THE MESSENGER

Newsletter No. 12

December 2019 — National Center of Competence in Research, RNA & Disease

NCCR
RNA & Disease

National Center of Competence in Research
The role of RNA in disease mechanisms

Dear colleagues

The Training & Education activities are now in their sixth year. Therefore a look back is justified to evaluate the success of the various measures taken to attract and educate students in RNA biology. We are happy to witness the constant growth of the RNA Biology PhD program with currently more than 45 enrolled students. I want to especially highlight the success of our "youngest Training & Education baby", the Predoc program. It was launched 2018 to allow master students to rotate for one year through different NCCR labs before starting a PhD project. We are now in the third phase of this program and have offered so far 12 students a Predoc position. We are pleased to see that all of the Predoc students from the first and one from the second round have meanwhile started a PhD in Switzerland, and two of them in an NCCR group. Another highlight of our activities is the summer school. Meanwhile the third summer school was held in 2019 and it was again very well received by the participating students/postdocs as well as by the engaged lecturers. Even though the majority of our education activities can be considered a full success, on one front room for improvement exists. Our PhD students not only have the opportunity for inviting one speaker per year for the seminar series, but they can also self-organize student retreats. So far solely two retreats were launched, thus more such activities are highly encouraged. In summary, the Training & Education program is running smoothly and keeps contributing to the success of the NCCR RNA & Disease.

Norbert Polacek
Training & Education Delegate and Principal Investigator

Research Highlights

"Do not give up and stick to it, even if public opinion is against you."

Interview: Dominik Theler

In this interview, Joan A. Steitz shares her perspective on careers, mentoring and fixing the leaky pipeline.

What made you become a scientist?
Interest in science, as well my father: He was a high school counselor, and I think he really had sort of wanted to be a scientist. Somehow, he felt that he was not up to it, but it was his hidden passion. He was very interested in many scientific things and very encouraging for me.

Who were your scientific role models and can you give us an example of what you learned from them?
The people I stumbled into working for. Joe Gall was a big influence and certainly Jim Watson, as well as other people that I have worked with. The way Jim Watson ran his lab and what he tried to do with his students is certainly, what I aspire to. It was very non-regimented and it was up to people to decide what they were going to do and then figure out how to do it. Also, everything was very communal in terms of discussing science.

Could you share with us a scientific "aha" moment?
I remember going home late at night after developing the film, which provided the first evidence for the base pairing between the messenger and ribosomal RNAs of bacteria, thinking "Wow, what if this is a new principle and this is how ribosomes initiate?" Now, of course, this is not how our ribosomes do so but the bacterial ones. So that was a big "aha" moment and there were a few others…

How did you get into the RNA research field and can you comment on its evolution?
I think it was serendipity and I feel very fortunate to have stumbled into this particular area because wonderful things keep happening. Now we have condensates and liquid droplets and RNA is involved in those. Oh my goodness.

"So that was a big 'aha' moment and there were a few others…"

Interview with Joan A. Steitz

More and more researchers are posting preprints on bioRxiv: Are you supporting this?
Not necessarily, because I have had so many experiences where sending a paper to a journal and getting the referees' reports has made us think about things we did not think about before and made us do things that we would not have done. I am just sort of embarrassed by the thought of putting something out there before that has happened. I like the refereeing aspect and the response to referees as long as it is reasonable. Sometimes nowadays, it is unreasonable what is asked for.

But when the field was small, researchers sent manuscripts to each other before submitting them to journals.
It is similar to that, but to me, it does not feel the same. Back then, you knew exactly to whom you were sending the manuscript and that those people, if they found something wrong, felt responsible that they had to get back to you about it. Whereas if you post it on bioRxiv, then it is up for grabs for anybody to make comments about it. That is why I feel differently about it, but I know that bioRxiv has proven to be a valuable tool for many people. It is not that I am against it, but I have not encouraged anybody in my lab to do it but maybe I should. I am thinking about that.

Do you judge an academic career to be more or less attractive today?
My judgment is that it is harder now than it used to be, because of where the field of biomedicine and molecular biology stands. There is so much happening and it became so competitive that it is not the same as when the field was small, and everybody knew what everybody else was doing. At that time, everybody seemed to be working together towards the same goal of obtaining knowledge and figuring out how things work. In that sense, I think it has become more difficult. Nowadays, on the other hand, it is perhaps more standardized in terms of what the routes towards success are.

