



FINANCING OF LIFE SCIENCES IN THE CZECH REPUBLIC IN 2021

Tomáš Mozga, [Biology Centre CAS](#)

Veronika Palečková, [Institute of Organic Chemistry and Biochemistry CAS](#)

Ladislav Čoček, [Masaryk University](#)

Jakub Zeman, [Masaryk University](#)

Pavla Růžková, [Institute of Botany CAS](#)

Michal Hojdekr, [University of South Bohemia in České Budějovice](#)

Martina Pokorná, [CEITEC MU](#)

Hana Štěpánková, [University of Chemistry and Technology Prague](#)

Editors: Jiří Stanzel a Aleš Vlk, [vedavyzkum.cz](#)

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Graphic design: [Marek Gabriel Hruška](#)

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The series “Financing of Life Sciences in the Czech Republic” was published on the portal vedavyzkum.cz between October and December 2020. For the very first time we presented a detailed and comprehensive summary of the support of science (in the form of available financial resources, such as grants, scholarships, fellowships, and awards in 2021) for different stages of the researcher’s career, starting from elementary school pupils, to senior group leaders and management of research institutions. The enumeration of various possibilities of obtaining financing for one’s own research activities is accompanied with real-life stories of students and researchers whose scientific career has been accelerated by the particular grants or programs. The last part of the series summarizes the current state and offers recommendations aimed at increasing the efficiency and competitiveness of the Czech research. This PDF brings you the entire series in a single document.



Life sciences, biosciences, sciences focusing on the living nature are perceived in the broadest sense as sciences studying the life and living organisms at the molecular level (molecular biology, genetics, structural biology, biochemistry, biophysics, bioinformatics, biotechnology, chemistry, etc.), at the cellular level (cell biology, microbiology, etc.), at the level of the whole organism (systematic biology, developmental biology, physiology, immunology, neurology, pharmacology, medicine, diagnostics, etc.) and at the level of ecosystems (population biology, evolution biology, ethology, ecology, paleoecology, soil biology, hydrobiology, environmental chemistry, ecotoxicology, agriculture, forestry, fisheries, food industry, etc.). From the established European division of scientific areas, we include three basic areas: Life Sciences (LIF), Chemistry (CHE) and Environmental and Geosciences (ENV).

Week after week, for four months a group of enthusiasts was exchanging countless emails and phone calls in order to describe in detail for the entire scientific community the available sources of financing and the substance of individual grant programs and challenges. We try to capture the existing support of the Czech science in the European context. We want scientific excellence to accumulate in the Czech Republic, we want the Czech Republic to become a significant driving force of the European Research Area (ERA). It is our aim to simplify long-term career planning for researchers and to increase their participation in international projects. Hopefully, this unique series will be useful, contributing and motivating for the scientific community. Find more information and inspiration for the development of your scientific career in the area of life sciences.

We would also like to open a discussion on the needs of efficient financing of science. Please share your experience from the Czech Republic and from other countries and join our discussion. Together, we develop the Czech science. You can send your suggestions, experiences and comments to the address: redakce@vedavyzkum.cz.

January 2021,
team of authors

**Tomáš Mozga, Veronika Palečková, Ladislav Čoček, Jakub Zeman,
Pavla Růžková, Michal Hojdeckr, Martina Pokorná, Hana Štěpánková.**



PART 1:

PRIMARY AND SECONDARY SCHOOL STUDENTS

Part one presents possibilities available to primary and secondary school students. They can actively participate in a number of national and international knowledge and creative competitions and can apply for various scholarships. An important role of mentoring and support of talented students is described by Lumír Krejčí of Masaryk University.

What is the ideal age when we should start developing a child's interest in science? "Any age basically, at [Bioskop](#) we offer courses for children from the age of six. Children are like mushrooms, ready to absorb an incredible amount of knowledge and skills. It is only necessary to show them the possibilities and help them to find areas which they consider the most satisfactory," the biochemist Lumír Krejčí describes his own experience.

The system of support of abilities, talent and creativity in preschool and school children and secondary school students is important for their discovery and knowledge of natural sciences. The first encounters of school pupils with life sciences most probably take place through the visit of some of the science centres ([Techmania Science Centre](#) in Pilsen, [VIDA! science centrum in Brno](#), [Pevnost poznání Olomouc](#), [iQLANDIA Liberec](#)), or some of the educational laboratories ([Bioskop](#), [Badatel](#), [Newton](#), [Open science](#)), through their study at a children's university ([MjUNI](#), [TUL](#)), at a research after-school course, summer camp or expedition ([Talentcentrum](#), [T-expedition](#), [Suburban day camp with biology](#)) or through their participation at an event ([prirodovedci.cz](#), [Science Fest](#), [Science Fair](#), [Science and Technology Week](#), [Night of Scientists](#)). Self-realization of schoolchildren and secondary school students in natural sciences is activated primarily through [competitions](#).

COMPETITIONS

The best way to take the first active step into the world of life sciences is through the [Biology Olympiad](#) or the [Chemistry Olympiad](#) in the 6th grade of primary school. These are science competitions in the knowledge of biology or chemistry. The announcer of both these Olympiads is the Ministry of Education, Youth and Sports. The Czech University of Life Sciences in Prague (CZU) is responsible for organizing the Biology Olympiad and the University of Chemistry and Technology Prague (UCT) is responsible for organizing the Chemistry Olympiad. Students compete in four categories – A, B, C and D, starting from the 6th grade of primary schools, up to senior (4th) year of secondary schools. Details are published annually at the beginning of the school year (in September). The competition takes place in school, district, regional and – for category A – national (central) rounds that are held in sequence.

Students of the 8th and 9th grade of primary schools can compete in the competition [Young Chemist of the Czech Republic](#). The 9th year of the national finals is planned to take place on 15 June 2021 at Pardubice University. In addition to a diploma, cup and cordon, the winners also receive a financial scholarship in the amount of CZK 12,000, CZK 24,000 and CZK 48,000 and various technical gadgets (laptop computer, drone, telephone).

The 26th year of the [Ecologist Olympiad \(EO\)](#), is currently taking place, with the topic of "Drought and climate change". The organizer is the Czech Union for Nature Conservation (ČSOP). Three-member teams of secondary school students participate in this competition. The ČSOP also organizes a biology competition named [Golden Leaf](#) for six-member teams of primary school pupils: the junior category is for students of the 4–6th grade and the senior category for students of the 7–9th grade. There are several checkpoints along the competition trail where the children test their knowledge in various areas: ecology, nature protection, environment, geology, zoology, botany, inanimate components of the ecosystem (e.g. meteorology, climatology, etc.). A part of the evaluation of each team is their practical work for the nature. Emphasis is being placed on the year-round activities of the team, but it is not a condition. The regional round will take place in April and May 2021, the national round in June 2021.

Secondary school students have an opportunity to participate in several international competitions: [European Union Science Olympiad \(EUSO\)](#), 19th year will take place on 8 – 15 May 2021 in Szeged, Hungary; [International Biology Olympiad \(IBO\)](#), 32nd year will take place on 18 – 25 July 2021 in Lisbon, Portugal; [International Chemistry Olympiad \(IChO\)](#), 53rd year will take place on 24 July – 2 August 2021 in Osaka, Japan.

Apart from knowledge competitions, there are also science project competitions organized for secondary school students where they solve their own practical research projects. [Students' Professional Activities \(SPA\)](#) is a national contest for talented students of the Czech secondary schools where they can present their scientific projects. This contest is announced by the Ministry of Education, Youth and Sports and organized by the National Pedagogical Institute (NPI) of the Czech Republic. The 43rd year of this contest will take place in the school year of 2020/2021. The fields of specialization in this contest are: (3) Chemistry, (4) Biology, (6) Healthcare, (7) Agriculture, food, forestry and water management, (8) Protection and creation of the environment.

[EXPO SCIENCE AMAVET](#) is a contest of talented secondary school students in solving specific scientific and technical projects and in the ability to present their work to the professional and non-professional public. It is organized by the Association for the Youth, Science and Technology – AMAVET, z.s. The 28th year of this contest will take place in the school year of 2020/2021.

The contest **České hlavičky (Young Czech Minds)** is annually announced by the company Česká hlava PROJEKT z.ú. in cooperation with the Ministry of Education, Youth and Sports (MŠMT). Applications are filed by individuals or by authors' teams consisting of no more than three members, no later than by June 2021. Awards are granted for specialized professional works and projects. Winners receive a financial reward of CZK 30,000. **GENUS "Nature Around Us"** for projects in the fields of natural sciences dealing with the environment around us, from the fields of chemistry, biochemistry, biology, microbiology, geology, paleontology, protection or improvement of the environment and other fields examining living and inanimate nature. **SANITAS "Human Life and Health"** for projects in the field of natural sciences dealing with human health, biological and chemical processes that contribute to the understanding of the function of the human body, or for works and projects in the field of virology, microbiology, biomedicine and related fields whose results are related to human health.

Secondary school students have the opportunity to present the results of their research also at international level, for example at the **European Union Contest for Young Scientists (EUCYS)**, the 32nd year of which will take place in 2021 in Salamanca. Three first prizes are granted of EUR 7,000 each, as well as three second prizes of EUR 5,000 and three third prizes of EUR 3,500 each. Another forum is the **International Science and Engineering Fair (ISEF)**, organized each year in May by the Society for Science & the Public (Washington, D.C.). More than 1,500 students compete for scholarships, grants, scientific routes and prizes in the value exceeding 4 million US dollars.

SCHOLARSHIPS

Professional and personal growth of talented secondary school students is supported by foundations and endowment funds. The success in science Olympiads and the results of the students' own research activities are especially appreciated. **Jaroslav Heyrovský Endowment Fund Award** is granted for winning science Olympiads and for successful projects presented in the national round of the Students' Professional Activities (SPA) contest. **Award of the Learned Society of the Czech Republic in the category Secondary School Student** is granted for exceptional scientific activities in the field of natural sciences or humanities. Proposals for the award are submitted by members of the **Lerned Society**, headmasters of secondary schools in the Czech Republic and Association for the Support of Talented Youth of the Czech Republic. The nearest deadline for filing applications is 28 February 2021.

Research activity performed during secondary school studies can easily transform into a study at a prestigious foreign university. **Scholarship Bakala Foundation Program** offers support to talented and goal-oriented students to achieve their study dreams at the world's best institutions. The scholarship is intended for students who demonstrate excellent academic results and the need for financial support in their application; those interested in studying (or students) comprehensive bachelor's or master's degree programs at foreign universities; young people seeking academic experience that will intellectually enrich them and help them achieve the best possible education. Applications were accepted from 16 November 2020 until 18 January 2021. The candidates are informed of the results of the first round in April and of the results of the second round in May 2021. If the selected students keep conscientiously fulfilling their obligations, they are supported for the entire duration of their study for which the scholarship was granted.

The Kellner Family Foundation University Project offers financial grants to students, primarily for the study of Bachelor's degree programs at foreign universities. The annual deadline for the submission of applications that must contain a brief essay in Czech and in English on the topic of "My interests and plans for the future" is on 30 April. The selected 10–20 candidates are invited for interviews. The students always receive a contribution covering one year of their studies. Thus, the foundation attempts to motivate students to achieve excellent study results. The scholarship recipients also undertake that they will live and work in the Czech Republic for at least three years during the period of 15 years after the completion of their study.

INSPIRATION: LUMÍR KREJČÍ ON TALENT OF SECONDARY SCHOOL STUDENTS

A successful example of excellent mentoring of Czech science in the past years is the support of a talented secondary school student Karina Zadorozhny (Movsesjan). Karina's deep interest in biochemistry and molecular biology started during her studies at the First Czech Grammar School in Karlovy Vary. When she was 16 years old, she moved to Brno to work in the Laboratory of Recombination and DNA Repair at the Department of Biology of the Faculty of Medicine at Masaryk University. In her research she investigated protein RAD51 and the appearance of cancer illnesses related to this protein. She published her results in international scientific journals (Cell Reports and Molecular Cell), still as a secondary school student. She received various awards for her work. In 2018 she started her studies at Northwestern University, Evanston, Illinois, USA. What is the view on mentoring of secondary school students of Lumír Krejčí from the Faculty of Medicine at Masaryk University, Karina Zadorozhny's mentor and founder of MU Bioskop, scientific education center?



Photography: Helena Brunnerová, Masaryk University

How can you recognise a talent or a “gift” for science in a secondary school student? How can you find a talented secondary school student?

Similarly as in sports, you need to spend enough time with the student to recognise the talent. But talent is not everything – the key is motivation. To find a talented student is not only difficult, but also time-consuming and expensive. That's why we founded Bioskop – an open laboratory, where by attending various courses, clubs and summer schools the students can try the applicative basics necessary for studies of a broad range of life sciences. During this time, we try to identify talented and motivated students, and subsequently offer them work on a scientific project within the Students' Professional Activities. Not all students must necessarily relate their future to science, but it can help many students to better decide on their further activities. A lot of students who participated at Bioskop's events come back and participate in its operation and further improvement.

