

---

# PROMYS - Promotion of Young Scientists in Eastern Europe

Funding scheme and portraits of the grantees



August 2016

# PROMYS – the funding scheme

## Purpose

The initiative “Promotion of Young Scientists in Eastern Europe” (PROMYS) is aimed at young researchers in Eastern Europe who have studied or worked in Switzerland for at least two years and would like to continue their careers in one of the new Eastern European member states of the EU (NMS). PROMYS is an investment in scientific collaboration with promising researchers in Eastern Europe who will collaborate with Switzerland in the long term and encourages the best next-generation talents to carry out research in these countries. The grants will strengthen independent and excellent new research teams that have been recently created. These teams will contribute to the consolidation of the European Research Area and to the continent’s competitiveness.

## Call

In June 2016, the SNSF awarded seven PROMYS grants worth a total amount of 4.3 million Swiss francs. The call was launched in August 2015 and was open to all scientific disciplines. Projects were submitted from eight different countries. After a two-phase evaluation process with interviews, the following seven young researchers were selected to implement their projects in their country. The project duration is five years.

## PROMYS grantees and projects

Grantee	Title of the project
<b>Bencze Laszlo-Csaba, Romania</b>	MIO-enzyme toolkit for the synthesis of unnatural amino acids
<b>Cajanek Lukas, Czech Republic</b>	Tau tubulin kinase 2 in ciliogenesis: mechanisms and functions
<b>Chitez Madalina, Romania</b>	Academic genres at the crossroads of tradition and internationalization: Corpus-based interlanguage research on genre use in student writing at Romanian universities (ROGER)
<b>Dolenec Danijela, Croatia</b>	Disobedient democracy: A Comparative Analysis of Contentious Politics in the European Semi-periphery
<b>Mátyus Edit, Hungary</b>	Molecular Quantum Dynamics
<b>Musilova Zuzana, Czech Republic</b>	Genomics of sensory adaptations: evolution of vision, smell and taste in fishes
<b>Stepanek Ondrej, Czech Republic</b>	T cell calculus: how T cells measure and interpret antigenic signals in health and disease

## Portraits of the grantees

### László Csaba Bencze, Romania

**Title of the project**

MIO-enzyme toolkit for the synthesis of unnatural amino acids

**Host institution**

Babeş-Bolyai University, Faculty of Chemistry and Chemical Engineering, Cluj-Napoca, Romania



---

#### Portrait

During my doctoral and current research in the field of biocatalysis and enzymology I have focused on synthetic procedures mediated by phenylalanine ammonia lyases, lipases and oxidoreductases. As a postdoctoral researcher at the University of Zurich, Department of Chemistry, in the group of Prof. Dr. John A. Robinson, I worked on the elucidation of the mechanism of action of the novel antibiotic POL7080, accumulating experience in recombinant technologies, site-directed mutagenesis, protein structural studies, and protein-ligand interaction studies, which are essential for the implementation of the current project.

#### Host institution

The Babeş-Bolyai University from Cluj-Napoca is the highest ranked Romanian university, which through its Department of Chemistry will provide the high-level research facilities for molecular cloning, protein expression, analytical techniques, organic synthesis, and the computational tasks of the project.

#### Project: A basis for industry production

The project, through its research efforts in biocatalysis, protein engineering and directed evolution, reaction biotechnology, and organic chemistry, integrates and joins the current waves of biocatalysis. The project aims to develop the MIO-enzyme toolkit – by the aid of the novel MIO-enzyme toolbox, novel high-throughput activity assays, novel immobilization techniques on nanosupports – for the production of industrially relevant  $\alpha$ - and  $\beta$ - amino acids. The unnatural amino acids will be used as building blocks in the synthesis of novel peptidomimetics, through collaboration with the mentor of the project, Prof. Dr. John A. Robinson, who provides the link to Switzerland. At the host institution the project creates an independent young research group, strengthens international collaborations, and allows the start of my habilitation work, with a view to a successful academic career.

## Lukas Cajanek, Czech Republic



### **Title of the project**

Tau tubulin kinase 2 in ciliogenesis: mechanisms and functions

### **Host institution**

Masaryk University, Department of Histology and Embryology, Brno, Czech Republic

---

### **Portrait**

I received my PhD training at Karolinska Institute in Sweden, in the lab of Ernest Arenas, where I studied stem cells and cell signalling. After my graduation I joined the lab of Erich Nigg at the Biozentrum of University of Basel, where I had an opportunity to pursue projects focused on the biology of centrioles and primary cilia. The work I carried out in Basel has provided very important insight into key steps of how these crucial organelles are made, leading to publications in some of the top scientific journals (PNAS, Science, JCS).

