end, he uses innovative colonization models in which healthy germ-free mice are only temporarily colonized with non-pathogenic intestinal bacteria. Another focus of his research is the development of novel methods to better investigate the gut microbiota and its changes in disease states in order to improve future diagnostic possibilities.

Contact:

Dr. Jakob Zimmermann, Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, and Department for BioMedical Research, University of Bern

Phone: +41 31 632 98 42

E-mail: jakob.zimmermann@unibe.ch

Macrophage Aggregation Control against Scarring (MACScar)

Project leader:

Joel Zindel, Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, and Department for BioMedical Research, University of Bern

Project description:

Since the organs located in our body cavities are so vital, nature has installed an extremely potent "Fix-it Service" directly on site. This consists of millions of specialized repair cells - the GATA6 macrophages - which recognize and repair tissue damage within a few minutes. However, excessive activation of this system leads to scarring with considerable consequential problems. The *MACScar - Macrophage Aggregation Control against Scarring* project is investigating the molecular principles and functions of GATA6 macrophages as a basis for new therapeutic approaches against postoperative adhesions.

Further information: <https://data.snf.ch/grants/grant/218347>

About Joel Zindel

Joel Zindel is Assistant Professor of Visceral Surgery and Senior Physician in the Department of Visceral Surgery and Medicine at Inselspital, Bern University Hospital, and Researcher at the

Department for BioMedical Research, University of Bern. Joel Zindel investigates the cellular and molecular basis of wound healing and scar formation after surgical interventions in the abdominal cavity. To this end, he uses human tissue samples and animal models. A key feature of his research is the use of multiphoton microscopy to study dynamic cellular processes in real time. As a surgeon, he is also actively involved in patient care and is a member of numerous specialist societies.

Contact:

Prof. Dr. med. Dr. sc. nat. Joel Zindel, Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, and Department for BioMedical Research, University of Bern

Phone: +41 31 632 59 00

E-mail: joel.zindel@insel.ch