UNIVERSITÄT
BERN

HANS-SIGRIST-STIFTUNG

VOM STIFTUNGSRAT GENEHMIGT
AM 2. MAI 2016

Tätigkeitsbericht 2015

Geschäftsstelle:
Hans-Sigrist-Stiftung
Universität Bern
Schanzeneckstrasse 1
Postfach
CH-3001 Bern
Tel. +41 (0)31 631 56 50
E-Mail: office@sigrist.unibe.ch
http://www.sigrist.unibe.ch

Inhaltsverzeichnis

Hans-Sigrist-Stiftung

Stiftungsrat

- Prof. Dr. N. Trautmann, Präsident
  Wirtschafts- und Sozialwissenschaftliche Fakultät
- Prof. Dr. C. Rigamonti, Vizepräsident
  Rechtswissenschaftliche Fakultät
- Prof. Dr. C. Leumann
  Vizerektor Forschung
- Dr. B. Pulver, Erziehungsdirektor
  Vertreten durch D. Schönmann,
  Amt für Hochschulen
- Prof. Dr. S. Brönnimann
  Philosophisch-naturwissenschaftliche Fakultät
- Prof. Dr. K. Henke
  Philosophisch-humanwissenschaftliche Fakultät
- Prof. Dr. A. Kunz
  Wirtschafts- und Sozialwissenschaftliche Fakultät
- Prof. Dr. E. Müller
  Veterinärmedizinische Fakultät (Vetsuisse) und Medizinische Fakultät
- Prof. Dr. A. Perren
  Medizinische Fakultät
- Prof. Dr. G. Rippl
  Philosophisch-historische Fakultät
- Prof. Dr. S. Schroer
  Theologische Fakultät

Tätigkeitsbericht 2015

An den beiden ordentlichen Sitzungen befasste sich der Stiftungsrat der Hans-Sigrist-Stiftung mit den folgenden Geschäften:

– Wahl des Preisträgers 2015
– Bestimmung des Forschungsgebietes für den Preis 2016
– Genehmigung des Tätigkeitsberichtes 2014
– Genehmigung der Jahresrechnung 2014 und des Revisionsberichtes 2014
– Genehmigung des Budgets 2016

Hinzu kamen folgende Tätigkeiten:

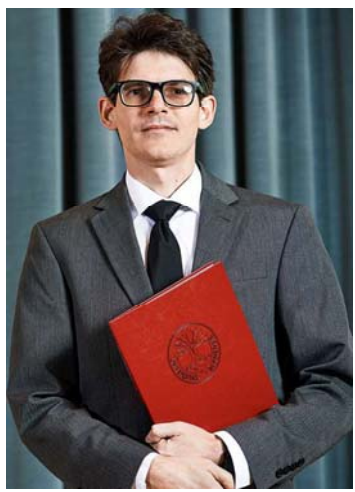
– Vergabe von neun Hans Sigrist Zuschüssen

Den Kolleginnen und Kollegen im Stiftungsrat und im Ausschuss danke ich für ihr aktives und konstruktives Mitwirken. Besonders danken möchte ich Frau A. Stockfleet für ihre engagierte, verantwortungsvolle und umsichtige Leitung der Geschäftsstelle.

Bern, 2. Mai 2016
Der Präsident des Stiftungsrates
Prof. Dr. N. Trautmann

2015 Hans Sigrist Prize
Combatting Antibiotic Resistance: Novel Antibacterial Strategies

A committee of experts, under the leadership of Prof. Dr. Andrea Endimiani, Institute for Infectious Diseases, University of Bern, presented a list of three finalists to the Board for the 2015 Hans Sigrist Prize in the field of Combatting Antibiotic Resistance: Novel Antibacterial Strategies. On May 18, 2015, the board selected Prof. Luciano Marraffini of The Rockefeller University, USA, as the 2015 Hans Sigrist Prize Winner.



Prof. Dr. Luciano Marraffini

Laudatio:

Prof. Marraffini of The Rockefeller University in New York is one of the internationally most distinguished and innovative researchers in the area of this year's prize field "Combatting Antibiotic Resistance: Novel Antibacterial Strategies". Specifically, Prof. Marraffini works with the CRISPR-Cas molecular system, the genetic machinery which provides bacteria with adaptive inheritable immunity ("genetic memory") against phages and plasmid infections. Prof. Marraffini is receiving the 2015 Hans Sigrist Prize because, by performing the genetic manipulations of the natural bacterial CRISPR immunity, he is developing a new approach to efficiently combat the spread of bacterial pathogens, especially those resistant to the clinically implemented antibiotic classes.

An Interview with the 2015 Hans Sigrist Prize Winner

HSF: How did you get interested in the field of bacteriology originally?

Marraffini: I think that was in college, probably, I have always been interested in molecular biology, to understand the biology of the simplest organisms, to understand bacterial life cycles and what they do. I decided to do my Ph.D. at the University of Chicago, where one class I really liked was bacterial pathogenesis, to learn how all these bacteria were causing disease, and the professor of that class became my Ph.D. supervisor - I chose to do a Ph.D. on microbiology based on that class.

HSF: It is amazing how one professor can have an effect on your life sometimes.

Marraffini: Yes, that's really true.

HSF: Can you explain your specific sub-field of adaptive immunity to our readers who are not experts in your field?

Marraffini: I will do my best. Bacteria, they are a simple organism, if you will. Prof. Endimiani (University of Bern) and I will not describe them as simple, as they are much more complex than people think, but in a way, they are just one cell. But still, they are infected by viruses; these viruses are known as bacteriophages. Viruses of bacteria are extremely potent; they can wipe out a population in a matter of a few hours, if not less. So, bacteria need to develop mechanisms to defend against these viral infections. There are many different mechanisms, many of them are just called resistance mechanisms, where bacteria become resistant to the virus. However, about ten years ago, a system was discovered that resembles an adaptive immune system of bacteria, similar to the adaptive immune system that we have that defends our cells from viral infections.