What would you advise and recommend to secondary school students who want to dedicate themselves to science and work on a research project?

Define the area that you're most interested in, search for universities, scientific institutes or laboratories/groups which work on such topic. Visit them during their open days or other activities. Decide on how much time you are able and willing to dedicate to the scientific work, because it is time-consuming, and then contact the institution of your choice.

How to ensure a safe work of students under 18 years in the laboratory? Are there any safety or administrative limitations related to age?

Students are properly trained in occupational safety and health issues to be able to move around the laboratory. Most of them have an individual study plan in order to work on their scientific project as much as possible.

How is the stay and work of the students financed?

Financing comes mostly from resources of the specific laboratory, but today there are some programs for students' support (JCMM is an example in our region).

How much time do you dedicate to mentoring of talented students?

It is individual and at different levels. We choose the project with the student that he/she will work on and then there is a colleague (usually a postdoc or research assistant) in the laboratory who daily dedicates his/her time to the student. I, personally, have at least one hour per week scheduled for each student, where we discuss not only the development and direction of the project itself, but their scientific growth as well (the ability to defend their work, communicate scientifically and find their way to further education). Nevertheless, my office door is usually open, and every student can visit according to their needs. The whole project usually lasts at least one year.

What is the benefit of working with students according to you?

I feel enriched by the scientific work itself, which is rather fun for me. Then, of course, I am pleased that I can help motivated students in their scientific growth, not only in further education, but also in a possibility to succeed at top universities abroad or scientific institutions. I hope that maybe some day they will come back and help to make a change in our rigid and conservative scientific environment in the Czech Republic.



PART TWO: BACHELOR'S AND MASTER'S DEGREE STUDENTS

The focus of the second part of our series is the university study. It is important for Bachelor's and Master's degree students to make the correct choice and study at an institution of the best possible quality. Short-term and long-term fellowships are, of course, a part of a university students' life. The fact that they get to know the world and gain experience brings young people closer to the best science. Eva Brichtova's, Jan Blaha's and Katerina Vackova's stories prove this.

"The selection of a mentor in all stages of studies is essential, because it can either accelerate your scientific career or put an end to it. Choose carefully, choose the best quality. Have a healthy self-confidence and a clear goal. Without any goal or a plan, you cannot move forward," says Jiří Nantl, the Director of CEITEC MU.

The first part showed how important it is to be active already at the secondary school. Participation in Science Olympiads and the students' results of their own professional activities facilitate their path to obtaining scholarship and studies at a prestigious university. There are various international charts comparing the quality of universities (for instance [QS World University Ranking](#), [The World University Rankings](#), [Academic Ranking of World Universities](#), [Round University Ranking](#), [Best Global Universities Ranking](#), etc.).

SCHOLARSHIPS & FELLOWSHIPS

Do not fear studying abroad. The best universities in the world actively look for talented students. Make your dream of a high-quality study come true through obtaining a scholarship. On the webpage of the [Czech National Agency for International Education and Research](#) (Dům zahraničních služeb, DZS) you can find information on scholarship options for study and research stays at universities in 30 countries of the world. Apart from European destinations, it is possible to go to Egypt, China, Japan, Mexico and Peru.

Bakala Foundation Scholarship Program is dedicated to goal-oriented students who demonstrate excellent academic results and the need for financial support in their application. Applications were accepted from 16 November 2020 until 18 January 2021. The candidates are informed of the results of the first round in April and of the results of the second round in May 2021. If the selected students keep conscientiously fulfilling their obligations, they are supported for the entire duration of their study for which the scholarship was granted.

Universities Project of the Kellner Family Foundation offers financial grants to students, primarily for the study of Bachelor's degree programs at foreign universities. The annual deadline for the submission of applications that must contain a brief essay in Czech and in English on the topic of "My interests and plans for the future" is on 30 April. The selected 10–20 candidates are invited for interviews. The students always receive a contribution covering one year of their studies. Thus, the foundation attempts to motivate students to achieve excellent study results. The scholarship recipients also undertake that they will live and work in the Czech Republic for at least three years during the period of 15 years after the completion of their study.

Krsek Foundation provides students of Czech citizenship under 25 years with a scholarship for the first year of their Master's degree studies at the world's best [universities](#) (28 in the USA, 3 in Canada, 8 in the United Kingdom, 3 in Germany, 2 in Switzerland, 1 in Austria and 1 in Australia). It supports students of technical disciplines, natural sciences, economics, history and political sciences. The applications can be submitted in the course the entire year.

Fulbright Scholarship for Postgraduate Studies is dedicated for studies or research at the level of the Master's or PhD degree in the United States for all disciplines, except for clinical medical research and MBA and LLM programs. The scholarship is granted for one academic year (4–9 months) and covers the costs of living in the form of allowance, contribution for the return flight ticket, basic health care insurance and tuition up to USD 15,000. It is necessary to submit online applications for academic year of 2022/2023 before 1 September 2021. The "Visiting Student Researcher" category has two deadlines each year: on 1 February and 1 September.

An excellent foreign university can be experienced also in the form of short-term or long-term study or research internship. The easiest possibility of traveling abroad to try living in a foreign European country is the [Erasmus+](#) program. All Czech universities are enrolled in the program. Each university announces their own deadlines for applications. You can participate for 2–12 months during your Bachelor's, Master's and PhD's degree studies. Meaning, up to three times over the three courses of the studies. Students receive financial means from their universities to cover their costs of living in the amount of EUR 480–660 per month, depending on the particular country. The success rate of applicants is almost 100 %.

The Bavarian-Czech Academic Agency (BTHA) and Bavarian Academic Center for Central, Eastern and Southeastern Europe (BAYHOST) announce scholarships for funding of one year of Master's studies or other study stays at Bavarian public universities. The scholarships are granted for one academic year and can be further extended based on an application, at most twice (i.e. three years in total). The deadline for submitting applications for academic year 2021/2022 was on the 1 December 2020. The deadline for applications for academic year 2022/2023 is expected in December 2021.

Master's and PhD's degree students of biochemistry and molecular biology can apply for the [FEBS Summer](#) fellowship and spend up to four months (July–October) on internship at a research institution within the area of FEBS countries. The next deadline for submission of applications is expected in April 2021. Find an excellent foreign mentor already today and plan your summer internship in advance.

The South Korea invites foreign students through [Kangnam University Scholarship Program](#) to study a 4-year Bachelor's degree course, 2-year Master's course and 3-year PhD's course at some of the South Korean universities. The deadline for applications in 2021 has not been announced yet, but it will be published on the [Embassy's website](#).

If you're a student of the first year of your Master's degree and you're more interested in getting practical experience from the operation of a technological company, we recommend checking the [Vulcanus Japan](#) training program. Japanese companies offer European students a fully paid 1-year training. The next internships will take place from 1 September 2021 to 31 August 2022. It is necessary to submit the application by 20 January 2021.

Bachelor's degree students of German universities can apply for the [DAAD RISE Worldwide](#) program and travel for a summer internship in the length from six weeks to three months to any of the 48 countries, including the Czech Republic. The research internships take place every year from June to October. How many Czech mentors have been visited by German students?

Currently, the Czech Republic has a very limited number of programs supporting studies of foreign students at the Bachelor's, Master's and PhD's degree studies at the Czech universities. [The government scholarship program](#) for academic year 2021/2022 can be used only by students of Bosnia and Herzegovina, Ethiopia, Georgia, Cambodia, Moldova, Ukraine and Zambia. We recommend creating a national program for attracting foreign students to the Czech Republic. The arrival of creative minds from abroad will raise the quality of students and studies as well. Let's open the Czech Republic to the world!

GRANTS

[Student Grant Agency \(SGA\)](#) of the Faculty of Science of University of South Bohemia in České Budějovice every year provides funding for research projects of the Bachelor's and Master's degree students. In 2020 it supported 13 students. The next deadline for applications is expected at the beginning of December 2021.

COMPETITIONS

[Werner von Siemens Award for the best diploma thesis](#) in the fields of IT, technology, medicine or natural sciences. The main criteria for evaluation of the submitted theses is, above all, the professional quality of the papers and their contribution to the current state of knowledge. The three best projects receive a financial reward in the amount of CZK 100,000, CZK 60,000 and CZK 40,000. The next deadline for applications is expected to be on 30 November 2021.

University students enjoy science. [FameLab – Talking Science](#) is nowadays one of the most important competitions in science popularisation worldwide. FameLab aims to discover new scientists who can inspire other people to see the world from a different perspective. Can you explain a concept in mathematics, natural sciences or technology in three minutes with using only the props you bring with you? The competition is dedicated to university students of scientific disciplines, mathematics or technical field (21 years and older) and researchers working in basic or applied research. In the Czech Republic, the competition is organised by the British Council. The applications can be submitted during February 2021. The Czech national finals of FameLab take place in May 2021, the international finals a month later in Cheltenham, the United Kingdom.

A unique opportunity to take a sneak peek at the current science and research is offered by the [Science slam](#). It is a special format popularising science where scientists talk about themselves and their work in a simple and funny way. The participants compete among themselves for popularity among the audience, they try to win their votes with a simple idea, enthusiasm for science, originality and an amusing approach to their speech. The researchers become actors for a while and in short time they try to present the most interesting facts from their research. The goal of the performance is, above all, to entertain, inform and present science in a different perspective. Students, employees and graduates of any Brno university can participate.

Rectors of the Czech public universities in Prague, rector of Brno University of Technology, President of the Czech Academy of Science and the Managing Director of the Institute of Clinical and Experimental Medicine in Prague nominate talented students in Bachelor's, Master's and PhD's degree studies and young scientific workers at the Czech Academy of Science who have proven exceptional skills and creative thinking within their field for [Josef Hlávka Award](#). Each award winner receives a contribution from the foundation in the amount of CZK 25,000.

INSPIRATION: **EVA BRICHTOVÁ**

After her graduation from the Secondary Grammar School in Sokolov, **Eva Brichtová** completed her Bachelor's degree studies at the University of Chemistry and Technology Prague. Krsek Foundation **scholarship** (2018) and Bakala Foundation **scholarship** (2018) enabled her to continue with her Master's degree studies of chemistry at the University of Cambridge in the United Kingdom. Currently, Eva continues her PhD studies at the **University of Cambridge** in the **Dr. Sophie Jackson's lab**.



Photography: Eva Brichtová's archive

What are your scientific plans? Where would you like to live and work?

I would like to stay in the academic sphere and dedicate myself to research, or maybe in part to teaching. In the end, I would love to get back to the Czech Republic, above all, because of my family, but I can imagine living in, for example, Germany, if the work conditions are better there.

Which scientific questions would you like to address?

I am not completely sure about the exact topic of my future research, but I would like to address imaging and studies of biochemical processes at molecular level, for instance interactions between medications and body receptors, mechanisms of cell signalisation and immunity response etc.

What made you go to study abroad? Why did you choose the University of Cambridge?

The selection of the University of Cambridge was mine and my partner's common decision, since he is also involved in science. Therefore, we have been searching for a place where we could study/work together, and we agreed on the University of Cambridge. During my Bachelor's degree studies at the University of Chemistry and Technology Prague (and partially, also during my secondary school studies) I had the opportunity to participate in research at IOCB Prague in Prof. Petr Bouř Group, which was a priceless experience and possibility for me to get involved in a scientific environment very early. I found out that studies/experience from abroad is very highly appreciated in the scientific environment and nowadays constitute almost an indispensable part of the scientific career.

Would you be able to study abroad without scholarships received from the foundations?

The scholarships from Krsek Foundation and Bakala Foundation which supported my Master's degree studies were very important decisive factors. Their obtaining provided me not only with the financial security, but also the self-confidence to be able to study at the University of Cambridge. If I had failed to get them, I would have probably tried to fund my studies with a student loan from the British government, but everything would have been much more complicated.

How did the studies abroad benefit you, how did it help you with your further professional development?

The studies abroad taught me to not fear asking questions or argue in discussion, and generally, it provides me (in addition to facts) with better communication skills and ability to cooperate with people from my field as well as across departments, which is sometimes more important than you would think in the first place.

Would you recommend current secondary school and university students studying abroad and why?

I would definitely recommend studying abroad. It is a valuable experience providing access to a lot of new opportunities. Nevertheless, I don't think that studies abroad are necessarily in all respects better than studies in the Czech Republic. The Bachelor's degree studies of chemistry at the University of Chemistry and Technology Prague gave me a good foundation. On the other hand, the diversity of approaches and experiences you receive abroad can greatly enrich you.