### **Host institution**

My lab is located at the new biomedical campus of Masaryk University in Brno in the Czech Republic. The campus brings together research labs from the Faculty of Medicine, the Faculty of Science, ICRC (International Clinical Research Center) and CEITEC (Central European Institute of Technology).

### **Project: What does a cell do?**

Our project aims to find out what a cell has to do in order to make primary cilium, an antenna-like organelle governing many important aspects of embryonic development as well as tissue homeostasis in adulthood. We are addressing this theme from a perspective of Tau tubulin kinase 2 (TTBK2), a key regulator of early events of ciliogenesis. The project has two main goals. The first is aimed to elucidate the role of TTBK2 in interactions of key components of the cilium. The second theme is focused on identification and functional validation of substrates of TTBK2 relevant for ciliogenesis. Erich Nigg (University of Basel) will act as a mentor to this project. We expect that the project will reveal some of the key aspects of the regulation of ciliogenesis and will also contribute to scientific training of involved personnel and consolidation of my lab at Masaryk University in Brno.

## Madalina Chitez, Romania



### **Title of the project**

Academic genres at the crossroads of tradition and internationalization: Corpus-based interlanguage research on genre use in student writing at Romanian universities

### **Host institution**

West University of Timișoara, Romania

---

### **Portrait**

I have always enjoyed studying languages: I received a BA degree in English and French from the Transilvania University of Brasov, Romania, then worked as a teacher of English. In 2004, I subscribed for a master's degree in linguistics in Freiburg, Germany. Convinced that linguistic research can impact teaching considerably, I remained at the same university and started my PhD research project on the topic of learner corpora. At the Zurich University of Applied Sciences, I conducted research in the areas of academic writing, contrastive rhetoric and corpus linguistics. During this time, I was given the chance to develop as a researcher by working with excellent scholars in a friendly atmosphere and being encouraged to undertake my own research initiatives.

### **Host institution**

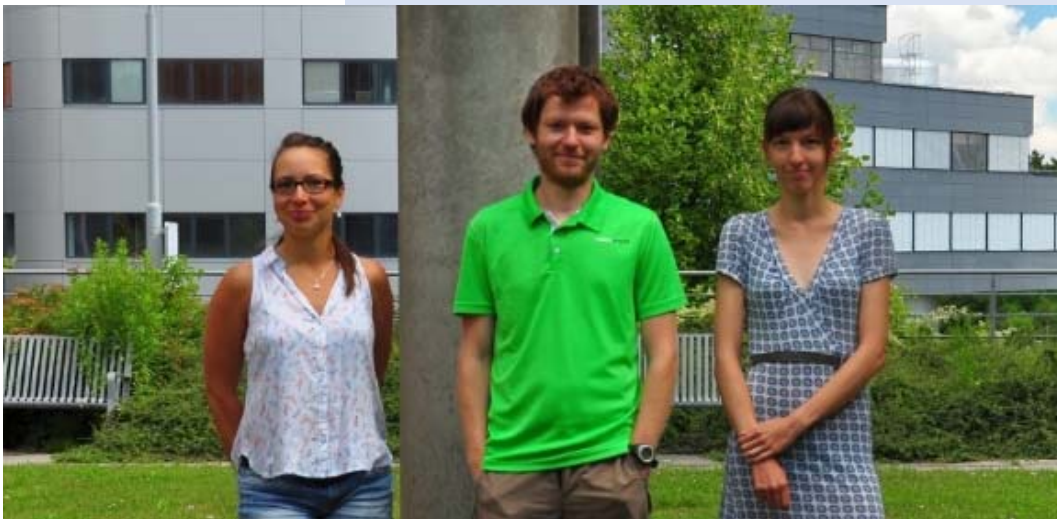
The West University of Timisoara is part of the university consortium that brings together what are considered to be the top four higher education organizations in Romania. At present, about 11,700 students are enrolled at the West University of Timisoara, within 11 faculties. The Faculty of Letters, History and Theology ranks third in terms of number of students and faculty.

### **Project: Different cultures in academic writing**

In my research project at the West University of Timisoara (WUT), Romania, I will investigate the linguistic phenomena related to the academic writing of Romanian students in both English as a Foreign Language and their native language Romanian. My analyses are based on a self-compiled corpus (ROGER), i.e. text database, of academic genres collected from several Romanian universities. The project will also implement and extend the methodology of survey-guided genre mapping developed during my research in Switzerland, where we compared academic writing cultures in the German, French and Italian language regions of Switzerland. The results of the project are intended to facilitate the understanding, evaluation and teaching recommendations related to the use of prominent academic genres written in Romanian compared to their versions in English as a Foreign Language and native-English standards. Several medium term goals are also important to achieve: activation and support of the Academic Writing Centre, inclusion of new topics in the department curriculum and creation of a research centre in corpus linguistics.