The way that the viral infection of bacteria works is that the virus will interact with the surface of the bacteria – basically sit on the surface of the bacteria, and then it will inject the genetic material of the virus. The bacteria, through this adaptive immune system, which is called CRISPR, can grab a little piece of the viral DNA and use that, transferring information of the infection to the bacteria and incorporating that viral DNA in its own DNA in the CRISPR locus. The CRISPR locus then becomes a collection of little snippets of viral information that are a history of infection of the bacterium. The bacterium can then use it to recognize the same virus. When another virus injects the DNA, if the bacteria already has this little piece, there is a mechanism by which the bacteria recognize, "oh, this DNA that I have in the CRISPR locus is the same that is the one that is being injected." This is similar to what antibodies do in our system with antigens, with things that infect us. They have information that was generated through adaptive immunity that resulted in an antibody that then recognizes the pathogen and triggers an immune response. This little DNA of the phage is in the

CRISPR system, and it is used to recognize the DNA of the phage that is invading. That then triggers an immune response that ends up with the destruction of the viral DNA that is being injected and that is how bacteria get protected.

HSF: That's fascinating. So, what specifically are you doing with this CRISPR system in order to develop the work further?

Marraffini: So, one of the aspects that we are very interested in is to understand how it works, the pure biology of it, because as I mentioned, this is a system that was discovered only maybe 10 years ago. We know only the very basics of how it works, and there are still many things that we would like to know at the mechanistic level. I mentioned that an immune reaction is triggered that destroys the virus, well, we still need to understand fully what that immune response actually is and how it destroys the virus. Another goal is to put some effort into how to repurpose these CRISPR systems to do other things that have an application. One of the applications that my lab was partly involved in, was the development of CRISPR to do genetic engineering of human cells and many other organisms. It provides a tool to do genetic manipulation of human cells much, much more easily than before.

HSF: Can you explain how that works?

Marraffini: The way that the CRISPR system kills the virus is by cutting the DNA of the virus, the genetic material. I mentioned that the CRISPR system grabs a little snippet of the DNA of the virus. DNA has a specific sequence, it is composed of four chemicals known as bases that contain information, equivalent to an alphabet of four letters; this little sequence, is composed of about 30 letters. What the CRISPR does is that it recognizes that the same 30 letters are present in the CRISPR system and in the invading virus and then it goes and cuts the viral DNA within those 30 letters. What we and others realized is that the same ability of the CRISPR system to cut the viral DNA can be used to cut any DNA. Now the CRISPR systems have been repurposed to cut human DNA. They can be put inside human cells, and they will go and cut a specific sequence at a specific gene in the human genome. That is the technology that the CRISPR system provides for making genetic manipulations. It was known for 20 years or so that if you can cut the human genome at a specific place, the cell will need to repair the DNA, as it needs to be a linear piece of information. So 20 years ago, people realized how to fool the repair systems to make a repair with the DNA sequence that we want.

HSF: So, to pre-program how the repair goes?

Marraffini: Yes, to pre-program how the repair goes. But what was very difficult about that is that before you repair it, you need to have a cut in the DNA to be repaired. In order to cut the DNA, you need to have a tool to cut it at the desired sequence.

Recently, some proteins called sequence-specific nucleases were developed that were able to be programmed to cut a specific sequence, but that was very complicated. With CRISPR, it is very simple, because the CRISPR system is actually poised to do that. If you specify this 30 nucleotide sequence, then the CRISPR system is programmed to go and cut that in a specific place.

HSF: So, it knows how to target a place?

Marraffini: Yes, it knows how to target it, exactly where to cut it. That really made it much simpler and more efficient to make genetic manipulations of human cells and other mammalian cells, which before was much more difficult. Of course, that has a lot of ethical implications, the U.S. national academies and the European and Chinese equivalents are trying to figure out if there are going to be rules about how to use CRISPR to manipulate human cells.

Another thing we are involved in is bacterial pathogenesis. We use the same principle of using the same CRISPR system to cut whatever we want in a DNA piece, to actually cut the bacteria DNA itself and kill it. We have found that is lethal for bacteria. Once you have something that can kill bacteria, there is always the opportunity of making antimicrobials. That is one of the things we are interested in. We can now use the CRISPR system to cut the DNA of any pathogen, and in a way, we have what we call the possibility, because it is not yet a reality, of a smart anti-microbial. Most of the current anti-microbials have somewhat of a broad spectrum, so they kill many bacteria, but with the CRISPR system, we can actually kill bacteria that has a specific sequence of DNA, and not just every bacteria.

HSF: So, to kill only the bad ones?

Marraffini: Yes, now there is a lot of interest in the human microbiome, a consortia of different types of bacteria, some of them are really necessary for human health and ideally, you do not want your antibiotic to kill those, you want it to kill only the bad ones. So, with CRISPR, we may be able to do that. We published the proof of principle of that. The main problem now is how to deliver the CRISPR system, which is the reason why antibiotics were so successful, because they were just pills you take that go everywhere in the body. The CRISPR system is not a small chemical. It has at least three genetic elements that you need to deliver into bacteria and that is not very simple to do.

HSF: In the type of bacteria that you are working with now, are you targeting certain ones? I believe I read something about staphylococcus. What do you think the biggest threat may be to public health that you are trying to address?

Marraffini: Staphylococci are a big problem in the clinical setting, there are some strains that are called MRSA, methicillin-resistant staphylococcus aureus, that are resistant to multiple antibiotics. Some are resistant to all of them. Hospital acquired MRSA infections affect patients who went into surgery. However, by the late 2000s, doctors started seeing community acquired infections, and these were MRSA strains that would spread in a

community, for example, in child care centers and in sports facilities. Staphylococci live in the skin, so you just need skin contact for infection. That is what is scary, as not a lot of people go to open heart surgery, but a lot of people use day care facilities or the locker room at a sports facility. I think recently it has been less of an issue in the hospitals, as hygienic standards were improved, but community acquired infections went up. For these reasons, we are trying to use CRISPR antimicrobials against pathogenic staphylococci.