"My judgment is that it is harder now than it used to be."

What is your opinion on careers outside of science?
People should do what they want to do. If everybody only wanted to do science, it would be a pretty crazy world, because a lot of other things would not get done. I always find that having diversity in terms of what people like to think about and what they want to accomplish is a wonderful thing. However, I am occasionally disappointed when students or postdocs do not go into academia when I see that they have all the qualities that it would take to succeed, and for random reasons, they decide not to do so. On the other hand, I have had many students and postdocs who have gone into other career directions and it is great because it is perfect for them.

"Yes, because you have to feel ownership."

You advise that everybody, including undergraduate students, should have their own project.
Yes, because you have to feel ownership. It is only then that you have your whole heart and mind dedicated to thinking about the project and moving it forward. Nobody else is going to move it forward if you do not push it forward. Some people do not like that and then they should not be doing science in my opinion.

Another piece of advice you give is to take vacation, what amount would you suggest?
That depends on what is going on, and how intense things are at the moment because there are always ups and downs during a scientific career. There are times, which are very exciting, and you have to be spending as much time as possible on your science. Then there are other times, when it is important just to keep doing something, and then things will happen. Do not give up and stick to it, even if public opinion is against you.

What actions need to be taken to fix the leaky pipeline regarding women in academia?
There are now many studies about how to cope with implicit bias when it comes to hiring, promotion, and grant decisions. Those are all good and should be implemented. However, I think there is an even bigger

Joan A. Steitz

Biography

Joan A. Steitz obtained her PhD in 1967 from Harvard University, Cambridge, USA. After postdoctoral research at the MRC Laboratory of Molecular Biology, Cambridge, UK she was in 1970 appointed assistant professor at Yale University, New Haven, USA, where she was subsequently promoted to associate, full and Sterling professor. Steitz is an investigator of the Howard Hughes Medical Institute and member of the National Academy of Sciences, the American Academy of Arts and Sciences and the American Philosophical Society. She received numerous honorary degrees and awards including the National Medal of Science, the RNA Society Lifetime Achievement Award, the Gairdner Foundation International Award, the L'Oréal Award for Women in Science and the Lasker ~ Koshland Special Achievement Award in Medical Science.

problem and that is social identity/stereotype threat. Persons, who are in a given setting in the minority, enter into a state of vigilance and feel uncomfortable. People should understand that this is a normal cognitive and physiological reaction. At least for me, it has been very revealing and helpful in terms of my understanding of myself and how I cope with various situations. So there I think it is a matter of education.

How long did it take you to overcome social identity threat?
First, I needed to learn about it, which was in 2007, when a brilliant paper (Murphy et al., Psychological Science (2007) 18:879) on this topic was sent to me. After reading about it, I realized, "Oh my god, this is what has been happening to me for years.", and then it became easier to change my own behavior. I finally figured out that people wanted to have me on a panel because then they could report that they had one or two females. Since I never said anything, I did not disrupt anything. I did not realize until years later why I was feeling that way. Now I am much more outspoken and I say what I think instead of just shutting up. To be affected by social identity threat, I believe is true for a lot of women, and it is true for people belonging to ethnic or racial minorities. I think that there is a vast number of people in science that are affected by this phenomenon for a variety of reasons.

"What is great about science is that it does self-correct."

Having panels equally composed of males and females would put a massive workload on female PIs because far less than fifty percent of current faculty members are female.
Female scientists being asked to be more represented on study sections or other types of committees than there are female scientists in the pool that is being selected from, makes me turn angry and I consider this exploitation.

Do you think that science is in a trust crisis regarding the public?
I think with respect to the public, where one gets the most outrage is on finding that sometimes scientists publish things that are not correct, or that turn out not to be right later on. Here I am not talking about cases of fraud, which are a completely different thing, but a lot of the findings that turn out to be wrong depend on how the experiment was done. It may have been perfectly valid at the time; it is just that in a different or novel context that does not turn out to be the result. I do not think that the public understands that aspect of science.