INSPIRATION: JAN BLAHA

Jan Blaha graduated from the Secondary Grammar School in Přelouč in 2018. Thanks to the Bakala Foundation scholarship (2018) and the Kellner Foundation scholarship (2018) he started to study a 3-year program Biological Sciences at the University College London in the United Kingdom. Later he switched to a 4-year program Biological Sciences: Computational Biology integrating Bachelor's and Master's degrees into one course. He is planning to complete his Bachelor's degree in 2022.



Photography: Jan Blaha's archive

What made you go to study abroad?

I started to consider studying abroad at the secondary school thanks to my mentors from the IOCB Prague. Over time, this surreal idea began to transform into a realistic plan.

Why did you choose the University College London (UCL)?

I applied for studies at various schools in the United Kingdom and the USA because of the positive experiences of other students and their reputation. I then chose UCL because it is a university that met most of my criteria – for instance, I wanted to stay in a big city and study an attractive subject.

Would you be able to study abroad without the scholarships received from the foundations?

My studying at the UCL is possible only thanks to the support of the Bakala Foundation and the Kellner Family Foundation. Without their scholarships, I wouldn't be able to pay for my studies abroad.

What do you appreciate the most about studying abroad?

I appreciate studying at the UCL for many reasons. The obvious one is a level of education which I receive from the best people in my field. Equally important is the local student community which is a mixture of people from all around the world, therefore a person's perspective of the world changes, but one also creates a network of friendships all around the world. Universities as UCL (where 30% students come from abroad) can be compared to big airport hubs where people from all around the world come to one place, during their transfer for the next flight they meet other passengers and then fly to other destinations (if their travel does not finish here). Thanks to that, much of a competition among people does not arise there, a willingness to help and support each other is more common. In my opinion it is hard to create such environment at local universities where, after they graduate, a lot of students (especially in science) will compete and fight each other for a limited number of positions.

Would you recommend current secondary school and university students studying abroad and why?

Studying abroad – far away from your home and old friends – is not for everyone, therefore, it strongly depends on each student's own personality. Personally, I can say I do not regret my decision and I wouldn't change my decision to study at the UCL. I believe that if somebody feels intrigued by studying abroad, it is worth at least to give it a try.

What are your scientific plans? Which scientific questions would you like to address?

At the moment, my scientific plans are very uncertain. I am planning to continue with my doctor's degree studies in bioinformatics and computational biology and probably stay involved in this field after that. I am interested in questions about the central dogma (replication, transcription and translation), above all, from the molecular and biochemical point of view.

Where would you like to live and work?

I am planning to stay in the United Kingdom for now, but I believe that my future place of residence will depend on job and research offers (if we're talking about countries with a relatively cold climate, since I hate warm weather).

INSPIRATION: **KATEŘINA VACKOVÁ**

*Kateřina Vacková studied at the First Faculty of Medicine of Charles University in Prague. During her studies, she used the Erasmus program for internships in Vienna and in Porto. Thanks to the Bakala Foundation **scholarship** (2016) she spent a year studying at **Harvard Medical School** in Boston. When she was 22, after her own experience with cancer, she founded a non-profit organisation **Loono**. Today she manages a team of more than 150 people in 8 cities across the Czech Republic. They have managed to train more than 100 thousands of people in the area of cancer prevention.*



Photography: Oldřich Hrb

What made you go to study abroad? Why did you choose Harvard Medical School?

I was inspired to submit my application to Harvard Medical School (HMS) by young entrepreneurs at the world's conference of Forbes – 30 under 30 which took place in Israel in 2016. When I told them my story about cancer and subsequent establishment and success of the Loono organisation, they told me unanimously: "You would be a perfect fit for HMS". Back then, I already studied in the fifth year of my university and the only option was to apply for a clinical internship for students of the last years of medical schools. Therefore, I improved my English from B1 to C1 level in 8 months, passed the TOEFL exam with 100+ points, wrote an essay, got all necessary vaccinations and recommendation letters and prepared for my interview.

Would you be able to study abroad without the foundation scholarship?

Without the Bakala Foundation scholarship and support of my patron, Marek Sacha, I wouldn't be able to even visit Harvard.

How did the studies abroad benefit you, how did it help you with your further professional development?

The internship in Boston helped me to peek into work of the world's best people in the field of medicine. Imagine that you ride an escalator and you pass by Bohdan Pomahač, the Czech surgeon who performed a face transplantation as the first person ever. Or you attend a morning class and Susan Block, one of the founders of palliative care, is giving a lecture. It was amazing! Accordingly, I had the opportunity to find out what truly means multidisciplinary approach in oncology. In my team, apart from doctors and nurses, there was a nutrition therapist, a social worker, a psychotherapist and a priest. Sometimes I panicked a bit, but those few months resulted in my incredible personal growth.

Would you recommend current secondary school and university students studying abroad and why?

I definitely recommend a foreign internship and utilizing this whole time as much as you can. When else will you get the chance to meet so many amazing people, friends, to learn so many things about the world as well as yourself, to travel, to taste, to think. The time abroad is a great opportunity to realise what you want to do after school, what is your journey and your mission. After the internship, stay in contact with the people you met. You never know, when your paths will cross again.

Nowadays you run a non-profit organisation called Loono that operates in eight Czech cities. What are your professional plans? What would you like to do as a doctor?

Loono aims to prevent cancer and other frequent and underestimated deceases. A prevention of cardiovascular disease, which is the most frequent cause of death in the Czech Republic, is very important. A campaign "You live by your heart" was created for them. Our big topic is a reproductive health which falls under a campaign "It's good down there". The demand for non-preventive health issues is growing, so that's why we started to give lectures on topics of contraception methods or menstruation, and within panel discussions called "The truth about" we contradict various myths about infertility, vaccinations, stress and other subjects. Now we want to dive into prevention of addictions such as smoking, alcohol, drugs or healthy teeth and mental health. Step by step, Loono establishes subsidiaries in other cities.



PART 3: PHD STUDENTS

The third part sums up the opportunities of PhD students. It is absolutely essential to choose the right topic, institution and a supervisor. An integral part of the professional development of PhD students are short-term and long-term research fellowships abroad. There is a number of fellowship programs available. PhD students have the first option to obtain their own grant. Get inspired by the stories of Šárka Boháčová or Zdeněk Farka.

Don't underestimate the selection of your PhD supervisor. Don't hesitate to find out references from current or former students. Supervisors, on the other hand, do check your references. We recommend selecting, as your mentor, a scientist who works on their own research grants, employs students on a full-time basis, dedicates his/her time to students, regularly meets them and consults with them, helps students prepare a strong curriculum vitae, motivates them to apply for scholarship and grants, has international cooperation, supports international student mobility and their participation at workshops and conferences, and who can praise him/herself with his/her former students' success.

The internet will help you in your search for the right mentor and institution for your PhD studies. Try to search for "PhD school" or "PhD program" in life sciences. Such schools or programs guarantee scientific excellence through selecting the best students, aiming for their professional development and fair relationships between students and supervisors. Each year the students receive feedback from a committee of professionals, so they are not dependent on the (ill) will of one person. PhD schools are common abroad, for instance the [International Max Planck Research Schools \(IMPRS\)](#), the [Vienna Biocenter PhD Programme](#), [Life Sciences PhD School Geneva](#), the [Life Science Zurich Graduate School](#), the [Graduate School of Life Sciences \(GSLs\) Würzburg](#), the overview of available PhD schools can be also found [here](#). In the Czech Republic, there is only the [CEITEC PhD School – Life Sciences and Molecular Medicine](#) and the [PhD program at IOCB Prague](#).

From the point of view of career development, during PhD studies, it is important to focus on individual fellowships, mobility grants and competitions. With the approximation of graduation from the PhD studies, you should start searching for postdoctoral positions away from your alma mater (see the next part of our series).

FELLOWSHIPS

Try doctoral studies abroad. The offer of open PhD positions can be found on www.findaphd.com or www.phdportal.com. [France](#), [Germany](#), [United Kingdom](#), [Netherlands](#), [Denmark](#), [Sweden](#) and [New Zealand](#) are very active in their offer of PhD studies. A guide on PhD studies in Germany can be found [here](#). Attractive positions funded by Marie-Skłodowska Curie (MSCA) – MSCA Innovative Training Networks (Doctoral Networks in the future) and MSCA COFUND are always published on [EURAXESS Jobs](#) portal. The MSCA ITN represents a doctoral project integrated into an international network of collaborating supervisors with an abundant program for the development of scientific skills across disciplines, as well as various soft skills important for the career in academic and industrial research. Doctoral positions in the MSCA projects are for three years and count with a full-time employment with "gross" salary and a mobility contribution in the amount of approximately EUR 3,800 monthly (differs based on the destination country). The doctoral programs financed by the MSCA COFUND have similar conditions.

Students enrolled at Czech universities can apply for a fellowship of the French government for **doctoral studies with a double supervision: [Barrande Fellowship Program](#)**. The doctoral studies are realised concurrently at Czech and French universities. A fellowship in the amount of EUR 1,060 per month is granted for the maximum of 3 years and the student must spend at least 5 months in France every year. After graduation, the student receives a diploma from both involved universities. The deadline for submitting applications for academic year 2021/2022 is 26 February 2021. The applications are processed by the French Institute in Prague.

For a 12-month doctoral research stay in France, it is possible to use the [Eiffel Scholarship Program of Excellence](#). The deadline for applications for academic year 2021/2022 is on 8 January 2021. PhD students under 30 years of age can participate. The amount of scholarship is EUR 1,400 per month. The French government funds also short-term 1- to 3-month [research internships](#) of PhD students. The next deadline for submitting applications is on February 2021, the monthly amount of scholarship is EUR 1,060.

Through the DAAD program, Germany funds two-year scholarships in the amount of EUR 1,200 per month dedicated to **doctoral studies with a double supervision** at Czech and German universities. The scholarship covers living costs in the form of allowance, contribution for a return flight ticket, basic health insurance, and for long-term stays a contribution for research as well. Online applications must be submitted before 16 November 2021 (for short-term stays also before 30 April 2021). The support is provided by the Czech National Agency for International Education and Research – [Academic Information Agency](#).

[Kangnam University Scholarship Program](#) can be used for a 3-year PhD course in South Korea. The deadline for submitting applications for 2021 is yet unknown, it will be published on the [embassy](#) 's website.

One academic year (4–9 months) can be spent at a research internship in the USA thanks to the [Fulbright scholarship for postgradual studies](#). The scholarship covers living costs in the form of allowance, contribution

for a return flight ticket, basic health insurance and tuition up to a maximum of USD 15,000. Online applications in the category of “Visiting student researcher” can be submitted by two deadlines each year: 1 February and 1 September.

The easiest possibility of traveling abroad to try living in a foreign European country is the **Erasmus+** program. All Czech universities are enrolled in the program. Each university announces their own application deadlines. With this program, you can stay abroad for 2–12 months. Students receive financial means from their universities to cover their living costs in the amount of EUR 480–660 per month, depending on the particular country. The success rate of applicants is almost 100 %.

PhD students in biochemistry and molecular biology can spend up to four months (July to October) on internship at a research institution in one of the FEBS countries with the **FEBS Summer** fellowship. The next deadline for submission of applications is expected in April 2021. Šárka Boháčová has a recent experience with the FEBS Summer Fellowship (you can read it [here](#)). PhD students in life sciences can throughout the year apply for the **EMBO Short-Term Fellowship** dedicated to short-term internships of 7–90 days. The success rate of applicants is around 50 %; applicants receive the project evaluation results within three months after submitting their application.

JSPS Postdoctoral Short-Term Fellowship (PE) funds 1- to 12-month research internships of PhD students in Japan. Every academic year there are three deadlines for applications, currently 2 October 2020, 15 January 2021 and 4 June 2021. In each round 20 [fellowships](#) in the amount of JPY 200 thousand per month per student are awarded. The success rate of applications is 20–25 %.

GRANTS

PhD students can obtain their first experience with preparation and submitting of their own grant application. All Czech universities in life sciences have their internal grant agencies and each year, they announce grant competitions: [Czech University of Life Sciences Prague](#), [University of South Bohemia in České Budějovice](#), [Masaryk University](#), [Mendel University](#), University of Ostrava, University of Hradec Králové, [Jan Evangelista Purkyně University in Ústí nad Labem](#), [Charles University](#), [Palacký University Olomouc](#), [University of Pardubice](#), [University of Chemistry and Technology Prague](#).

Over the past years, there was a big interest of PhD students in the **ZETA programme** of the Technology Agency of the Czech Republic (TACR) supporting young researchers in their innovation activities. Zdeněk Farka from Masaryk University is one of the successful scientists (he describes his experience [here](#)). The project proposal must contribute to involvement of students and young researchers and workers in research and development activities aimed at the use of results in practise and raise their interest in projects with a specific applied impact. So far, four competitions were realised, the last deadline was in November 2019. In the future similar challenges will be announced as TACR SIGMA programme (currently under preparation).