HSF: What do you think the biggest challenges are in your research field right now, either for funding or for certain types of research?

Marraffini: In general, in microbiology, I think one of the challenges is funding, I think the Hans Sigrist Prize is absolutely fantastic, because it lets us have freedom in what we do; it is very much welcome. The difficulties in funding also have an effect, not only on the current labs, but also on students, who see microbiology as a very difficult field. There are many other translational sciences, where they study more applied things, so many students tend to go into these other disciplines. Throughout the history of medicine, the study of microbiology has proven to be very important for many reasons. One is the pathogenesis aspect of microbiology, and the other aspects are the development of many of the key technologies that we have today in medicine. This CRISPR mechanism is today somewhat revolutionizing human genetics. It is being adopted by a lot of labs, and it is going to have many human applications and implications. However, when I first started, and began to do experiments on CRISPR, the people who were studying this system were like me, interested in microbiology and how bacteria defend themselves against viruses, which in principle, does not have direct relevance to anything, it is just curiosity-driven. Forty years ago, from studying the same interaction between bacteria and their viruses, scientists discovered restriction enzymes, which are also able to cut the DNA of phages, but they can also be repurposed to cut any type of DNA, which led to something called recombinant DNA technology. The discovery of antibiotics is also tightly related to people who were studying how bacteria protect themselves from other bacteria, or how fungi protect themselves. These are microbiology problems that in the end became very useful. Therefore, the restricted funding of microbiology is not a good thing.

HSF: So you feel that these foundational studies, which are not generally funded by a company with an application, are very important?

Marraffini: Absolutely, nowadays, many funding agencies are becoming stricter about what they expect research to produce, they want a goal in public health to be met specifically, but you still have to maintain basic research to come up with new things. You cannot do that strictly from application-based studies.

HSF: Can you give me your impressions of the University of Bern? How have you enjoyed your visit?

Marraffini: Today, Prof. Endimiani gave me a tour of the Institute (IFIK), and I was really impressed, because what I saw is the proximity between the clinical side and the academic research side, especially in a small setting. It seems there is a really strong fundamental connection between the research side and the hospital side, which is what you want when you are studying antibiotic resistance. You want to get the isolates that come from real infections and people. Most antibiotic resistance comes from the spreading of plasmids, and the work that Prof. Endimiani is doing focusing on plasmids is critical to solve this problem. Bacteria have these little circular pieces of DNA that can be transferred from one bacterium to another with a very high efficiency, and very quickly, a population can become resistant to a particular antibiotic. Prof. Endimiani's new ideas on how to fight this transfer are really clever.

2015 Hans Sigrist Prize Winner Prof. Dr. Luciano Marraffini (top row, second from right) with University of Bern Rector Prof. Dr. Martin Täuber and other prize winners at the 2015 Dies Academicus ceremony. (Photo Copyright: University of Bern, Communications Section).

HANS SIGRIST SYMPOSIUM 2015

Prof. Dr. Andrea Endimiani, Institute for Infectious Diseases, University of Bern, organized the 2015 Hans Sigrist Symposium, entitled, "Combatting Antibiotic Resistance: Novel Antibacterial Strategies" on Friday, December 4, 2015, with lectures by the Hans Sigrist Prize Winner and other globally-known speakers in the field.

1:00 p.m. Opening remarks on behalf of the Hans Sigrist Foundation Board

1:10 p.m. Prof. Dr. Luciano Marraffini, The Rockefeller University, New York, USA
Exploiting CRISPR-Cas Immunity to Produce Sequence-Specific Antimicrobials
Moderators: Prof. Dr. med. Stephen Leib, University of Bern
Prof. Dr. Malcolm Page, Birmingham University and Basilea
Prof. Dr. Alessandra Carattoli, Istituto Superiore di Sanità, Italy

1:55 p.m. Prof. Dr. Andrea Endimiani, University of Bern
The Rising Problem of Multidrug-Resistant Bacteria in Humans and Non-Human Settings

2:15 p.m. Prof. Dr. med. Gian Maria Rossolini, Universities of Florence and Siena, Italy
Mechanisms of Antibiotic Resistance

2:45 p.m. Dr. Laurent Poirel, University of Fribourg
Successful Clones and Transmission of Resistance Genes

3:15 p.m. Break

3:45 p.m. Prof. Dr. med. Jesús Rodríguez-Baño, Hospital Universitario Virgen Macarena, Sevilla, Spain
Facing Infections due to Multidrug-Resistant Pathogens: The Clinical Impact of Superbugs
Moderators: Prof. Dr. med. Hansjakob Furrer, University of Bern
Prof. Dr. Vincent Perreten, University of Bern

4:15 p.m. Prof. Dr. med. Robert A. Bonomo, Veterans Affairs Medical Center, Cleveland
Novel Approaches in the Treatment of Gram-Negative Infections - a Renaissance in Therapy

4:45 p.m. Prof. Dr. med. Patrice Nordmann, University of Fribourg
Concluding remarks

Hans Sigrist Symposium Speakers, from left to right: Dr. Laurent Poirel, Prof. Dr. med. Gian Maria Rossolini, Prof. Dr. med. Robert Bonomo, Prof. Dr. Andrea Endimiani, Prof. Dr. med. Jesús Rodríguez-Baño, Prof. Dr. Luciano Marraffini, Prof. Dr. Norbert Trautmann, and Prof. Dr. med. Patrice Nordmann.

2015 Hans Sigrist Prize Winner, Prof. Dr. Luciano Marrafffini, speaks to an engaged audience at the annual symposium.

FORSCHUNGSGEBIET FÜR DEN HANS SIGRIST PREIS 2016

Der Stiftungsrat hat in der Herbstsitzung vom 2. November 2015 dem durch Prof. Dr. Martin Grosjean in einem engagierten Referat vorgestellten Forschungsgebiet "The Human Fingerprint on the Earth's System" für den Preis 2016 zugestimmt. Dieses Gebiet wurde von der Philosophisch-naturwissenschaftlichen Fakultät und der Philosophisch-historische Fakultät der Universität Bern vorgeschlagen. Prof. Dr. Grosjean wird in Zusammenarbeit mit den erwähnten Fakultäten ein Evaluationsgremium einberufen. Die Wahl der Preisträgerin oder des Preisträgers durch den Stiftungsrat erfolgt im Mai 2016.