"I do not think that the public understands that aspect of science."

This is particularly true in biological science, where you work with messy systems and you have no idea what exactly is in your test tube. Therefore, you have to do all sorts of controls and if you miss out on the wrong control, you might come to a mistaken conclusion. What is great about science is that it does self-correct. Even if people have great ideas that seem to be the solution to problems at one particular point, they may either not be the whole solution or they may be partially wrong, but that gets fixed. Sometimes a concept, even if it sounds foolish, has to be out there for other people to think about it and further refine it.

Advice for Mentees:

- If making discoveries in science gives you joy, go for it!
- Keep exposing yourself to more diverse aspects of science.
- Go to meetings. Connections are important.
- Take on the most challenging questions.
- Everyone (even undergrads) should have their own projects.
- Stick to it – even if public opinion is against you.
- Diverse groups of people come up with the most creative solutions to problems.
- When you start a new lab, keep the most important problems for yourself.
- Take vacations.
- Choose a supportive partner.
- Teach: both by mentoring undergraduates and in the classroom.

Slide content from Joan A. Steitz's keynote "Reflections and Perspectives on a Career in Science" at the Supervision of Scientific Success Symposium in October 2019 at ETH Zurich.

Acknowledgments
This interview was conducted in the context of Joan A. Steitz's visit to Zurich in October 2019 as a keynote speaker of the Supervision of Scientific Success Symposium, which was organized by the D-HEST Association of Scientific Staff (HAS). We thank the organizers for providing the opportunity to conduct this interview.

Research Highlights

Roland Fischer

Post-transcriptional functions of a developmental regulator

The TRIM71 protein regulates the fates of mammalian stem cells. Although the protein has both RNA-binding and protein ubiquitylation activities, the molecular basis of its developmental function has been unclear. However, a well-studied orthologue, LIN-41, in the model organism *C. elegans* provided potential hints as the Grosshans group (from the FMI in Basel) had previously shown that its known developmental functions were fully explained through binding and silencing of a small set of mRNA targets. Exemplifying the mission of the NCCR RNA & Disease to promote novel research avenues through collaboration among its members, the group now united its efforts with those of the Bühler group (also at the FMI) to understand whether this function was conserved for TRIM71 and to identify relvant targets. As reported in Genes & Development, the researchers used mouse embryonic stem cells to demonstrate that TRIM71, as in *C. elegans*, binds specific structures on target RNAs to silence them. "It was amazing to see that the way TRIM71/LIN41 recognizes its targets in mammals is exactly the same as in worms," says Alex Tuck, a postdoc in the Bühler group and one of the first authors of the study. "This nicely demonstrates the power of *C. elegans* as a model organism for studying core questions in biology."

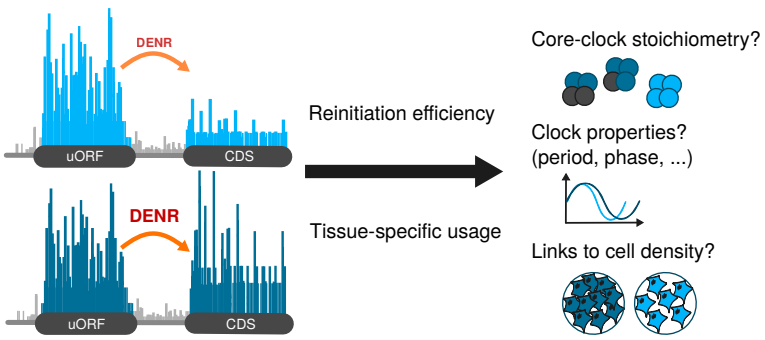
The obvious next step in the analysis was trying to get hold of relevant targets. Using various human and mouse cell lines, the researchers managed to identify several shared targets of TRIM71, including proteins involved in genetic disorders. Taking a closer look at one of them, MBNL1, they were able to show that the regulation of MBNL1 enables TRIM71 to take control of alternative splicing in stem cells, one possible mechanism to promote stem cell fates. Specific point mutations in TRIM71 were recently shown to cause a congenital brain disease, hydrocephalus, in humans. The FMI researchers discovered that these mutations impaired RNA target binding and silencing. While it remains unknown which specific TRIM71 target(s) mediate this disease phenotype, the team's success in identifying targets shared across several mouse and human cell lines provides a springboard for further analysis, and "an important step towards understanding how mutations in TRIM71 can cause disease," says Thomas Welte, a postdoc in the Großhans group and the other first author of the study.