COMPETITIONS

Werner von Siemens Award for the best diploma thesis in the fields of IT, technology, medicine or natural sciences. The main criteria for evaluation of the submitted theses is, above all, the professional quality of the submitted papers and a contribution to the current state of knowledge. The three best projects receive a financial reward in the amount of CZK 100,000, CZK 60,000 and CZK 40,000, respectively. The next deadline for the submission of applications for this competition is expected to be on 30 November 2021.

Each year, the Embassy of France in Prague awards the best young scientists under 33 years from Czech universities and research institutions. **Albert Schweitzer's Award** for medicine, **Jean-Marie Lehn's Award** for chemistry, **Sanofi Award** for pharmacy and **Make our planet great again Award** for environmental and climatic research are available. The three best contestants receive a financial reward in the amount of CZK 65,000, CZK 40,000 and CZK 25,000 in the form of a cheque awarded by the respective sponsor company. Above that, the Embassy of France in Prague awards the first two winners with a scholarship for a 1-month internship in a French laboratory of their choice. Students will be nominated for the competition by research organisations during March 2021.

Česká hlava Doctorandus Prize for Natural Sciences is an award for innovative approach, the most outstanding work, professional or scientific activities of PhD students of mathematics, physics, chemistry, biology and medicine. The conditions include Czech citizenship and graduation from PhD studies no more than 18 months before the deadline for submitting applications (June 2021). The laureate receives a financial reward of CZK 50,000.

Rectors of the Czech public universities in Prague, rector of Brno University of Technology, President of the Czech Academy of Science and the Managing Director of the Institute for Clinical and Experimental Medicine in Prague nominate talented students in PhD's degree studies and young researchers of the Czech Academy of Science for Josef Hlávka Award. The nominated students have proven exceptional skills and creative thinking within their field. Each award winner receives a contribution from the foundation in the amount of CZK 25,000. The expected deadline for submitting applications is in June 2021.

Shimadzu prize for young chemists and biologists is a competition of the best submitted works in chemistry involving the use of instrumental analysis. The reward is a financial bonus for the three best works in the amount of EUR 1,000, EUR

600 and EUR 300. Young researchers under 34 years can compete. The expected deadline for submitting applications is in May 2021.

University students enjoy science. **FameLab – Talking Science** is nowadays one of the most important competitions in science popularisation worldwide. FameLab aims to discover new scientists who can inspire other people to see the world from a different perspective. Can you explain a concept in mathematics, natural sciences or technology in three minutes with using only the props you bring with you? The competition is dedicated to university students of scientific disciplines, mathematics or technical field (21 years and older) and researchers working in basic or applied research. In the Czech Republic, the competition is organised by the British Council. The applications can be submitted during February 2021. The Czech national finals of FameLab take place in May 2021, the international finals a month later in Cheltenham, the United Kingdom.

A unique opportunity to take a sneak peek at the current science and research is offered by the **Science slam**. It is a special format popularising science where scientists talk about themselves and their work in a simple and funny way. The participants compete among themselves for popularity among the audience, they try to win their votes with a simple idea, enthusiasm for science, originality and an amusing approach to their speech. The researchers become actors for a while and in short time they try to present the most interesting facts from their research. The goal of the performance is, above all, to entertain, inform and present science in a different perspective. Students, employees and graduates of any Brno university can participate

INSPIRATION: ŠÁRKA BOHÁČOVÁ ON FEBS SUMMER FELLOWSHIP

*Šárka Boháčová is a PhD student at the Faculty of Science of Charles University. She works in Kvido Stříšovský's team at the IOCB Prague. Thanks to the **FEBS Summer**, she completed a 10-week research internship at the laboratory of **Prof. David Stephens** at the University of Bristol in the United Kingdom.*



Photography: Michal Hoskovec, IOCB Prague

Was it difficult to find a foreign mentor and apply for the FEBS Summer Fellowship?

Finding a mentor in a foreign laboratory was not difficult at all. Maybe I was lucky, but professor David Stephens was the first person I approached. He was excited about the possibility of our cooperation and after I presented my project to him, he immediately agreed. Sufficiently elaborate project you want to take abroad and your approach certainly play a big role. If you show ambition and interest, only a few will reject you. In my own application for the FEBS fellowship, my mentor Kvido Stříšovský was a great support. Overall, the process of applying for the FEBS fellowship is not complicated. Everything can be clearly reviewed in the online application. However, it is useful to ask more experienced colleagues what should be included in the curriculum vitae, what is the best way to phrase the application itself etc.

Was the FEBS fellowship sufficient to cover all your living and research costs? How did you fund the remaining costs of your business trip?

The FEBS fellowship covered most of my living and travel costs. Fellowship funds are not intended for research, so the host laboratory cannot ask you to pay any financial compensation. My employer provides meal allowances, which also helped me with financing my business trip.

How did the internship abroad enrich you? How did it help you in your further professional growth?

The internship enriched me in many ways. It helped me in my language skills – I stopped being afraid to speak English, because I found out that many accents of some nations are even worse. Overall, you are forced to speak, write, understand and the improvement is obvious. The internship also greatly enriched me culturally and socially. I am still in touch with the people I met there. Living as a foreigner will teach you that it doesn't matter what your nationality or religion is. I have lost a lot of prejudices. They have been replaced by an effort to understand and I am very happy about that. Personally, I think that if everyone spent at least three months abroad alone, the racial hatred would disappear. In addition, during the research I met a lot of skilled people. In Professor Stephens' laboratory I learned to work with various microscopes and to prepare high-quality microscopic samples. I still benefit from the experience I have gained.

Would you recommend such an internship abroad to PhD students? Why?

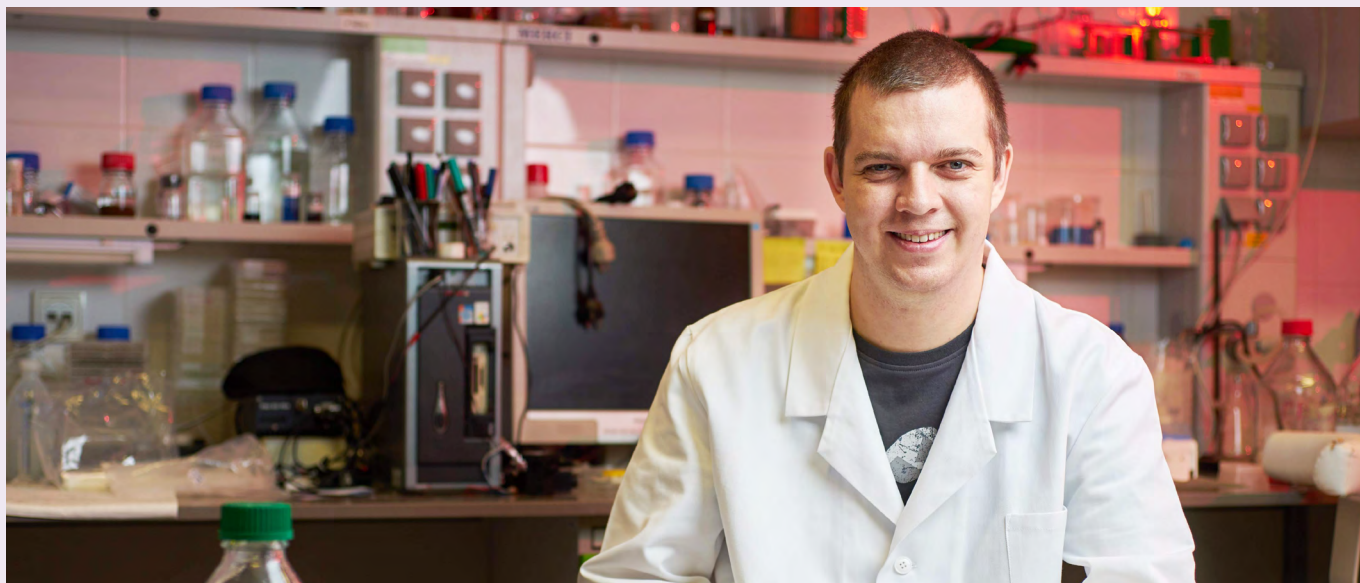
I would definitely recommend an internship abroad to every PhD student. Especially if you have not been to one yet or if you would like to learn a technique that no one in your laboratory does. It is much better to observe someone at work than to try to gain knowledge by reading articles. It is useless to invent something that has already been invented.

What are your next research plans?

Currently, my goal is to finish my PhD studies and create a high-quality publication. I would like to go on a short-term internship abroad as a part of my doctorate, if the opportunity arises. Then I plan postgraduate studies abroad, but after that I would like to return to the Czech Republic. Whether I return as a researcher, a journal editor, a head of a laboratory or a teacher is yet unknown.

INSPIRATION: ZDENĚK FARKA ON TAČR ZÉTA PROGRAMME

Zdeněk Farka applied for the TAČR Zéta grant during his PhD studies at Masaryk University at CEITEC PhD School. The project "Immunoassay for the diagnosis of European foul brood", prepared in cooperation with the company BCT Technologies, a.s. succeeded in the evaluation and was funded by the amount of CZK 2.7 million. Zdeněk completed internships at the University of Regensburg in Germany and the University of Rouen in France. Nowadays he works as an assistant professor at the Department of Biochemistry at the Faculty of Science, Masaryk University.



Photography: Zdeněk Farka's archive

What motivated you as a doctoral student to apply for your own grant?

My main motivation for submitting the project was, of course, funding. Although our department had enough money to carry out research, my own junior grant allowed me to work on my own project, become partially independent and also to involve some of my colleagues into the research.

Was it difficult for you to find a partner and to prepare and submit the project application for TAČR ZÉTA Programme?

Due to the fact that the cooperating company has to pay for the research from their own money, the arrangement with a commercial partner is one of the most difficult steps in submitting the project. In our case, fortunately, we could benefit from the long-term cooperation between our workgroup and the BVT company. This considerably facilitated the negotiations. The TAČR ZÉTA project application is relatively short and simple compared to a number of other project schemes. I have to appreciate the significant help of Assoc. Prof. Petr Skládal, the leader of my dissertation thesis, and the Grant Office at CEITEC Masaryk University. Submitting a project would have undoubtedly been much more difficult without them.

What was the benefit of working on an applied project?

TAČR ZÉTA was my first major autonomous project. First of all, this project gave me a completely different point of view on the research itself. In addition to the current responsibility for the proposal of experiments and achieved results, I was now responsible for managing a small team, negotiating with the partner, ordering materials and writing reports. For me, the project was a "tasting" of an independent scientific career with all its benefits (especially independence) and duties (high level of responsibility).

What is the benefit of TAČR ZÉTA Programme for young researchers? Should this program continue and why?

I would like to emphasize the relatively reasonable level of administrative duties from the part of TAČR. Forms for the interim and final reports are clear and not excessively long. This allows you to focus primarily on the research itself. The result of our project is a portable device that detects European foul brood from a sample of debris, bees, or larvae. The main reason why this program should definitely continue is the opportunity to work independently on your own topic and the opportunity to get acquainted with all aspects of project management. By the way, this is also the main reason why I would recommend my colleagues to sign up for this programme.

What are your research plans? What research questions would you like to address?

I would definitely like to continue to focus on the development of biosensors and other types of immunochemical assessment methods. We are currently dealing with brands based on so-called photons of upconversion nanoparticles. These nanoparticles show anti-Stokes luminescence and after an excitation by two photons in the infrared region of the spectrum, they emit one photon in the visible area. Compared to conventional fluorescent marks, this enables to reduce the influence of the optical background and thus achieve a higher sensitivity. We have already successfully applied this pattern for the detection of a number of analytes (eg. the drug Diclofenac or the prostate cancer marker PSA) as well as tissue labeling (breast cancer), but the detection still requires a special laboratory reader. In the near future we want to miniaturise the device into an immunochromatographic strip format (similar to a pregnancy test). We would also like to develop a portable reader, which could lead to a gradual expansion of the method from research laboratories to clinical practice.



PART 4: JUNIOR POSTDOCS

What awaits young researchers after the completion of their PhD study? The fourth part of our series brings advice to junior postdocs. The only way to succeed in science today is researchers' mobility. Without a long-term international experience, it is almost impossible to receive a research grant and, therefore, reach own scientific independence.

Successful defense of the doctor's thesis and the day of obtaining a PhD title are an essential milestone in the professional career of each researcher. On the "D-day", time starts running – the days, months and years since the completion of the PhD studies are counted relentlessly. Upon obtaining the PhD title, a limited time slot opens, during which it is possible to apply for fellowships and grants. Should the applicant fail to submit the application within the limited time window, the possibility of receiving the financial support of the given program is lost forever.