APPLYING FOR A SUPPLEMENTARY GRANT (ZUSCHUSS)

Hans Sigrist Supplementary Grants are meant to supplement, but not fully fund, the cost of a research visit to the University of Bern. Given the high cost of living in Bern, the Foundation offers up to 1,000 CHF per month, pro-rated weekly, to assist professors from other universities with their living costs while conducting a project in cooperation with a University of Bern faculty member. The foundation accepts applications for supplementary grants (Zuschüsse) on a rolling basis. Applications must be submitted at least six weeks before the proposed research visit, in order to allow time for consideration. However, because the foundation has a fixed annual budget for these grants, earlier applications are encouraged. The request/application for a Supplementary Grant must made by the University of Bern host professor. Full details on the application process (in English) are available on our website at www.sigrist.unibe.ch.

2015 HANS SIGRIST SUPPLEMENTARY GRANTS (ZUSCHÜSSE)

In 2015, the Foundation approved nine Hans Sigrist Supplementary Grants for a total amount of 26,600 CHF:

Prof. Dr. Raluca Sassu, University Lucian Blaga, Sibiu, Romania

Prof. Dr. Claudia Roebers, Institute for Psychology, received 500 CHF for a two-week grant for Prof. Dr. Raluca Sassu of Lucian Blaga University in Sibiu, Romania. Prof. Sassu continued her research with Prof. Roebers to conduct a study of 159 Swiss kindergarten childen, regarding the cognitive competencies and functions needed for school readiness.

2015 Hans Sigrist Supplementary Grant recipient Raluca Sassu, giving standardized tests to Swiss kindergarten children as a part of a project designed to determine what factors contribute to school readiness.

2015 HANS SIGRIST SUPPLEMENTARY GRANTS (ZUSCHÜSSE)

Dr. Ebrahim Seadi, Kerman University of Medical Sciences, Iran

Prof. Dr. Bruno Gottstein, Institute for Parasitology, requested 6,000 CHF for six-month grant for Dr. med. Ebrahim Saedi from the Institute of Medical Parasitology, University of Medical Science in Kerman, Iran. During his research stay in Bern, Ebrahim Saedi tackled some basic biological questions regarding the two related parasites Echinococcus granulosus and Echinococcus multilocularis, together with Prof. Bruno Gottstein, Dr. Markus Spiliotis and Dr. Ghalia Boubaker. In the main project, the gene expression profiles were studied at different biological developmental stages of E. granulosus. A second parallel minor project included the search for and validation of appropriate reference genes that can be used for gene expression analyses of different Echinococcus species, while a third subproject made use of eight known sequences for cloning, expression and purification of recombinant antigens of putative diagnostic value for E. granulosus and E. multilocularis.

During his research stay in Bern, 2015 Hans Sigrist Supplementary Grant recipient Ebrahim Saedi also visited Swiss farmers to get an insight into the practical parasitological problems affecting Swiss cattle and other production animals.

2015 HANS SIGRIST SUPPLEMENTARY GRANTS (ZUSCHÜSSE)

Dr. Louis-Philippe Dalembert, Independent Novelist, Haiti

Prof. Thomas Claviez received 4,000 CHF to help support the visit of Louis-Philippe Dalembert as Dürrenmatt Guest Professor for World Literature in Spring 2015. At the University of Bern, Dalembert taught a B.A./M.A. seminar entitled "Le vadou haïtien: entre littérature et peinture", open to all humanities students. The main texts studied were Le mystère du vaudou (Hurbon), Le Manuscrit de Port-Ébène (Bona), Le Royaume de ce monde (Carpentier) et Haïti Chérie (Buch). The course's aim was to create an understanding of the Haitian culture through the phenomenon of voodoo and its representation in literature and the fine arts. In addition, Louis-Philippe Dalembert gave a workshop with doctoral candidates at the Walter Benjamin Kolleg entitled "Literature and Vagabondism".

As the Dürrenmatt Guest Professorship is committed to stimulate the dialogue between art and academia, the University of Bern also organized events with Mr. Dalembert that were open to the general public, such as readings and presentations from Dalembert's works as well as film screenings, including Maya Deren's Divine Horsemen (1953). Louis-Philippe Dalembert's visit was covered not only by newspapers and news websites but also by the national television (SRF Tagesschau, February 2, 2015).

Dr. Dalembert teaching University of Bern students in the seminar "Le vadou haïtien: entre littérature et peinture" in Spring 2015. Copyright Tamara Ulrich.

2015 HANS SIGRIST SUPPLEMENTARY GRANTS (ZUSCHÜSSE)

Prof. Makarand Paranjape, Jawaharlal Nehru University, India

Prof. Dr. Gabriele Rippl and Prof. Dr. Thomas Claviez, English Department, requested 3,000 CHF for the visit of Prof. Makarand Paranjape, from Jawaharlal Nehru University in India. While in Bern, Prof. Paranjape taught an M.A. seminar, entitled "Passages to India: Film and Literature". The main texts studied, both in their original novel forms and cinematic adaptations, were Passage to India (Forster and Lean), The Home and the World (Tagore and Ray), and Q&A/Slumdog Millionaire (Swarup and Doyle). The aim was not only to introduce students to select international literary and cinematic texts so as to provide a better understanding of another culture and society, in this case, Indian, but also to explore the relationship between two important media, literature and cinema. Similarly, the course problematized the rather simplistic opposition between Western and native representations of India, between Anglo-Indian and Indian English literatures on the one hand and between Hollywood and Bollywood films on the other. Likewise, the relationship between Indian language texts and their English or translated counterparts also came into question. Taking into account the recent history of colonialism and nationalism, the course provided insights into the plurality, diversity, and complexity of cross-cultural contexts and readings and also an understanding of the distinctive and unique features of India as a geo-political and cultural territory. The theoretical assumption informing our inquiry is that imaginative works, whether literary or cinematic, offer a specially useful and productive way to comprehend a society, a way which is not necessarily available through the discourses of history, politics, economics, or other non-fictional or non-imaginative sources, such as newspapers and the TV reports. The University of Bern English Department is currently working to plan a series of Indo-Swiss conferences centred on major Swiss figures such as Hermann Hesse, Jean Gebser, and Le Corbusier whose work was influenced by and had a major impact on India.