Welte T. et. al. (2019) Genes Dev. 2019 Sep 1; 33(17–18):1221–1235

Translating Time

The Gatfield Lab has tackled yet another question of how post-transcriptional regulation interconnects with rhythmic gene expression driven by the circadian clock. This time, their interest was in upstream open reading frames (uORFs). They uncovered a novel mechanism how a uORF – and its capacity to trigger translation reinitiation – defines the N-terminus and the levels of the CLOCK protein. As an entry point, PhD student Violeta Castelo-Székely used fibroblast cells with a loss-of-function of DENR, which is a non-canonical initiation factor that was recently associated with reinitiation both in *Drosophila* and in HeLa cells. The aim of the experiment was to identify rules that explain why certain uORFs trigger DENR-dependent reinitiation while others do not. To identify DENR-regulated translation events transcriptome-wide, the researchers applied ribosome profiling to DENR-deficient NIH3T3 cells. By this method, they uncovered 240 endogenous transcripts with altered translation rate, and extracted 5′ UTR features predictive of DENR dependence.

David Gatfield explains that there are some enigmas still to be resolved when it comes to circadian rhythms and biological clocks. „Beyond the well-described transcriptional feedback loops that are at the basis of circadian timekeeping, we know that there are a number of unexplained features that most likely involve regulation at the RNA level." The researchers suspected translation to play a role, as an additional level in the regulatory network. „Already a couple of years back the hypothesis to be tested was: The translational level is important for the function of the circadian clock." At the time, they had investigated this hypothesis from various angles and also observed that knocking down DENR led to circadian period shortening. In the absence of DENR, the clock was ticking considerably faster, the cells lived so-to-speak by a 22–23 hour day, rather than the correct 24 hours. However, which particular clock transcripts were actually regulated by DENR? The current study now uncovers that *Clock* itself is translationally controlled through uORFs and DENR. It turns out that Nature has devised a surprisingly complicated translational landscape in the *Clock 5′* UTR: a highly translated uORF that overlaps the annotated CLOCK coding sequence in a different frame thus triggers DENR-dependent reinitiation from a downstream, alternative start codon.



Research Highlights

"I see the study as part of a larger effort to bring some order and understanding into the current zoo of mechanisms that uORFs appear to be able to act by" explains David Gatfield. It is poorly understood why certain uORFs elicit NMD, while others trigger translation reinitiation or are subject to leaky scanning. "But of course, right now we are particularly interested in understanding this concrete, novel regulation of *Clock* and its importance for circadian functions and physiology *in vivo*". In which physiological situation is this reinitiation event regulated? Could it serve to uncouple CLOCK protein abundance from mRNA levels in specific cell types? DENR was originally identified because its expression increased in cultured cells at high density, which led to its name Density Regulated Protein. First links between cell density and circadian rhythmicity have indeed been described in recent years, and the group considers it an interesting question for further research to assess whether CLOCK uORFs and DENR play roles in determining density-dependent differences of circadian rhythms.

As a side note, Gatfield sees the work as a good example for fruitful collaborations within the NCCR framework, in this case with the associate member Steve Pascolo at the University of Zürich. He also stresses that an important contribution to the study was made possible through an NCCR mobility grant that allowed Violeta conduct important experiments in the lab of Jernej Ule in London.

Castelo-Szekely V. et. al. (2019) Nucleic Acids Res 2019 Jun 4; 47(10):5193–5209

Predoc Program RNA & Disease Switzerland

A Unique Opportunity in Switzerland

The third generation of Predoc students have just started their first rotations, time to have a look at the program's development so far.

The Predoc Program RNA & Disease Switzerland offers to prospective PhD students the opportunity to do research in participating NCCR RNA & Disease member and associate member laboratories. During one year, participants perform three rotations of each four months. Participants can explore different research fields, expand their portfolio of methods and build a professional network. Moreover, they have the unique opportunity to get to know NCCR laboratories, in which they might subsequently pursue their PhD studies.