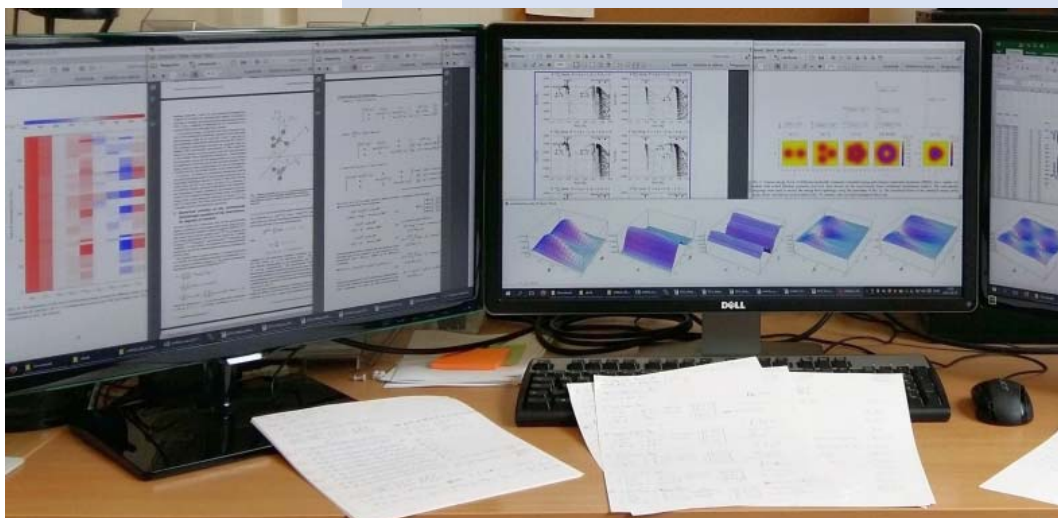
Project Musilová - Evolution of vision, smell and taste in fishes



Project Cajanek - Tau tubulin kinase 2 in ciliogenesis: mechanisms and functions



Project Dolenc - Disobedient Democracy



Project Mátyus - Molecular Quantum Dynamics



Project Bencze - MIO-enzyme toolkit for the synthesis of unnatural amino acids



Project Stepanek - Institute of Molecular Genetics, Prague

## Danijela Dolenc, Croatia



### **Title of the project**

Disobedient Democracy

### **Host institution**

University of Zagreb, Faculty of Political Science,  
Croatia

---

### **Portrait**

I am an academic nomad, so far having studied in four countries: Croatia, the UK, the US and Switzerland. I completed my PhD at ETH Zurich, at the Centre for Comparative and International Studies, under the supervision of Prof. Frank Schimmelfennig. Among the many benefits of living and studying in Switzerland I would particularly single out the fantastically well-resourced setting, with ETH Zurich providing all the infrastructural and academic support to enable the development of excellent research. In addition to that, I also very much enjoyed the highly international team and regular retreats to the Alps!

### **Host institution**

The Faculty of Political Science of the University of Zagreb dates from 1962, but my Department of Comparative Politics was established more recently, in 2004. Since then the Faculty has made big steps in increasing international cooperation and supporting young academics in developing their research expertise.

### **Project: Democratic practices at the edge of Europe**

Since the start of the economic crisis in 2008, we have been witnessing a new cycle of contention against institutional politics, signaling a Europe-wide disappointment with democracy. Starting from this insight, the main objective of this project is to explore ways in which contemporary social movements advance democratic practices in Europe. The project investigates contemporary democratic practices in four cities of the European semi-periphery: Zagreb, Belgrade, Madrid and Lisbon. Since protest movements often experiment with direct democracy, this project will use the extensive Swiss experience with referenda and related forms of direct democratic participation. In particular, the project will rely on the expertise of the Centre for Research on Direct Democracy in Aarau, as well as on continued cooperation with colleagues at the ETH Zurich.



## Edit Mátyus, Hungary



### **Title of the project**

Molecular Quantum Dynamics

### **Host institution**

Eötvös Loránd University (ELTE), Budapest,  
Hungary

---

### **Portrait**

I studied chemistry and obtained a PhD in theoretical chemistry in my home country, Hungary. During my studies I had shorter research stays at the Georg-August University in Göttingen, at the University of Stuttgart, at the University of Georgia, Athens (GA, USA), and at Princeton University. After obtaining my PhD, I was an ETH Fellow at the Laboratory of Physical Chemistry at ETH Zurich, which is a fascinating place for a theoretical spectroscopist. With a PROMYS grant I return to my home country after a two-year research stay at the University of Cambridge.