Prof. Paranjape teaching University of Bern students in the seminar "Passages to India: Film and Literature" in Spring 2015.

2015 HANS SIGRIST SUPPLEMENTARY GRANTS (ZUSCHÜSSE)

Dr. Romi Zäske, Friedrich Schiller University of Jena, Germany

Dr. Romi Zäske from the Friedrich Schiller University of Jena, Germany, received a 4,500 CHF grant to collaborate with Prof. Dr. Kathrin Henke at the Center for Cognition, Learning and Memory at Bern University on a neuropsychological project to answer the question if people can learn new information during sleep. Of particular interest are the neurophysiological correlates of auditory learning during sleep and subsequent unconscious retrieval of sleep-learned text during wakefulness as measured with behavioral tests and electroencephalography (EEG). Ultimately, this ongoing research is aimed at advancing our understanding of memory formation and consciousness.

2015 Hans Sigrist Supplementary Grant recipient Dr. Romi Zäske, preparing an EEG recording for one of her participants. Within her project she seeks to determine if and how we learn new information during sleep.

2015 HANS SIGRIST SUPPLEMENTARY GRANTS (ZUSCHÜSSE)

Dr. Michael N. Evans, University of Maryland, USA

Prof. Dr. Michael N. Evans from the Earth System Science Interdisciplinary Center, University of Maryland, USA received 3,000 CHF to visit the Oeschger Centre for Climate Change Research OCCR at the University of Bern. The question motivating his research visit was: How sensitive is the climate to changes in natural and anthropogenic causes? One approach is to use "Detection and attribution" (D&A) techniques applied to climate observations and simulations over the past century. To improve upon these efforts, we started the first detection and attribution study that directly uses paleoclimatic observations spanning the last Millennium. Preliminary results suggest that assessment of the sensitivity of the climate system to various forcing factors will be more uncertain than previously suggested. The Visiting Fellow collaborated with numerous researchers at the University of Bern and he presented his work at the OCCR Plenary Meeting in September 2015. The joint project will continue in 2016.

Supplementary Grant Recipient Prof. Michael N. Evans, speaking with PhD Fellow Peter Stucki at the OCCR Plenary Meeting, September 2015.

2015 HANS SIGRIST SUPPLEMENTARY GRANTS (ZUSCHÜSSE)

Prof. Dr. Craig Baumrucker, The Pennsylvania State University, University Park, PA, USA

Prof. Dr. Rupert M. Bruckmaier, Veterinary Physiology, Vetsuisse Faculty at the University of Bern requested 4,000 CHF grant for Dr. Craig R. Baumrucker, Department of Animal Science at Penn State University, USA. They are collaborating on the mechanisms of colostrum formation in mammary glands of dairy cows. The movement of blood immunoglobulin G into mammary secretions during the colostrum forming phase of late pregnancy is known to be extremely variable among cows. The understanding of the mechanism is important to the survival and health of the newborn because the ruminant species are born immune-deficient and depend upon adequate IgG1 provision through colostrum consumption. An immunoglobulin Fc receptor (FcRn) has been hypothesized to be the means of cellular transfer and its role in this process is being established by these collaborative efforts.

Prof. Dr. Craig Baumrucker (The Pennsylvania State University) and Prof. Dr. Rupert M. Bruckmaier, (UniBern/Vetsuisse) with a Swiss dairy cow, while doing their common research on colostrum formation in mammary glands of cows in fall 2015.

2015 HANS SIGRIST SUPPLEMENTARY GRANTS (ZUSCHÜSSE)

Dr. Gerrye Mubungu and Dr. Claude Kayembe, University Clinics, Department of Pediatrics, Kinshasa, Democratic Republic of Congo

Prof. Dr. med. Hugues Abriel, Department of Clinical Research, requested 1,600 CHF to support the housing costs of Dr. Gerrye Mubungu and Dr. Claude Kayembe, University Clinics, Dept. of Pediatrics, Kinshasa, from the Democratic Republic of Congo. These two young pediatric doctors were invited by Prof. Abriel to learn basic laboratory techniques and to be exposed to clinical aspects of genetic and cardiologic disorders. About half of their time was spent in the laboratory of Prof. R. Jaggi (Genomics Facility of the Dept. of Clinical Research) and the other remaining half was spent at the Inselspital with cardiologists and geneticists. In addition, they were invited to the University of Zurich, Hôpital de l'Enfance of Lausanne, and University Children's Hospital Basel to give seminars where they presented their current clinical and research activities. In their research project, they were able to extract DNA from pediatric patients with mild or severe malaria and to sequence a candidate gene that may confer protection against this deadly infection. It is foreseen that this stay is the start of a long-lasting collaboration between the group of Prof. Abriel at the University of Bern and these Congolese pediatric doctors.

Dr. Gerrye Mubungu and Dr. Claude Kayembe extracting DNA from pediatric patients in the genomics core facility of the Dept. of Clinical Research of the University of Bern. They were introduced to these laboratory techniques by Prof. Rolf Jaggi, Nathalie Schuster, and Dr. Irène Keller.