The annual call for applications is published in spring with the application deadline in summer. The Predoc Committee, which consists of six principal investigators of the network, evaluates the received applications and shortlisted candidates are invited for interviews taking place at the beginning of September in Zurich. Based on the interviews, the Predoc Committee takes the decision, which candidates are offered a Predoc position.

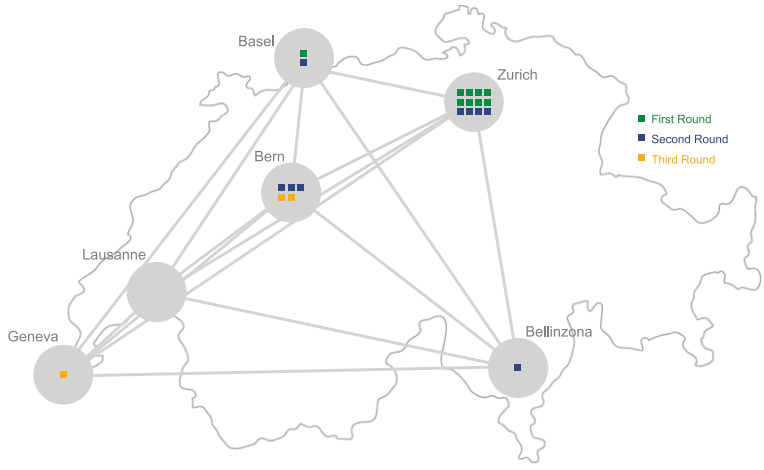
Upon the program's initial presentation, some concerns were voiced that such a program would not attract enough suitable applications. However, so far this is not the case. For example, in the last recruitment round, the Predoc Committee decided, based on the quality of the received applications, to invite twice the number of candidates for interviews than maximum spots for Predoc students available.

Over the first three rounds of recruitment, nine out of twelve candidates accepted the offered Predoc position. Participants are assigned one of the Predoc Committee members as a mentor and contact the labs in which they would like to perform their rotations. The decision of whether or not to host a given participant is up to the respective laboratory. So far, participants do not seem to have difficulties in finding laboratories hosting them.

The three Predoc students of the first generation started their first rotations two years ago and performed nine rotations in eight different laboratories. All three are currently pursuing their PhD studies at ETH Zurich and the University of Zurich, two of them in NCCR laboratories in which they did rotations. One rotation took place in Basel and all the other eight in Zurich. Given the high density of rotations taking place in Zurich, the Predoc Committee decided to change the regulations and make it a requirement for participants to perform their rotations in at least two cities.

Of the second generation Predoc students, one completed the program and the other two are doing their final rotations. Their rotations labs are located in Basel (one rotation), Bellinzona (one rotation), Bern (three rotations) and Zurich (four rotations), with one participant performing rotations in three different cities. Again, the nine rotations took place in eight different laboratories. The participant, who completed the program, is now pursuing PhD studies at ETH Zurich.

The third cohort of Predoc students just started their first rotations in two labs in Bern and one in Geneva, which marks the first rotation taking place in the western part of Switzerland. In conclusion, the Predoc program is running well and we expect it will continue to be a successful educational instrument of the NCCR RNA & Disease.



Rotation Locations of the Predoc Participants

Molecool.ch

Kosmos RNA

As part of the NCCR RNA & Disease outreach program, we aim at sharing our passion for research and science with a broader, non-scientific audience. In this context, we are delighted to present to you our new multi-lingual webpage: Molecool – Kosmos RNA. Molecool.ch is a dedicated webpage filled with specially produced content for a broad readership. The webpage is work in progress and will be continuously filled with additional information, including text, video and interactive content.

Please feel free to contact us (office@nccr-rna-and-disease.ch) if you have contents that you think would be suitable for Molecool.ch.

Public Outreach

Scientifica – Zurich Science Days

This year's edition of the Scientifica – Zurich Science Days, featured the topic *"Science Fiction – Science Facts"* and attracted between 20'000 and 30'000 visitors. The NCCR RNA & Disease took part with a booth on CRISPR-Cas gene technology; what are facts, limitations, threats and fiction regarding the controversially discussed gene scissors? At our booth, visitors could cut DNA with CRISPR-Cas, play the CRISPR-Cas targeting puzzle, explore in 3D structures of CRIPSR-Cas complexes, and play the Phage Invaders Game of the Innovative Genomics Institute. The presenters discussed with the visitors the potential of CRISPR-Cas for the treatment of so far incurable diseases but also ethical aspects regarding designer babies.