Thus, it is necessary to have a clear idea of your further work well before the completion of your PhD studies. If you want to continue with your scientific career, it is necessary to start in a sufficient advance looking for and arranging an excellent research group and mentor for your postdoctoral work abroad. You need to become scientifically independent on your PhD tutor. You need to experience the working environment of a different institution. You need to expand your expertise and knowledge. You need to become a part of the international scientific community. You need to establish contacts and cooperation. You need to have enough time to complete research projects and formulate your own research topic. The time flies by incredibly. Half a year seems like nothing. You are just starting to find your ways in the new environment. Expect at least 2–5 years to start and complete a research project. You will only make the most of your work with high-quality publications. The outputs and experience gained from your work will move you further.

There is constantly a high demand for smart postdocs. You can follow the offer of vacancies at [Euraxess](#), [ResearchGate](#), [Nature Jobs](#), [GERiT](#), [NIH](#), [Academic Positions](#), [University Positions](#). The advertised positions are usually available immediately.

You do not have to wait for the opening of a position with a suitable topic that you want to address in your research. It is much better to find a mentor yourself and actively contact them with an application for a postdoc position in their team. Your PhD tutor or a senior colleague in the given field may assist you in the selection of a suitable laboratory and mentor. Be prepared that you will have to obtain a fellowship for your dream postdoc position.

FELLOWSHIPS

The best quality and strongest applications usually result from close cooperation between postdocs and their mentors. The sooner you start to arrange your postdoctoral internship and to formulate your research project, the better, more thoughtful, readable and attractive your final application will be and the higher your chances to succeed in tough international competition. The success rate of applicants for postdoctoral fellowships ranges between 3 % and 25 %. It is not uncommon that the preparation and "ripening" of a project application may take as long as a whole year. Do not underestimate the preparation of your application. The competition is enormous. The key to success is to start in time and well in advance.

The most prestigious and best funded European fellowship is the **MSCA Individual Fellowship** (MSCA IF in Horizon 2020 in the years 2014–2020 has been renamed to MSCA Postdoctoral Fellowship in Horizon Europe for the years 2021–2027). As a part of your professional development, you should definitely try to prepare and submit an MSCA project. **European Fellowship** allows a stay of 1–2 years anywhere in Europe. **Global Fellowship** finances 2-year stays outside the EU with a 1-year return stage to the sending institution. So far, this fellowship has not been restricted in terms of age, but a limit of 8 years after the obtaining of PhD is expected to be introduced in the Horizon Europe program. MSCA scholarship covers personal costs (salaries and taxes) in the amount of EUR 5,080 per month (this differs depending on the target country; if the applicant takes care of a child, they can have a reduced FTE), EUR 600 per month as a contribution for mobility, EUR 660 per month as a family contribution, EUR 1,000 per month as a research subsidy and EUR 650 per month as a subsidy for administration and indirect costs. The success rate of applicants is 13 %. The most recent deadline for submitting applications was on 9 September 2020. The next call will be announced on 15 April 2021, with the application submission deadline on 15 September 2021. Projects will be able to start between 1 March 2022 and 1 September 2022. Lenka Gahurová writes about her experience with MSCA IF and balancing her research and family life – read [here](#).

We recommend postdocs within 4 years after obtaining their PhD who want to carry out a highly innovative research applying for the **HFSP Postdoctoral Fellowship**. This program finances 2- to 3-year high-risk projects. The most recent deadline for submitting applications was on 13 August 2020 and the deadline of the next round of the project selection will be in August 2021. 80 fellowships are granted each year, the success rate of applicants is around 16 %.

With a one-year delay, the [Czech Science Foundation](#) (GAČR) is going to announce a new program GAČR POSTDOC INDIVIDUAL FELLOWSHIP in spring 2021. This program is intended for postdocs within 4 years after obtaining their PhD for the implementation of 2-year international research internships or for the implementation of 3-year stays of postdocs with international experience at Czech research institutions. The planned budget for three-year programs is

CZK 3 million per year. The financing of 40 projects per year is expected. This new program will be introduced in detail in a separate article after the guidelines for 2021 are announced.

The **EMBO Postdoctoral Fellowship** for 1- to 2-year research projects is available to postdocs specializing in biochemistry and molecular biology within 2 years after obtaining their PhD. There are two deadlines for submitting applications each year: on the second Friday in February (12 February 2021) with the internship commencement on 1 July 2021 and on the second Friday in August (13 August 2021) with the internship commencement on 1 January 2022. 140 fellowships are granted each year, with the success rate of applicants being 15 %. Thanks to the EMBO Postdoctoral Fellowship, Iva Mozgová had a chance to spend 2 years in the Lars Hennig laboratory in Uppsala, Sweden. She describes her experience [here](#).

FEBS Long-Term Fellowship is intended for postdocs specializing in biochemistry and molecular biology within 3 years after obtaining their PhD who are members of professional organizations associated in **FEBS**. The fellowship is granted for one year, with a possibility of extension to two years. The most recent deadline for submitting applications was on 1 September 2020, the next round will take place during summer 2021.

Fellowships for international internships granted by **Experientia Foundation** support 1-year stays of Czech researchers under 35 years of age specializing in organic, bioorganic and medicinal chemistry. The deadline for submitting applications is on 15 March each year, the selected recipients are announced by the end of June of the given year. Experientia Foundation financed, for example, a 1-year internship of Tomáš Slanina from Masaryk University in the group of prof. Alexander Heckel at Goethe Universität Frankfurt am Main in Germany. For more details, read [here](#).

Belgium offers **Wallonie Long-Term Scholarship** for postdocs in life sciences within 9 years after obtaining their PhD. A scholarship of EUR 2,120 per month is granted for one year, with a possibility of extension for two years. The scholarship covers the costs of living, accommodation and travels within Belgium. The deadline for submitting applications is on 1 March 2021, the results of evaluation will be announced by 15 July 2021. The internship must commence as of 1 October 2021.

Germany is open for foreign postdocs within 4 years after obtaining their PhD through the **Humboldt Research Fellowship**. The monthly scholarship of EUR 2,670 is granted for a period of 6–24 months. Applications may be submitted during the course of the whole year and are evaluated three times a year – in March, July and November. The success rate of applicants is 25 %. All the fellowship recipients are subsequently included in the life-long program **Humboldtians**. One of them is Hana Macíčková Cahová from the IOCB Prague who spent two years at the fellowship in Germany. For inspiration, read [here](#).

Switzerland is open for postdocs within 2 years after obtaining their PhD through the **ETH Zurich Postdoctoral Fellowship**. The success rate of applicants for the fellowship in the amount of CHF 207,200 for 2 years ranges between 25 and 30 %. There are two deadlines for submission of applications each year, the nearest are planned for 1 March 2021 and 1 September 2021. 28 new ETH fellowship recipients are expected in 2021.

The **United Kingdom** attracts postdocs within 7 years after obtaining their PhD by means of **Newton International Fellowship**. The fellowship of GBP 99,000 is intended for a 2-year research internship. A new round will be opened in January 2021. The deadline for submitting applications can be expected at the end of March 2021.

Other countries are also worth mentioning. **Canada** grants 70 fellowships through the **Banting Postdoctoral Fellowship** each year to foreign postdocs within 3 years after obtaining their PhD. The fellowships are for two years, in the amount of CAD 70,000 per year. The most recent deadline for submitting applications was on 1 October 2020, the next one is expected in autumn 2021.

Japan offers several programs for foreign postdocs. **JSPS Postdoctoral Fellowship for Research in Japan Standard Program** (P) is intended for foreign postdocs within 6 years after obtaining their PhD for 1- to 2-year research stay. There are two deadlines for submitting applications each year: in September and in May. On 4 September 2020, applications were closed for internships commencing between 1 April and 30 September 2021, the deadline for internships commencing between 1 September and 30 November 2021 will be on Friday, 7 May 2021. The next deadline is planned in September 2021 for internships taking place in 2022. 115 best applicants succeed each year, the success rate is 10 %. **JSPS Postdoctoral Short-Term Fellowship (PE)** finances 1- to 12-month research internships of postdocs and PhD students. There are three deadlines for submission of applications each year, the current ones are on 2 October 2020, 15 January 2021 and 4 June 2021. There are 20 [fellowships](#) granted each year in the amount of JPY 362,000 per month for each postdoc. The success rate of applications is 20–25 %. **Canon Research Fellowship** supports 3- to 12- months internships for 15 recipients each year. Applications may be filed by postdocs within 10 years after obtaining of their PhD. The nearest deadline for filing applications is 15 February 2021. The success rate of applicants is 10 %. **Matsumae Fellowship** allows covering a 3- to 6-month internship of a postdoc and researcher under 49 years of age in Japan. The most recent deadline for submitting applications was on 30 June 2020, the next one is expected in June 2021.

Internships in research institutions in the **USA** attract a lot of interest. It is possible to spend one academic year (3–10 months) at a research internship in the USA with the **Fulbright Scholarship for Researchers and Scholars** or with the **Fulbright-Masaryk Scholarship**. The scholarship covers living costs, contribution to return flight ticket, basic health care insurance and contribution to research and further professional development. The grant also includes minor contributions for family members. Online applications are submitted by 1 November each year. The deadline on 1 November 2021 is intended for internships taking place in the academic year of 2022/2023. The success rate of Czech applicants is 25 %.

The **[Life Sciences Research Foundation Fellowship](#)** is highly competitive (success rate of 3 %). Applications for the 3-year support in the amount of USD 186,000 can be filed by postdocs in life sciences within 5 years after obtaining their PhD. The most recent deadline for submission of applications was on 10 October 2020. 18–25 fellowships are granted each year.

The **[Charles A. King Trust Postdoctoral Research Fellowship Program](#)** supports medical projects bringing understanding and improvement of the treatment of human diseases. This is a two-year grant in the amount of USD 102,000 for postdocs within 3–5 years after obtaining their PhD who work at research institutions in the state of Massachusetts. The nearest deadline is on 3 March 2021. The success rate is 12–16 %.

The **[Helen Hay Whitney Foundation](#)** supports three-year postdoctoral research in biomedicine. Postdocs within 1–2 years after obtaining their PhD may apply for this fellowship. The most recent deadline for submitting applications was on 15 June 2020, the next one is expected in June 2021.

The research of cancer is financed by the **[Damon Runyon Cancer Research Foundation](#)**: a 4-year fellowship in the amount of USD 231,000 for researchers within 18 months after obtaining their PhD as of the application submission deadline: on 15 March 2021 and 15 August 2021; or the **[Jane Cofin Child Fellowship](#)**: a 3-year fellowship in the amount of USD 165,000 for researchers within 18 months after obtaining their PhD as of the application submission deadline: on 1 February 2021.

The world's leading research universities, such as [Cambridge University](#) (UK), [ETH Zurich](#) (Switzerland), [Harvard University](#) (USA), [John Hopkins University](#) (USA), [Massachusetts Institute of Technology](#) (USA), [Princeton University](#) (USA), [Stanford University](#) (USA), [University of British Columbia](#) (Canada), [University of Pennsylvania](#) (USA), [University of Toronto](#) (Canada), [University of Washington](#) (USA), [Yale University](#) (USA) each year nominate postdocs for the **[Schmidt Science Fellowship](#)**. The fellowship recipients receive USD 100,000 for one year.

There are also several programs supporting short-term research internships available to postdocs. **[EMBO Short-Term Fellowship](#)** covers a 7- to 90-day research internship. The success rate of applicants is around 50 % and the applicants receive the results of the project evaluation within three months after submitting their application, which can be submitted at any time during the whole year.

[FEBS Short-Term Fellowship](#) finances 2- to 3-month internships of postdocs within 6 year after obtaining their PhD, the recipients receive approximately EUR 70 per day, applications may be submitted at any time during the whole year.

[Wallonie Short-Term Scholarship](#) for postdocs in life sciences within 9 years after obtaining their PhD for 1- to 3-month internships, the scholarship amounts to EUR 2,120 per month and there are three deadlines each year: on 1 December 2020 for internships taking place between February and May 2021, on 1 February 2021 for internships taking place between June and September 2021 and on 1 May 2021 for internships taking place between October 2021 and January 2022.

[DAAD Short-Term Scholarship](#) opens German institutions to postdocs within 4 years after obtaining their PhD for 1- to 6-month internships. The scholarship amounts to EUR 1,200 per month, plus travel expenses. The application submission deadlines are on 16 November 2020 and on 30 April 2021.