FORSCHUNGSAUSZEICHNUNG UND -FÖRDERUNG DURCH DIE HANS-SIGRIST-STIFTUNG

Die Hans-Sigrist-Stiftung hat seit ihrer Gründung zahlreiche Persönlichkeiten aus Bern, aus der Schweiz sowie aus dem Ausland auszeichnen und unterstützen können. Nachstehend werden alle Preis- und Stipendiumsempfänger und -empfängerinnen aufgeführt. Zu erwähnen ist, dass zahlreiche dieser Persönlichkeiten nach der Auszeichnung durch die Hans-Sigrist-Stiftung ihre wissenschaftliche Laufbahn mit grösstem Erfolg fortgesetzt haben, was u.a. auch auf den innovativen Charakter der Hans Sigrist Unterstützung schliessen lässt. So erhielt Robert Horvitz, unser erster Preisträger 1994, acht Jahre später den Nobelpreis, und 2009 wurde der frühere Hans Sigrist Preisträger (Preis 1997), Prof. Jack W. Szostack, zusammen mit Elisabeth Blackburn und Carol Greider mit dem Nobelpreis für Medizin ausgezeichnet.

BISHERIGE TRÄGERINNEN UND TRÄGER DES HANS SIGRIST PREISES

1994 Prof. H. Robert Horvitz, Massachusetts Institute of Technology, USA
Apoptosis – Der programmierte Zelltod

1995 Prof. Joseph P. Newhouse, Harvard University, USA
Gesundheitsökonomie

1996 Prof. Frantisek Smahel, Karls-Universität Prag, Tschechien
Geschichtliche Erforschung von Ostmitteleuropa

1997 Prof. Gerald F. Joyce, Scripps Research Institut, USA, und
Prof. Jack W. Szostak, Harvard Medical School, USA
RNA – Schlüsselmolekül zur Entstehung von Leben

1998 Dr. Michel Orrit, Centre de Physique Moléculaire Optique et Hertzienne, Université de Bordeaux, Frankreich
Chemische Grundlagen neuartiger Materialien

1999 Prof. Joan W. Scott
Institute for Advanced Study, Princeton, USA
Neue Erkenntnisse in der Geschlechterforschung

2000 Prof. Elsa Tamez, Universidad Biblica Latinoamericana, Costa Rica
Kontextuelle Bibelhermeneutik

2001 Prof. Jan Johansson, Karolinska Institutet, Schweden
Biologische Grenzflächen: Die innere Lungenoberfläche

2002 Dr. Jorge Galàn, Yale University, USA
Pathogen-Wirt-Interaktion

2003 Prof. Dr. Emilio Gentile, Università «La Sapienza», Rom, Italien
Politische Religionen als Merkmal des 20. Jahrhunderts

2004 Prof. Dr. Christopher Pollitt, Erasmus University, Rotterdam, Niederlande
Public Governance

2005 Prof. Dr. Stephen Elledge, Harvard Medical School, Boston, USA
Qualitätskontrolle in lebenden Zellen

2006 Prof. Dr. David M. Richardson, Stellenbosch University, Südafrika
Biological Invasions

2008 Prof. Dr. Andreas Feldtkeller, Humboldt-Universität, Berlin, Deutschland
Religionen – Wahrheitsansprüche – Konflikte – Theologien:
Theoretische Perspektiven

2009 Prof. Dr. Patrik Vuilleumier, Universität Genf, Schweiz
Kognitive Neurowissenschaft

2011 Prof. Dr. Nicola Lacey, University of Oxford, United Kingdom
Rechtsstaat und Spätmoderne

2012 Prof. Dr. Stephen A. Boppart, University of Illinois, USA
Diagnostische Lasermedizin

2013 Prof. Dr. Yoshiki Sasai, RIKEN Center for Developmental Biology, Kobe, Japan
Stem Cells in Regenerative Medicine

2014 Prof. Dr. Jennifer Klein, Yale University, New Haven, CT, USA
Women and Precarity: Historical Perspectives

2015 Prof. Dr. Luciano Marraffini, The Rockefeller University, New York, NY, USA
Combatting Antibiotic Resistance: Novel Antibacterial Strategies

BISHERIGE EMPFÄNGERINNEN UND EMPFÄNGER VON HANS SIGRIST STIPENDIEN

1994 Dr. Michael Gerfin
Rechts- und Wirtschaftswissenschaften

1996 Dr. Petra S. Hüppi
Klinische Forschung

1997 Dr. Alberto Achermann und Dr. Andreas Lienhard
Rechtswissenschaft

1998 Dr. Eliane Marti
Forschung mit dem Tier – Forschung für das Tier

1999 Dr. Werner Eugster
Einfluss der Juragewässerkorrektionen auf das lokale und regionale Klima

2000 Dr. Lorenz E. Baumer
Kultureller Austausch - Classical Archaeology

2001 Dr. Ohad S. Parnes
Geschichte der Naturwissenschaften, Mathematik oder Logik des 19. und 20. Jahrhunderts

2002 Dr. Erik Vassella
Erreger-Wirt-Wechselwirkung auf molekularer Ebene

2003 Dr. Claudia Spadavecchia
Schmerzerkennung und Behandlung beim Tier

2004 Dr. Sacha Zala
Historische Politologie: politische Geschichte im Spannungsfeld von Anthropologie, «politischer Theologie», Sozial- und Politikwissenschaften (18.–20. Jahrhundert)

2005 Dr. Georg Lutz
Entwicklung politischer Institutionen zur Förderung guter Regierungsführung

2007 Dr. Friederike Zeeh
Studien im Rahmen der «Veterinary Public Health»: Neue Nachweismethoden für aktuelle Erkrankungen des Verdauungs- und des Atmungsapparates und Untersuchungen zur Entstehung von Lahmheiten bei Schweinen