We would like to thank very much the persons involved in the NCCR's booth as well as the organizers and staff of the Scientifica!

Martin Jinek presenting to a group of Scientifica visitors, while Martin Pacesa instructs visitors how to cut DNA with CRISPR-Cas.

The NCCR booth in full swing.

Participating groups

Jacob Corn	*ETH Zurich, Switzerland*
Martin Jinek	*University of Zurich, Switzerland*
Rory Johnson	*University of Bern, Switzerland*
Stefanie Jonas	*ETH Zurich Switzerland*
Coordinator:	
Dominik Theler	*ETH Zurich, Switzerland*

3rd NCCR RNA & Disease summer school

RNA Regulation in Health and Disease

The 3rd NCCR RNA & Disease Summer School took place this year from the 26th to 30th of August 2019 in Saas-Fee, Switzerland. 38 participants from 26 different laboratories gathered to learn more about "RNA Regulation in Health and Disease".

Participants of the 3rd NCCR RNA & Disease summer school.

Twenty-five percent of all NCCR RNA & Disease and associated labs were represented among the summer school trainees. The purpose of the summer school was to provide the attendees with the unique opportunity to interact and learn from distinguished scientists in the field and to share ideas with peers.

The summer school consisted of 14 lectures by established experts in genome architecture, gene expression control, epitran-

Conference Center Steinmatte, Saas-Fee, Switzerland.

3rd NCCR RNA & Disease summer school

scriptomics and phase separation. During the journal club sessions, participants benefited from in depth discussions and had the opportunity to interact in an informal setting with invited scientists. Moreover, all participants were given the opportunity to train their presentation skills and share their current research activities in three minutes flash talks. Evenings were busy for all participants that where challenged to develop a multidisciplinary research project in small groups. This exercise provided an opportunity to experience how to create synergies by integrating complementary knowledge and expertise. The flip chart presentations on the last day of the summer school served as an ideal platform for each group member to present his/her contributions to the project. The organizers and lecturers were very pleasantly surprised at how participants engaged in the maturation of their project proposals by harnessing their own expertise and that of the invited speakers, thus resulting in six novel and creative research project ideas.

The summer school provided networking opportunities between sessions, in the evenings and while hiking on the free afternoon in the stunningly beautiful scenery of the Swiss Alps.

The NCCR management would like to express their gratitude to the organizers, the invited lecturers and the participants for their contributions towards this successful summer school.

Group work: participants developing ideas for their research project proposal.

Networking during the coffee break.

3 minutes flash talks by participants.

Lecturers of the 3rd NCCR RNA & Disease Summer School

Matthias Altmeyer	*University of Zurich, Zurich, Switzerland*
Stefan Ameres	*Institute of Molecular Biotechnology, Vienna, Austria*
Claus Azzalin	*University of Lisbon, Lisbon, Portugal*
Peter Brodersen	*University of Copenhagen, Denmark*
Luisa Cochella	*Vienna Biocenter Campus (VBC), Austria*
Martine Collart	*University of Geneva, Switzerland*
Torben Jensen	*Aarhus University, Denmark*
Rory Johnson	*University of Bern, Switzerland*
Sebastian Leidel	*University of Bern, Switzerland*
Peter Meister	*University of Bern, Switzerland*
Donal O'Carroll	*University of Edinburgh, United Kingdom*
Uwe Ohler	*Max Delbrück Center for Molecular Medicine, Berlin, Germany*
Magdalini Polymenidou	*University of Zurich, Switzerland*
Juan M. Vaquerizas	*Max-Planck-Institute for Molecular Biomedicine, Münster, Germany*
Organising Committee:	
Constance Ciaudo	*ETH Zurich, Switzerland*
Ana Claudia Marques	*University of Lausanne, Switzerland*
Raffaella Santoro	*University of Zurich, Switzerland*
Coordinator:	
Larissa Grolimund	*University of Bern, Switzerland*

Announcements

People

We would like to welcome Jean-Yves Roignant, associate professor at the University of Lausanne, as a new associate member of the NCCR RNA & Disease. The Roignant lab explores how RNA modifications control gene expression, including their biological roles in health and disease and their molecular mechanisms of action.