POSTDOCS IN THE CZECH REPUBLIC

Long-term postdoctoral internships (usually of foreign postdocs) in the Czech Republic can be funded from the following resources:

- (1) **AVČR Programme of support for promising human resources** (PPLZ) for postdocs within 2 years after obtaining their PhD; financial support for 1–2 years in the amount of CZK 600,000 per year covers only the salary of the postdoc; there are two deadlines each year, on 30 April and 30 September.
- (2) **AVČR Programme of support of international collaboration of young researchers** (MSM) for postdocs within 3 years after obtaining their PhD; financial support for projects of 1–2 years amounts to CZK 1 million, the deadline is in August.
- (3) **EMBO Postdoctoral Fellowship** (see page 17).
- (4) **FEBS Long-Term Fellowship** (see page 17).
- (5) **Feodor Lynen Research Fellowship** for German postdocs within 4 years after obtaining their PhD, the length of their internship at Czech research institutions is between 6 and 24 months and the success rate of applicants is around 40 %.
- (6) **GAČR POSTDOC INDIVIDUAL FELLOWSHIP** (see page 16).
- (7) **HFSP Postdoctoral Fellowship** (see page 16).
- (8) **MSCA Individual Fellowship** (see page 16). For those from abroad who are interested in postdoctoral internship at the Czech research institutions, there are even three sources of possible funding for each MSCA IF application. Czech Republic is one of the so-called “widening countries”. If the applicants for internships at the Czech research institutions in their application answer “Yes” to the question “Do you wish to participate to the **Widening Fellowships** and thus increase your chances of being funded?”, they thus increase their chance of obtaining the financing from an additional budget of EUR 7 million a year from the working program “Spreading Excellence and Widening Participation”. MSCA IF applicants associated with Czech research institutions whose projects were highly evaluated, but who ended up right below the line due to the lack of financial resources, still have a chance of being financed from the national resources. The Ministry of Education, Youth and Sports (MŠMT) repeatedly announces calls for MSCA IF mobility within the Operational Program Research, Development and Education (OPVVV). The deadline of the most recent call no. 02_20_079 **International Mobility of Researchers – MSCA-IF IV** for the applicants for MSCA IF 2019 was on 31 August 2020. The international mobility MSCA IF will also be supported in the upcoming years by the Operational Program Jan Amos Komenský. The nearest call is planned for spring 2022 for the applicants for MSCA IF 2020 and 2021.

During your postdoctoral internship, you have to come up with your own research topic, find your own research niche and formulate your own innovative research project independent on your former tutors and mentors. We will take a look at grant applications in the next part of our series.

INSPIRATION: [LENKA GAHUROVÁ ON MSCA INDIVIDUAL FELLOWSHIP](#)

In May 2015, [Lenka Gahurová](#) graduated from her PhD studies in developmental biology and epigenetics at the [University of Cambridge](#) in the United Kingdom. She is currently working as a postdoc at [Alexander Bruce's](#) group at the Department of Molecular Biology and Genetics at the [Faculty of Science, University of South Bohemia](#) in České Budějovice. Since 1 June 2017 she has been working on the project: "OOC SOCS: Socs3 gene in oocyte maturation and fertilisation – a novel link between inflammation and infertility" funded by the [MSCA Individual Fellowship](#). She interrupted the project twice because of maternity and parental leave.



Photography: Lenka Gahurová's archive

Is it difficult to prepare the MSCA Individual Fellowship (MSCA IF) application and to compete internationally with your project?

I don't think it would be significantly difficult. Of course, it takes some time to write and edit everything to one's necessary level of satisfaction, while meeting the specified number of pages. Therefore, it is a good idea to start writing in advance, for example about a month to three months before the deadline. Preferably don't leave everything for the last two weeks. The application includes not only the scientific part of the project, but also signatures and explanations of why you are the best possible candidate, how the scholarship will affect your career, what you will bring to the host institution, how you will contribute to the popularisation of science and other aspects. As a result, writing the application was quite a creative activity. In addition to scientific knowledge, it was necessary to involve my imagination, meaning that I had to figure out how to make the project as interesting as possible, even from a non-scientific point of view. You have to work on the application properly. It must not be underestimated, especially if the candidate wants to study at an institution which is not among the top 20 re-

search centers in Europe. You need to trust yourself and not feel discouraged. For example, everyone told me that with MSCA IF I did not have a chance to get to the University of South Bohemia, and above all, to such a young group leader. Still, I got the fellowship. It is also important to clarify with your future leader if he or she expects you to come up with the project yourself, thus you will write the entire application yourself. Or, he or she can offer you a project assignment and help you with the scientific part of the application.

What advice would you give to someone who would also like to apply for MSCA IF?

If you have never written a similar application for a fellowship, I recommend that you beforehand either read some or at least talk to someone who has already written a successful application. It helped me a lot to know about the required style of writing of the application, so that I would have a chance to succeed in international competition.

How has obtaining the MSCA IF affected your scientific career? How did it enrich you?

Thanks to this experience, I learned, to a large extent, how to write an application for a scientific grant. I have not seen any other direct positive consequences yet, but I believe that it will be beneficial in the future. For instance, it can be a bonus in my resume that I am able to get my own scholarship – in contrast to the situation where I would work as a postdoc on a GAČR grant received by someone else.

How can scientific work be combined with a parental leave? How does MSCA IF support women in science?

I think that MSCA IF is an ideal grant for scientists-mothers. It can be easily interrupted for the entire period of your maternity or parental leave. If you need it for the child care reasons, you can switch from full-time to part-time. There are countries where maternity and parental leave are not paid for by the state, but by the research institution. The problem here can be that the employer is not willing to pay the given maternity or parental leave in the amount of full MSCA IF salary. Several of my acquaintances have experienced this, but fortunately this is not a problem in the Czech Republic. If the candidate already has a child at the time of submitting their application, he or she will receive a maximum of EUR 500 more per month. When it comes to combining scientific work and parental leave, I definitely do not see motherhood as the end of my career. When the children are asleep or cared for by my husband, I can still work from home, for example on bioinformatics analysis or I can write articles, read, plan and lead students. At the same time, I don't have to be stressed about an active grant and the need to generate results. Therefore, in my point of view, work is a pleasant break from children for me. And vice versa, caring for children is a pleasant rest from work.

What is your experience with the MSCA IF? Would you recommend this program to postdocs and why?

I would definitely recommend MSCA IF. I think that it is possible to get the grant and the salary conditions are pleasant. You just have to count with the fact that, at least as a researcher in the field of molecular biology, the grant money will not be enough for the whole research – in terms of buying chemicals, etc. It is recommended to be in a group where there are other sources of financing and basic needs can be covered from this money. Then, the MSCA IF money can be used as a bonus for some specific items. Unfortunately, I also have some negative experience – coming from the side of the European Commission, the Czech Republic, but also the University of South Bohemia.

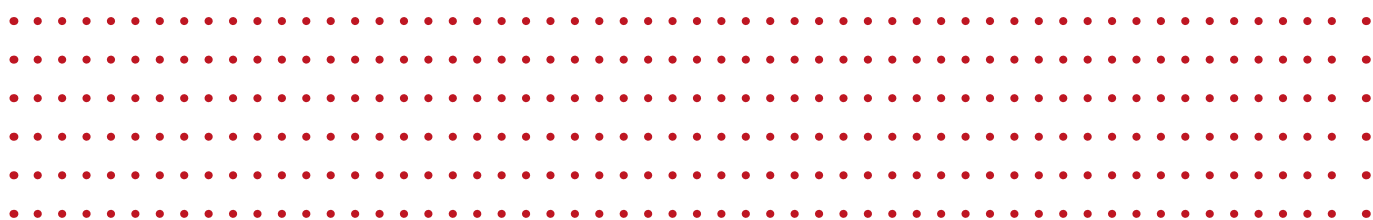


Could you be more specific?

Specifically, the European Commission often sends emails saying that according to this and that decree, it is necessary to state something somewhere in the online system of the project. However, it is often explained very incomprehensibly and in my own experience, sometimes even the responsible people are not able to explain what it means and what I should do. The grant also includes money for so-called mobility, which is supposed to be used for personal travel. This means not for conferences and business trips, but for example for a holiday trip. In the Czech Republic, this money is normally added to the super-gross wage. As a result, the recipient loses half of it. They keep telling us that this cannot be done in any other way. However, this is not the case of all institutions. So at a different place, fellows receive the full amount in the form of a holiday pay. And this, unfortunately, is a case of other countries as well. The last drawback, in my opinion, is the project management at the University of South Bohemia. I say this because, during my project, the project manager has changed five times. I was often not even informed about the change, and in addition I was constantly confronted with the fact that I have to make orders myself. This means not only finding out price information from the sellers, but also entering them in the university purchasing system, where invoices are generated etc. However, I have heard that better times are coming, so specifically this aspect should improve when I return from my parental leave.

What are your research plans?

After finishing the fellowship, I would like to establish my own research group, preferably at the Faculty of Science at the University of South Bohemia, if there is a spare place for me. I have ideas of what I would like to work on and, actually, we are already working on it with the students in some part. Therefore, I would like to apply for the GAČR Junior Star, GAČR Standard and ERC Starting Grant. I hope that at least one of the applications will be successful.



INSPIRATION: [IVA MOZGOVÁ ON EMBO POSTDOCTORAL FELLOWSHIP](#)

Iva Mozgová got her PhD degree in molecular biology and genetics at Masaryk University in Brno. With the help of [EMBO Postdoctoral Fellowship](#) she prolonged her PhD studies in Dr. Lars Hennig's laboratory at the [Swedish University of Agricultural Sciences](#) in Uppsala. Since January 2019 she manages her own research group focused on plant epigenetics at [Biology Centre CAS](#) in České Budějovice. Currently she realises [ERC-CZ](#), [Lumina Quaruntur fellowship AVČR](#) and [INTER-COST](#) projects.



Photography: Jana Platichová, AVČR

How did you find your foreign mentor Lars Hennig? Why did you decide to study your PhD degree in Sweden?

I met professor Lars Hennig at the EMBO epigenetic conference in Heidelberg, back then as a PhD student at CEITEC MU in Brno. Lars Hennig worked on the developmental aspects of the function of repressive plant complexes Polycomb, and his favourite topic was flowering induction of plants – topics I was not very aware of, and I thought that I didn't particularly like them. Two years later, Lars moved with his group from ETH Zurich to Swedish University of Agricultural Sciences (SLU) in Uppsala and was looking for new team members. I was about to finish my PhD studies in 6 months, and I knew that I would like to go abroad for my postdoctoral studies and would like to continue with the work on plants and chromatin, and therefore I should understand the developmental epigenetics. So, I wrote a cover letter and sent my curriculum vitae, in order to "practise".

What happened then? What fellowships did you apply for?

I was invited to an interview and then received an offer where the start of the position could be postponed for those remaining 6 months. During finalisation of my PhD degree I started to learn the topic of my future project suggested by Lars and prepare applications for fellowships: HFSP, EMBO Long-Term Fellowship and MSCA Individual Fellowship. Thus, Sweden was a kind of coincidence supported by my impressions from the interview: a nice mentor and a good scientist with deep interest in plant research, February with lots of snow, sun and blue skies in minus 15 degrees, people riding their bikes on bike paths



parallel to cross-country skiers... Over the course of time, I found out that if I don't like something about plants, it is probably something I don't know enough about.

How difficult is it to prepare the EMBO Postdoctoral Fellowship application and to compete internationally with your own project?

During the preparation of the fellowship applications, I probably reached my limits for the first time in my life. The deadlines for applications were 14 days apart, I started late, I found out that I underestimated the details which needed to be thought through before, and the time necessary for maturing of the application, in order to be able to re-read it critically and adjust it. However, I started with the MSCA IF application which was 27 pages long. Rewriting it into a 10-page long EMBO LTF application was actually fun and relief. The EMBO applications focus, above all, on scientific content and understanding your own's work context. I don't know how much difficult the competition was – I am not familiar with the statistics of applied and successful applications of that year. The selection procedure for EMBO LTF (now EMBO Postdoctoral Fellowship) had and still has two rounds. In the second round, the candidate has to pass an interview in one of EMBO member's laboratory. I undertook it in Prof. Crisant Gutierrez's laboratory in Madrid. I have to say that I enjoyed the interview, I spent a whole day in the host laboratory. My previous and planned works, interview with Prof. Gutierrez and discussion of my work in his laboratory with his team members were part of the presentation. To travel for an interview from Sweden to Spain for one day was a very enriching experience for me, even if I hadn't succeeded in the interview.

How did obtaining the EMBO fellowship influenced your scientific career? How did you benefit from it, how did it enrich you?