2008 Dr. Oliver Bossdorf
Evolutionary Ecology of Plant Invasion

2009 Dr. Johannes Klein
Schwurverhalten im Alten Testament

2010 Dr. David Weibel
Die Rolle von Avataren bei der Identitätskonstruktion in virtuellen Welten

Dr. Bartholomäus Wissmath
Immersion in Virtual Realities

2011 Dr. Anna Coninx
Risikoprävention und Gefahrenabwehr im Strafrecht und Polizeirecht

2012 Kai Gerrit Held
Biomedical Photonics, Optoacoustic Imaging

2013 William Hariton
Cell-Cell Adhesion-mediated Signaling in Epidermal Stem Cells

2014 Matthieu Lavoyer
Women and Precarity: Historical Perspectives

2015 Odette Bernasconi
Combatting Antibiotic Resistance: Novel Antibacterial Strategies

JAHRESRECHNUNG 2015

Erfolgsrechnung

	2015	2014	Abweichung
	CHF	CHF	CHF
Wertschriftenertrag			
Dividenden-und Zinsertrag Finanzanlagen	69'157.63	71'180.37	-2'022.74
Zinsertrag Flüssige Mittel	0.00	202.60	-202.60
Fremdwährungsgewinne	265.66	5'446.78	-5'181.12
Realisierte Kursgewinne Finanzanlagen	84'510.92	10'530.55	73'980.37
Nicht realisierte Kursgewinne Finanzanlagen	40'684.61	366'919.88	-326'235.27
Total Nettoerlös aus Leistungen	**194'618.82**	**454'280.18**	**-259'661.36**
Wertschriftenaufwand			
Bankspesen	176.00	84.00	92.00
Spesen Finanzanlagen	640.10	160.45	479.65
Fremdwährungsverluste	6'532.60	0.00	6'532.60
Realisierte Kursverluste Finanzanlagen	3'706.98	1'022.00	2'684.98
Nicht realisierte Kursverluste Finanzanlagen	97'788.71	5'900.97	91'887.74
Wertschriftenverwaltung	19'145.70	18'846.90	298.80
Total Aufwand	**127'990.09**	**26'014.32**	**101'975.77**
Bruttoergebnis	**66'628.73**	**428'265.86**	**-361'637.13**
Personalaufwand			
Saläre	27'491.40	26'883.60	607.80
Sozialleistungen	5'559.20	6'903.10	-1'343.90
Total	**33'050.60**	**33'786.70**	**-736.10**
Übriger betrieblicher Aufwand			
Verwaltungsaufwand	3'435.70	1'903.08	1'532.62
Buchführung	868.95	1'024.05	-155.10
Revision	5'200.00	2'600.00	2'600.00
Aufwand Stiftungsrat	351.80	348.30	3.50
Total	**9'856.45**	**5'875.43**	**3'981.02**
Ausserordentliches, einmaliges oder periodenfremdes Ergebnis			
Ausserordentlicher Ertrag	0.00	100'136.27	-100'136.27
Ergebnis vor Verwendungen gemäss Stiftungszweck	**23'721.68**	**488'740.00**	**-465'018.32**

Erfolgsrechnung

	2015	2014	Abweichung
	CHF	CHF	CHF
Ergebnis vor Verwendung gemäss Stiftungszweck	**23'721.68**	**488'740.00**	**-465'018.32**
Verwendung gemäss Stiftungszweck			
Hans Sigrist-Stiftung Preis	-100'000.00	-100'000.00	0.00
Spesen i.S. Hans Sigrist-Stiftung Preis	-14'824.70	-14'094.85	729.85
Stipendien	-245'739.10	-171'841.45	73'897.65
Wissenschaftliche Massnahmen	-26'600.00	-12'250.00	14'350.00
Total	**-387'163.80**	**-298'186.30**	**88'977.50**
Jahresergebnis	***-363'442.12***	***190'553.70***	***553'995.82***

Bilanz

	31.12.2015	31.12.2014	Abweichung
	CHF	CHF	CHF
AKTIVEN			
Umlaufvermögen			
Flüssige Mittel	706'301.47	364'166.86	342'134.61
Übrige kurzfristige Forderungen	28'934.65	19'584.35	9'350.30
Verrechnungssteuer	26'255.95	18'355.05	
Forderung ggü. Salärbuchhaltung Universität Bern	2'678.70	1'229.30	
Aktive Rechnungsabgrenzungen	4'186.10	23'314.02	-19'127.92
Anlagevermögen			
Finanzanlagen	4'982'009.73	5'672'060.19	-690'050.46
Total AKTIVEN	**5'721'431.95**	**6'079'125.42**	**-357'693.47**
PASSIVEN			
Kurzfristiges Fremdkapital			
Verbindlichkeiten aus Lieferungen und Leistungen	0.00	0.00	0.00
Übrige kurzfristige Verbindlichkeiten			
Verbindlichkeit ggü. Salärbuchhaltung Uni Bern	0.00	0.00	0.00
Passive Rechnungsabgrenzungen	11'117.65	5'369.00	5'748.65
Dritte	5'917.65	2'769.00	
Organe	5'200.00	2'600.00	
Eigenkapital			
Stiftungskapital	7'431'908.10	7'431'908.10	0.00
Bilanzverlust	-1'358'151.68	-1'548'705.38	190'553.70
Jahresergebnis	-363'442.12	190'553.70	-553'995.82
Total	**5'710'314.30**	**6'073'756.42**	**-363'442.12**
Total PASSIVEN	**5'721'431.95**	**6'079'125.42**	**-357'693.47**

Anhang

A. Bewertungsgrundsätze

Die vorliegende Jahresrechnung wurde gemäss den Vorschriften des Schweizer Gesetzes, insbesondere der Artikel über die kaufmännische Buchführung und Rechnungslegung des Obligationenrechts (Art. 957 bis 962 OR) erstellt. Die wesentlichen Abschlusspositionen sind wie nachstehend bilanziert:

Finanzanlagen
Die Wertschriften des Anlagevermögens werden zum Stichtagskurs am Bilanzstichtag, also zum Marktwert bewertet.