It is with deep regret that we announce the passing away of Kiyoshi Nagai (MRC Laboratory of Molecular Biology, Cambridge, UK) on September 27th 2019. Kiyoshi was a highly respected researcher and colleague in the field of structural biology and will be deeply missed. We extend our condolences to his family and friends.

Congratulations to Adrian Krainer (NCCR RNA & Disease advisory board member, St Giles Foundation Professor and Deputy Director of the Cancer Center at Cold Spring Harbor Laboratory, Long Island, NY) for the receipt of the Peter Speiser Award 2019. Adrian Krainer has also been elected to the National Academy of Medicine in October 2019. Congratulations!

We congratulate Martine Collart for the appointment as Vice-Dean in charge of the fundamental medicine section of the medical faculty of the University of Geneva as of July 2019.

Support Grants

Lukas Gurzeler (Mühlemann Lab), Hasan Vatandaslar (Stoffel Lab) and Emil Dedic (Allain Lab) received a Lab Exchange Grant.

Please visit our webpage for more information on the Lab exchange program, the Doctoral mobility grant and measures in equal opportunities.

Translational grants

An NCCR RNA & Disease Translational fellowship was awarded to Bogdan Mateescu to conduct a translational project in the laboratory of Isabelle Mansuy (ETHZ and University of Zurich).

An Insel/UniBE-sponsored NCCR RNA & Disease Clinical Translational fellowship was awarded to Roberta Esposito to conduct a clinical translational project in the groups of Rory Johnson (Department for BioMedical Research, University of Bern) and Carsten Riether (Department of Medical Oncology, University Hospital Bern).

Swiss RNA Workshop

The 21th edition of the Swiss RNA Workshop will take place on January 24, 2020, in Bern. Keynote lectures will be given by Reinhard Lührmann, (Max Planck Institute for Biophysical Chemistry, Göttingen, Germany) and Nicholas Luscombe (Francis Crick Institute & University College London, London, UK).

Visit the workshop's website for more information.

Upcoming events organized or supported by the NCCR RNA & Disease

> NCCR Seminar Series:
Lori Passmore (MRC Laboratory of Molecular Biology, Cambridge, UK) February 3, University of Bern & February 4, 2020, ETH Zurich
Amy Pasquinelli (University of California, San Diego, USA) March 23, University of Bern & March 24, 2020, ETH Zurich
Geraldine Seydoux (Johns Hopkins University School of Medicine, Baltimore, USA) May 18, University of Bern & May 29, 2020, ETH Zurich

NCCR RNA & Disease Internal Events:

> 5th Annual Retreat, January 27–29, 2020, Kandersteg, Switzerland
> Site Visit, March 11–12, 2020, ETH Zurich, Switzerland

Jobs

Scientific Officer (60 %) of the NCCR RNA & Disease
in Bern
Find out more

Postdoctoral Position – RNA Biology and Circadian Clocks
Gatfield Lab, University of Lausanne
Find out more

PhD program in RNA Biology
Find out more on the PhD program website.

Predoc program in RNA & Disease
Find out more on the Predoc program website.

Check the jobs's section of the NCCR RNA & Disease webpage for other openings.

IMPRINT

The National Centres of Competence in Research (NCCR) are a research instrument of the Swiss National Science Foundation

NCCR RNA & Disease
Phone: +41 31 631 38 12
office@nccr-rna-and-disease.ch
www.nccr-rna-and-disease.ch

Office Bern
University of Bern
Departement of Chemistry and Biochemistry
Freiestrasse 3, CH-3012 Bern

Office Zürich
ETH Zürich
Institute of Molecular Biology & Biophysics
ETH-Hönggerberg, HPP L15
Otto-Stern-Weg 5, CH-8093 Zürich

UNIVERSITÄT BERN

ETH zürich

FNSNF
SWISS NATIONAL SCIENCE FOUNDATION