I think it opened my eyes and doors – meaning I learnt a lot about taking responsibility for my own project and its progress, my CV is stronger and I got more contacts. A possibility to undertake courses of laboratory management (EMBO Lab Management Course, the regular price is around EUR 2,000) for free, to be a part of the EMBO LTF holders' network and participate at EMBO LTF holders' conferences, all of this is included in the fellowship. EMBO LTF holders are a group of approximately 100 postdocs in a similar stage of their career who wonder, as well as yourself, how to continue with their projects, how to proceed with dysfunctional projects, how and where to continue, and how to raise money for your own research. Of course, regarding life sciences, it is necessary to count with the fact that among 100 participants only 4–5 work on a topic related to plants. So, don't expect a scientific conference in the true sense of the word.

What is your experience with the EMBO fellowship? Would you recommend this program to postdocs?

I would definitely recommend the programme to everyone. From preparation of the application to final report, it is very simple in terms of administrative burden and it is based on trust. The application must be well elaborated, but it basically does not contain any parts other than scientific ones. The interview is mostly very enriching and includes a sneak peek at the work in EMBO members' laboratories. The fellowship itself is actually an "educational" program, work under a leadership of high-quality mentors, a possibility to be a part of a community of similar people and obtaining a formal introduction to laboratory management. It is a great starting point for establishing your own research group.

What are your research plans?

My immediate plan is to create a research group which would get some kind of stability in terms of a strong research topic and high-quality team members, on which further funding can be based on. Therefore, my current goal is to finish the projects we started with my PhD candidates 3–4 years ago, get publications and enable the students to successfully finish their PhD studies with a reasonable chance of further career progress. In addition, I would like to smartly set and lead projects of my first postdocs, in order for them to gain benefits from their efforts of working in a new group. I also remain loyal to EMBO, I unsuccessfully applied for EMBO Installation Grant in 2018 (after the interview in Prof. Frederic Berger's laboratory in Vienna I was selected among 5 candidates, but back then there was only one grant awarded in the Czech Republic). I would like to apply for the EMBO Young Investigator Program. I am also planning to apply for the ERC Consolidator Grant, Czech Science Foundation grants, and possibly also for grants within (or as a co-coordinator of) consortia. For everything, my own group's results are needed primarily. After two years of moving, buying instrumentation and furniture and equipping our laboratory, I can now focus on research.

INSPIRATION: **TOMÁŠ SLANINA ON EXPERIENTIA FOUNDATION GRANT**

Tomáš Slanina obtained his PhD degree in organic chemistry at *Masaryk University* in Brno and at *Universität Regensburg* in Regensburg, Germany in 2015. In 2016, *Experientia Foundation Grant* enabled Tomáš to travel for a 1-year internship in Prof. *Alexander Heckel*'s group at *Goethe Universität Frankfurt am Main* in Germany. Then he undertook further postdoctoral studies with *Henrik Ottosson* at *Uppsala University* in Sweden. Since April 2019, he has managed his own research group focused on redox photochemistry at the *IOCB Prague*. In 2019 he became a member of the *Experientia Foundation* Board of Directors.



Photography: Marek Matušík, Experientia Foundation

Why did you decide to go for your postdoc to Germany? How did you find your foreign mentor?

I knew professor Heckel from conferences and lectures and also from a common project on which he worked together with our colleague. In professor's Petr Klán's photochemical group we developed photoactivatable molecules which were tailor-made for biological applications. Our laboratory in Brno was more synthetically and physical-chemically focused. Therefore, I liked the possibility to learn to use photoactivatable substances in molecular biological research which Alexander Heckel performs. I could build upon my knowledge, but at the same time it was a big step into the unknown. I wrote a research project and got the Experientia Foundation fellowship for a 1-year postdoctoral internship abroad.

Why did you choose the research group in Sweden for your next postdoctoral internship?

I chose professor Ottosson's group in Uppsala, above all, for the method of their research. Compared to all chemistry groups that use the inductive method, meaning working from observation to theories, Henrik Ottosson has built his scientific projects on deductive approach. His goal is to develop a very interesting theory of aromaticity and antiaromaticity in an excited state and then find specific examples of its functioning in the real world. In addition, Sweden and the entire Scandinavia are close to my heart because of their nature.

Was it difficult to obtain the Experientia Foundation fellow-

ship for your foreign internship?

Experientia Foundation's postdoctoral fellowship is one of the smoothest and least complicated grants I have ever applied for. Regarding the formal requirements, preparing the application is very easy and logical. Therefore, the emphasis is placed on the scientific excellence of the project, the applicant and the hosting lab. All you have to do is choose your dream laboratory, contact its leader and figure out an excellent project.

How did obtaining the fellowship influence your research career? What did it bring, how did it enrich you?

The possibility to work at a prestigious international laboratory with your own money is a great starting point for a young scientist's career. I studied abroad already during my Master's as well as Doctor's degree studies, so from this point of view, the experience was not new. The main benefit for me was the independence I had in research, and learning a new research field of chemical biology from the basics. This brought me more insight and ability to interlink the scientific fields. After the doctoral studies, most chemists face a career decision – whether to continue with science or start working in the chemical industry itself. For me, the research internship was a clear impulse motivating me to stay in science.

What is your experience with the Experientia Foundation fellowship? Would you recommend it to postdocs and why?

The Experientia Foundation aims to accommodate the needs of its fellowship holders as much as possible. That is why the overall administrative requirements during the stay are limited to a necessary minimum. In addition, thanks to the personal nature of the foundation, you know where the money for your internship comes from, which motivates you to obtain the best results possible. Therefore, I liked the idea that by sharing my successes with the Foundation I please its founders, Hana and Dalimil Dvořák. I would definitely recommend this program to all postdocs and finishing PhD students who work in the field of organic, bioorganic and medicinal chemistry, which are the areas supported by the Experientia Foundation.

What are your research plans?

At the moment, I am managing a junior research group at IOCB Prague focused on redox photochemistry – a discipline interlinking the areas of photochemistry, electrochemistry, molecular electronics, photocatalysis and organic synthesis. We are already at the stage where we have managed to put together a team of excellent colleagues thanks to whom we have completed key experiments and we know that our suggested concepts work. This allows us to develop ideas in more detail and applications. The big question of our research is, above all, the ability to manipulate with electrons in organic molecules, therefore the ability to place the electron/vacancy on a specific location with the help of external stimulus (for instance light) and further stabilisation of such state. We want to learn to play table tennis with electrons and consequently use them in molecular electronic and material chemistry.

INSPIRATION: HANA MACÍČKOVÁ CAHOVÁ ON HUMBOLDT RESEARCH FELLOWSHIP

*Hana Macíčková Cahová completed her PhD studies in organic chemistry at the University of Chemistry and Technology Prague. **Humboldt Research Fellowship** allowed her a two-year postdoctoral internship in Prof. Dr. **Andres Jäschke's** group at **Ruprecht-Karls-Universität Heidelberg** in Germany. Currently, she manages her own research group focused on chemical biology of nucleic acids at the **Institute of Organic Chemistry and Biochemistry in Prague**. She works on an ERC-CZ project.*



Foto: Michal Hoskovec, ÚOCHB AVČR

How did you find your foreign mentor Andres Jäschke? Why did you decide to do your postdoctoral internship in Germany?

My entire work in Germany as well as my cooperation with Prof. Jäschke is a result of a family compromise. My husband worked for a multinational company and had the opportunity to go out as an expat. Nevertheless, it was very difficult to find a place where a branch of his company would be located, and at the same time, a decent chemistry of nucleic acid chemistry would be done somewhere in the area. My PhD supervisor, prof. Michal Hocek, helped me to find such a group. I remember that we sat down with a map of Europe and were looking for an ideal place for this compromise. In the end, he recommended Prof. Jäschke in Heidelberg, so I contacted him, and he immediately called Prof. Hocek, asking, why I wanted to work with him and not somewhere in the USA. After the introductory phone interview, he invited me for a one-day interview in Heidelberg. I was very interested in the new topic which he wanted me to work on. So, we finally agreed that I would start immediately after the defence of my PhD thesis and that I would apply for the Humboldt fellowship.

Is it difficult to prepare the Humboldt Research Fellowship application and to compete internationally with your own project?

I would say it's similar to a preparation of any other grant application. There are definitely less administrative requirements compared to Czech grants. I overheard that even though the average success rate of applicants is approximately 30%, Czechs are still more successful in comparison to other nations.

How did obtaining of the Humboldt Fellowship influence your research career? How did you benefit from it, how did it enrich you?

Any fellowship received in the international competition is a big success and it will strengthen your CV a lot. It means that you had to pass through a selection, and you had to prove that you are good. Humboldt Foundation is very well organised and provides great conditions and assistance to foreign scientists. It will help you meet other fellowship holders, it organises various meetings at German universities. It is definitely a great prestige to receive this fellowship.

What is your experience with the Humboldt Fellowship? Would you recommend this program to postdocs?

As I mentioned before, Humboldt Foundation is very well organised and provides really good conditions for all fellowship holders. Especially, if a person wants to go abroad with his/her family, the foundation is very helpful and has a lot of programs on how to help scientists (find work for scientists' partners, move whole families, etc.). I, personally, have not used this program, because I didn't have kids yet.

What are your research plans?

They are big. I am planning to develop further our most recent discovery of a new form of RNA caps in bacteria. We have no idea what they are for, on which RNAs they are bound and whether they exist in human cells as well. Nevertheless, in a year and few months my ERC CZ ends. Therefore, apart from the coronavirus depression, I am slowly getting into a "postERC" depression. I am looking for further funding of my research and I am finding out that the Czech government's response to coronacrisis is to rather cut money for science. Many grant events that existed in past years were not announced at all, and the cuts are done also in the Czech Science Foundation (GAČR). So, I am worried that this crisis will also negatively affect the Czech basic research.



PART 5: SENIOR POSTDOCS

The fifth part of our series describes the most important milestone in the scientific career of every researcher. Where and how can a senior postdoc achieve the position of an independent researcher and the grant resources for his/her own research group? How to defend own scientific independence?

In the previous part we showed the importance and necessity of a long-term international internship and high-quality outputs thereof for every postdoc. Now you have achieved independence on your PhD tutor and obtained experience from a different working environment. You have established new contacts and cooperation. You have become a part of the international scientific community. You have succeeded in publishing the results of your postdoctoral project in a top scientific journal and you have presented them at an international conference. You have been continuously updating all your research activities and activities for the scientific community in your CV.

A strong CV (“track record”) supported by specific valuable outputs of your own research work constitutes only one half of your further success. The second (even more important!) half is an idea of your own innovative research project. Such project must be entirely new and different from the problems solved by your mentors. You have to present a “knowledge gap” in the current understanding and suggest a solution on how to fill this knowledge gap. These days, there is generally the highest demand for novel and high-risk high-gain research projects. Don’t be afraid of pushing the boundaries of knowledge.

For filing any grant application, you need a support of a research institution. The Czech research institutions only rarely and irregularly open and offer positions for independent junior researchers (see [EURAXESS](#)). The undertaking to advertise open tenders at EURAXESS is assumed by institutions certified with the HR AWARD (as of 1 January 2021, [25 Czech research institutions](#) or their parts have obtained the HR Award certification).

In the Czech Republic, there is still a general lack of strong institutional support of young researchers, regular establishment of new research groups, opening of new scientific directions and will to continually rejuvenate institutions. “There is no place, there are no resources,” is the most common explanation of why it cannot be done. Don’t get discouraged. You have to be proactive, choose an appropriate institution on time, find an experienced mentor who will help you understand the system and with whom you can consult your research projects and booked on time the support and approval of the given institution for the submission of your grant applications. Then, the only thing awaiting you is a very tough competition of project suggestions and research ideas. Your scientific independence is based on obtaining your own research grant.

INSTITUTIONAL SUPPORT

[Charles University](#) was the first in the Czech Republic to realize the need to actively support young researchers. Since 2016, it announces the program **Primus** thus purposefully investing in the establishment and development of new scientific groups and laboratories. In the first five years (2016–2020), it awarded 112 grants, of which 54 were in the field of life sciences and chemistry. Applications may be submitted by postdocs within 8 years after obtaining their PhD who have international experience and excellent results. The grant in the total amount of CZK 3–4 million per year is awarded for 3 years, with a possibility of extension by another 2 years. The condition for awarding support from the Primus program is filing an application for ERC grant. The sixth round of the contest will be announced at the beginning of January 2021, with the deadline for submitting applications in April 2021. About 20 applicants will succeed and the results of the project evaluation will be known by the end of June 2021. The program Primus and its benefits for Charles University are presented below by the Vice-Rector of Charles University Jan Konvalinka.

In September 2020, Masaryk University announced a new program **MUNI Award JUNIOR**. This program is designated for young researchers up to 40 years of age, within the maximum of 10 years after obtaining their PhD. The grant of CZK 2 million per year is awarded for 3 years, with a possibility of extension by another 2 years. In the first year, the support is expected to be granted to 6–9 promising researchers. The deadline for the submission of applications was on 31 December 2020.