B. Erläuterungen zur Jahresrechnung

	31.12.2015 CHF	31.12.2014 CHF
Finanzanlagen		
Aktien Schweiz	813'466.40	804'687.15
Immobilen-Fonds	604'386.70	519'179.20
Obligationen Schweiz CHF	2'255'220.00	1'864'603.00
Obligationen Ausland CHF	0.00	1'113'267.50
Obligationen Ausland FW	672'296.63	734'038.07
Aktien Welt	636'640.00	636'285.27
Total	**4'982'009.73**	**5'672'060.19**

C. Übrige im Gesetz vorgesehene Angaben

1.1 Rechtsform, Zweck

Die Hans Sigrist-Stiftung ist eine gemäss öffentlicher Urkunde vom 12. August 1993 (Urschrift 1755) errichtete Stiftung im Sinne der Art. 80ff ZGB mit Sitz in Bern. Domizil der Stiftung ist Schanzeneckstrasse 1, 3012 Bern.

Gemäss den Statuten vom 21. Januar 1997 hat die Stiftung zum Zweck: die Förderung der wissenschaftlichen Forschung und Honorierung hervorragender wissenschaftlicher Leistungen, gleichgültig in welchem Fachgebiet gemäss Reglement vom 29. Oktober 1996.

1.2 Personelle Zusammensetzung des Stiftungsrates

Trautmann Norbert, Prof. Dr., Bern	Präsident
Rigamonti Cyrill, Prof. Dr., Bern	Vizepräsident
Brönnimann Stefan, Prof. Dr., Zollikofen	Mitglied
Henke Katharina, Prof. Dr., Murzelen	Mitglied
Kunz Alexis, Prof. Dr., Riaz	Mitglied
Leumann Christian, Prof. Dr., Bern	Mitglied
Pulver Bernhard, Dr., Bern	Mitglied
Müller Eliane, Prof. Dr., Sugiez	Mitglied
Perren Aurel, Prof. Dr., Bern	Mitglied
Rippl Gabriele, Prof. Dr., Biel/Bienne	Mitglied
Schroer Staubli Silvia, Prof. Dr., Köniz	Mitglied

1.3 Entschädigungen an die Stiftungsräte werden keine ausgerichtet.

1.4 Zeichnungsberechtigung

Der Präsident und der Vizepräsident des Stiftungsrates
führen Kollektivunterschrift zu zweien.

1.5 Revisionsstelle

Gfeller + Partner AG
Amthausgasse 6
3000 Bern 7

1.6 Erklärung, ob Anzahl Vollzeitstellen im Jahresdurchschnitt nicht über 10, 50 oder 250 liegt

Die Anzahl Vollzeitstellen liegt im Jahresdurchschnitt nicht über 10 Mitarbeitenden.

1.7 Erläuterungen zu ausserordentlichen, einmaligen oder periodenfremden Positionen der Erfolgsrechnung

	31.12.2015 CHF	31.12.2014 CHF
Ausserordentlicher Ertrag	0	100'136.27
Rückvergütung Hans-Sigrist-Preis 2014 infolge verstorbener Preisträger		
Total	**0**	**100'136.27**

1.8 Wesentliche Ereignisse nach dem Bilanzstichtag

Nach dem Bilanzstichtag sind keine wesentlichen Ereignisse eingetreten, welche die Aussagefähigkeit der Jahresrechnung (2015) beeinträchtigen könnten bzw. an dieser Stelle offengelegt werden müssten.

1.9 Abweichungen von den Grundsätzen ordnungsmässiger Rechnungslegung

Gemäss Art. 2 Abs. 4 der Übergangsbestimmungen des neuen Rechnungslegungsrechts kann bei der erstmaligen Anwendung der neuen Vorschriften auf die stetige Darstellung und Gliederung der Jahres-rechnung verzichtet werden. In der vorliegenden Jahresrechnung wird von diesem Recht Gebrauch gemacht.

An den Stiftungsrat der
Hans-Sigrist-Stiftung, Bern

GFELLER + PARTNER AG

Bericht der Revisionsstelle zur eingeschränkten Revision

Als Revisionsstelle haben wir die Jahresrechnung (Bilanz, Erfolgsrechnung und Anhang) der Hans-Sigrist-Stiftung für das am 31. Dezember 2015 abgeschlossene Geschäftsjahr geprüft.

Für die Jahresrechnung ist der Stiftungsrat verantwortlich, während unsere Aufgabe darin besteht, die Jahresrechnung zu prüfen. Wir bestätigen, dass wir die gesetzlichen Anforderungen hinsichtlich Zulassung und Unabhängigkeit erfüllen.

Unsere Revision erfolgte nach dem Schweizer Standard zur Eingeschränkten Revision. Danach ist diese Revision so zu planen und durchzuführen, dass wesentliche Fehlaussagen in der Jahresrechnung erkannt werden. Eine Eingeschränkte Revision umfasst hauptsächlich Befragungen und analytische Prüfungshandlungen sowie den Umständen angemessene Detailprüfungen der beim geprüften Unternehmen vorhandenen Unterlagen. Dagegen sind Prüfungen der betrieblichen Abläufe und des internen Kontrollsystems sowie Befragungen und weitere Prüfungshandlungen zur Aufdeckung deliktischer Handlungen oder anderer Gesetzesverstösse nicht Bestandteil dieser Revision.

Bei unserer Revision sind wir nicht auf Sachverhalte gestossen, aus denen wir schliessen müssten, dass die Jahresrechnung nicht Gesetz und Stiftungsurkunde entspricht.

Bern, 22. März 2016
CZ/13

GFELLER + PARTNER AG

Hans Jörg Dubach
Dipl. Wirtschaftsprüfer
Zugelassener Revisionsexperte

ppa. Christian Zwahlen
Dipl. Wirtschaftsprüfer
Zugelassener Revisionsexperte
(Leitender Revisor)

Beilagen:
- Jahresrechnung (Bilanz, Erfolgsrechnung und Anhang)

AMTHAUSGASSE 6
PF 619, 3000 BERN 7
TEL. +41 (0)31 310 40 00
FAX +41 (0)31 310 40 01
WWW.GFELLER-PARTNER.CH

Hans-Sigrist-Stiftung
Schanzeneckstrasse 1
Postfach
CH-3001 Bern
www.sigrist.unibe.ch
office@sigrist.unibe.ch