### **Host institution**

Eötvös Loránd University is the most prestigious higher education institution in Hungary. As a student, I most enjoyed its traditionally strong curriculum in mathematics and theoretically oriented disciplines, and the pleasant location of the Science Faculty along the bank of the river Danube.

### **Project: New foundations of certain common concepts of chemistry**

My goal is to explore, in unprecedented detail and by theoretical methods, the dynamical properties of molecules. On the one hand, I intend to go far beyond the common approximations, which will lead to the understanding of the most accurate measurements. On the other hand, I aim to extend the applicability of quantitative quantum dynamical methods towards larger systems, in particular, to study molecular interactions in molecular clusters. Alongside the methodological developments, I will consider afresh the theoretical foundations of certain common concepts in chemistry. This side of my work should fit very well with my continuing collaboration with Prof. Reiher's group at ETH Zurich on theoretical developments beyond the electron-nuclear separation. At the host institution, I intend to build a research group working at the frontiers of theoretical molecular quantum dynamics.

## Zuzana Musilová, Czech Republic



### **Title of the project**

Genomics of sensory adaptations: evolution of vision, smell and taste in fishes

### **Host institution**

Charles University, Department of Zoology, Prague, Czech Republic

---

### **Portrait**

I spent a postdoc at University of Basel focusing on molecular evolution in fishes. During that time, I managed to understand the complexity of being a researcher. I got into close contact with scientists experienced in various different fields, as well as in touch with the cutting-edge technologies. This made me realize that I have to look at every research question from multiple perspectives. I have also been able to interact with leaders of various fields of science who visited Basel during that time. This contributed to the creative shaping of my research focus, as well as to my critical thinking.

### **Host institution**

The Department of Zoology at Charles University in Prague represents a dynamic environment for multiple research teams. It offers a combination of a university spirit and strong naturalist tradition, together with open access to modern infrastructure, facilitate stimulation of original research ideas.

### **Project: Fishes as an ideal model**

My research team will focus on genetic mechanisms of sensory systems of vision, smell and taste. Fishes have the most diversified portfolio of receptor genes among vertebrates and, therefore, appear as an ideal model to examine the evolution of sensory receptor genes. We will target molecular mechanisms of adaptation, including the contribution of DNA mutation and alternative gene expression in four model groups of teleost fishes. We will employ mostly genomics, transcriptomics and functional analyses to achieve the following goals: 1) general molecular mechanisms and evolution of vertebrate sensory function, 2) key environmental factors shaping senses, 3) ontogeny of sensory systems, and, 4) competition between sensory systems. Members of my team will collaborate intensively with Prof. Salzburger (University of Basel), who is one of the leading figures in evolutionary genomics of fishes.

## Ondrej Stepanek, Czech Republic



### **Title of the project**

T cell calculus: how T cells measure and interpret antigenic signals in health and disease

### **Host institution**

Institute of Molecular Genetics, Academy of Sciences of the Czech Republic, Prague

---

### **Portrait**

After I graduated in a PhD program of Immunology at the Charles University in Prague, I started my postdoctoral appointment in the research group of Prof. Ed Palmer at the Department of Biomedicine in Basel. I have spent four wonderful years focusing on understanding fundamental principles of how T cells (a subtype of white blood cells) trigger an adaptive immune response against invading pathogens but maintain self-tolerance at the same time. I also investigated how the self-tolerance might fail in autoimmunity. During this time, I was able to learn how to perform high-profile immunological research.

### **Host institution**

The Institute of Molecular Genetics (IMG) is one of the leading Czech research institutes in the fields of molecular, cellular and developmental biology and immunology. Adaptive immunology has a long-lasting tradition at the IMG with a couple of well-recognized discoveries made in the past.

### **Project: New collaborations and networks with Swiss universities**

My project focuses on understanding how T cells recognize their antigens and how this induces the immune response. We will characterize a novel self-antigen-driven T cell fate decision checkpoint, clarify the first biochemical step in the TCR signal transduction pathway and address how T cell receptor structure determines its specificity. I am collaborating with scientists at Swiss universities, especially at the University of Basel. The PROMYS grant will keep me connected to the University of Basel Immunological Community, offering me opportunities to exchange ideas and establish new collaborations. In addition, it will provide me with inspiration to establish a similar network in Prague. During the 5 years of the PROMYS grant, I would like to address the clinically relevant issues in T cell biology and establish a strong research group to make further discoveries in the future.

**Published by**

Swiss National Science Foundation  
Interdisciplinary and International Cooperation (InterCo)  
Wildhainweg 3, P.O. Box  
CH-3001 Berne | Switzerland  
+41 (0)31 308 22 22  
interco@snf.ch | www.snsf.ch

**Photo on front page:**

Project Chitez: Academic genres at the crossroads of tradition and internationalization