Scientific excellence in Ecology, Applied and Landscape Ecology and Environmental Earth Sciences since 2020 has also been newly supported by the [Faculty of Environment](#) of the Czech University of Life Sciences in Prague by its program **Research Excellence in Environmental Sciences (REES)**. Applications may be submitted at any time during the year. The REES grant offers an employment contract for three years and the financial support of up to CZK 9 million. It is conditional upon submitting an application for ERC grant and at least one publication per year in the first quartile and one publication every second years in the first decile. The first recipients of the REES grant in 2020 were [Petr Keil](#), macroecologist, and [Aleš Urban](#), climatologist.

In 2018, the [Czech Academy of Sciences \(CAS/AVČR\)](#) established the program **Prémie Lumina quaeruntur**. to support scientific excellence. It is an award granted to promising postdocs within 10 years after obtaining their PhD (this time period does not include sickness leaves longer than 90 days, mandatory army service, maternity and parental leave and the time of taking care for a close person), for a period of 5 years in the amount of CZK 4 million per year. The amount of CZK 1 million per year is co-funded by the hosting institute of the Czech Academy of Sciences. Starting from 2021,

the annual deadline for the submission of applications should be on 28 February. Candidates for this award may only be nominated by the director of an institute of the Czech Academy of Sciences following previous debate by the board of the given institute.

During the first three years (2018–2020), the Czech Academy of Sciences awarded 19 researchers, of which 6 in the field of biological and chemical sciences. 2018: [Ondřej Kuda](#) (Institute of Physiology CAS), [Iva Mozgová](#) (Biology Centre CAS); 2019: [Jana Kamanová](#) (Institute of Microbiology CAS), [Zdeněk Kameník](#) (Institute of Microbiology CAS); 2020: [Miloslav Kverka](#) (Institute of Microbiology CAS), [Vladimíra Petráková](#) (J. Heyrovský Institute of Physical Chemistry CAS).

Open international recruitments for the positions of research group leaders were organized in 2020 also by other Czech research institutions. The [Biology Centre CAS](#) in České Budějovice filled one position at the Institute of Parasitology: [Ivona Mladineo](#) and one position at the Institute of Plant Molecular Biology: [Michael Wrzaczek](#). The [Faculty of Science](#) of the University of South Bohemia in České Budějovice has two new group leaders: [Martin Janda](#) and [Jules Segrestin](#).

GRANTS

Institutional support will not be sufficient, you will also need to obtain a grant. The **ERC Starting Grant** awarded by the European Research Council offers the greatest freedom and independence for your own research work. Applications may be filed by postdocs within 2–7 years after obtaining their PhD (in the case of women, and additional period of 1.5 years is added for each childbirth) who present a highly innovative and high-risk research project (“high-risk high-gain”). It is possible to apply for EUR 1.5 million for a 5-year research project and an additional amount of EUR 1 million for instrumentation equipment. Approximately one fourth of the best applicants are invited for a personal interview in Brussels where they are required to defend the vision of their research in front of a committee consisting of 15 members. The success rate of applicants is around 13 %. A new call of ERC Starting Grants will be announced in the middle of January 2021 as a part of Horizon Europe, with the expected deadline for the submission of applications on 8 April 2021. The ERC grant is transferable to any place throughout Europe.

In the period of 2007–2020, 19 ERC Starting Grants were awarded to the Czech Republic, of which 11 grants were in the fields of chemistry and life sciences: 2007: [František Štěpánek](#) (University of Chemistry and Technology Prague); 2010: [Jana Roithová](#) (Charles University); 2011: [Péter Szabó](#) (Institute of Botany CAS); 2013: [Pavel Plevka](#) (CEITEC MU); 2014: [Jan Macák](#) (University of Pardubice); 2015: [Milan Vrábel](#) (Institute of Organic Chemistry and Biochemistry CAS); 2018: [Matyáš Fendrych](#) (Charles University), [Marek Mráz](#) (CEITEC MU), [Kateřina Sam](#) (Biology Centre CAS), [Ondřej Štěpánek](#) (Institute of Molecular Genetics CAS); 2019: [Filip Kolář](#) (Charles University).

ERC applicants whose projects were highly evaluated, but who ended up right below the line due to the lack of financial resources, can receive support from the Czech Republic through the program **ERC CZ** administered by the Ministry of Education, Youth and Sports (MŠMT). In the period of 2012–2020, five calls of this program took place, where 9 ERC Starting Grants were financed from national resources in the fields of life sciences and chemistry: 2012: [Alena Panicucci Zíková](#) (Biology Centre CAS); 2013: [Michal Holčapek](#) (University of Pardubice), [Martin Kalbáč](#) (J. Heyrovský Institute of Physical Chemistry CAS); 2016: [Hana Macíčková Cahová](#) (Institute of Organic Chemistry and Biochemistry CAS); 2018: [Iva Mozgová](#) (Biology Centre CAS, grant provided by the Czech Academy of Sciences); 2019: [Alberto Naldoni](#) (Palacký University in Olomouc), [Jan Tippner](#) (Mendel University in Brno); 2020: [Gabriel Demo](#) (CEITEC MU), [Jan Hrček](#) (Biology Centre CAS).

The **EMBO Installation Grants** represent an essential contribution for the development of life sciences in the Czech Republic. Applications may be submitted by postdocs within 9 years after obtaining their PhD who have been working in the Czech Republic for less than 2 years. EMBO grants of EUR 50,000 per year are granted for 3 years, with a possibility of extension to 5 years. The deadline for submitting applications is on 15 April each year. Research projects are evaluated by an international committee of EMBO members and financed by the Czech Republic from the budget of the Ministry of Education, Youth and Sports (MŠMT). Each year, only one grant is usually awarded. Unfortunately, many promising researchers with a very good EMBO evaluation cannot reach the support due to the low financial allocations by the Czech Republic.

In the years 2006–2019, 19 researchers received support: 2006: [Petr Svoboda](#) (Institute of Molecular Genetics CAS); 2017: [Vítězslav Bryja](#) (Masaryk University), [Štěpánka Vaňáčková](#) (CEITEC MU); 2008: [Martin Anger](#) (Institute of Animal Physiology and Genetics CAS); 2009: [Cyril Bařinka](#) (BIOCEV), [Alena Panicucci Zíková](#) (Biology Centre CAS); 2010: [Alena Krejčí](#) (University of South Bohemia in České Budějovice); 2011: [Kvido Strišovský](#) (Institute of Organic Chemistry and Biochemistry CAS); 2012: [Lukáš Trantírek](#) (CEITEC MU); 2013: [Karel Říha](#) (CEITEC MU); 2014: [Peter Lukavský](#) (CEITEC MU), [Pavel Plevka](#) (CEITEC MU); 2015: [Ondřej Štěpánek](#) (Institute of Molecular Genetics CAS); 2016: [Vladimír Varga](#) (Institute of Molecular Genetics CAS); 2017: [Zuzana Kečkovéšová](#) (Institute of Organic Chemistry and Biochemistry CAS); 2018: [Martin Schwarzer](#) (Institute of Microbiology CAS); 2019: [Panagiotis Alexiou](#) (CEITEC MU), [Peter Dráber](#) (BIOCEV).

“Without the support of EMBO IG, my group would have never achieved the successes we have achieved, we would have never published in Cell and I could have never obtained the ERC Consolidator Grant. Without EMBO IG, nobody would know me today, if I had stayed in science at all. EMBO IG provided me the financial resources for starting new research directions that resulted in the cooperation with bioinformatics from Croatia and that generated data for our publication in Cell. The EMBO YIP community gave me the environment and know-how to be able to finish the publication and push it through the peer review and it trained me in being able to write a successful ERC grant application. The EMBO brand has increased my visibility in the scientific community, it has enabled me to easily find contacts and

cooperations that now bring benefit to my laboratory, my institution and, after all, the Czech science as a whole. This cannot be substituted with any local attempt for supporting young scientists, because such programs can maybe offer more money, but definitely not the community and the proven career development program," [Petr Svoboda](#) from the Institute of Molecular Genetics CAS describes his own experience.

In 2020, the [Czech Science Foundation](#) (GAČR) initiated a new program entitled **GAČR JUNIOR STAR**. The aim of this program is to support excellent basic research and provide an opportunity for beginning researchers to develop an independent group with several collaborators and modern equipment that will revive the current structure of basic research in the Czech Republic. Applications for this grant may be filed by postdocs within 8 years after obtaining their PhD (as of 30 September of the given year; this period is extended by the period of maternity and parental leave). The grant in the total amount of CZK 25 million is awarded for a period of 5 years. The evaluation results are known at the beginning of November. The project implementation always commences as of 1 January of the following year. The deadline of the next round of GAČR JUNIOR STAR is expected in April 2021.

In the first year, 355 applications were evaluated and 30 projects were supported (success rate of 8.5 %), of which 2 projects were in the field of chemistry (EX3): Martin Hulla (Charles University) and Daniel Rozbeský (Charles University); 4 projects were in the field of human biology and medical sciences (EX4): Jan Dobeš (Charles University), Zuzana Kadlecová (Masaryk University), Martin Schwarzer (Institute of Microbiology of CAS), Marek Šebesta (CEITEC MU) and 7 projects were in the fields of biology and agricultural sciences (EX5): Anne Daebeler (University of South Bohemia in České Budějovice), Jan Janouškovec (Institute of Microbiology CAS), Petr Kohout (Institute of Microbiology CAS), Eva Nováková (University of South Bohemia in České Budějovice), Tomáš Pluskal (Institute of Organic Chemistry and Biochemistry CAS), Robert Tropek (Charles University), Jana Voříšková (Institute of Microbiology CAS).

The grants **GAČR Standard** represent a certainty of the Czech research environment, as they have been granted since 1993 without any interruptions. These are intended for 2- to 3-year projects in basic research in all scientific disciplines. The amount of their budget is not specified. The success rate of applicants in 2019 was 25 % (three times higher than in the GAČR JUNIOR STAR 2021).

The establishment of new research groups in the field of organic chemistry, bioorganic chemistry and medicinal chemistry is financed by the **Experientia Foundation** by means of **start-up grants**. A grant in the amount of CZK 2 million per year is awarded for 3 years, with 65 % (CZK 1.3 million per year) being financed by the foundation and 35 % (CZK 0.7 million per year) being co-financed by the hosting institution. The support can be granted to chemists within 5 years after obtaining their PhD. The deadline for submitting applications is on 15 March each year, the evaluation is announced by the end of June of the given year. For applicants with the deadline on 15 March 2021, the financial support commences as of 1 January 2022.

In the period of 2018–2020, the foundation supported two researchers: 2018: [Ondřej Baszczyński](#) (Charles University); 2020: [Petr Kovaříček](#) (University of Chemistry and Technology Prague).

Take advantage of your international contacts and get involved in some of the running **COST Actions**. COST supports the creation of international consortia for co-operation in a specific scientific field, meetings of the research community and education of students. Active members of a running COST Action from the Czech Republic may submit a separate research project in the program **MŠMT INTER-COST** of the Ministry of Education, Youth and Sports (MŠMT). This program is being implemented in the Czech Republic since 1993, during which time projects of Czech teams worth more than CZK 1 billion have been supported. The deadline for the submission of applications is usually in the middle of December and the evaluation results are announced in the middle of May of the following year. The success rate of applicants is around 50 %. The fifth competition with the deadline planned for December 2020 was cancelled by the Ministry of Education, Youth and Sports. It is still uncertain whether the new call of the INTER-COST program will be announced in 2021.

In the past years, postdocs were also interested in the **TAČR Program ZÉTA** supporting young researchers in their innovation activities. Project proposals must contribute to the involvement of students and young researchers in research and development activities aimed at utilizing the results in practice and increase their interest in projects with a specific practical impact. So far, four competitions took place, with the last deadline in November 2019. Similar calls will be announced in the future as the program TAČR SIGMA (currently under preparation).

AWARDS

The most significant result of basic research in automation, cybernetics, medicine, IT, natural sciences, can obtain **Werner von Siemens Award**. The best project receives a financial reward of CZK 300,000. The next deadline for the submission of applications will most probably be on 30 November 2021.

The Neuron Endowment Fund annually awards the **Neuron Award for Promising Young Scientists** (who obtained their PhD no more than 10 years prior to the announcement date, including an extension by the period of parental leave or long-term sickness). The prize is associated with a personal reward of CZK 500,000 and may be granted to as many as 7 candidates. Nominations are submitted by the Czech scientific community by the end of March 2021 in seven scientific disciplines (biology, chemistry, computer science, physics, mathematics, medicine and social sciences). The guarantor of the selection of laureates is a domestic and international scientific council composed of personalities of Czech and world science.

The Neuron Endowment Fund also supports Czech researchers in the “field research” around the world. This follows the famous era of the travelers Zikmund and Hanzelka. In the period of 2015–2019, seven rounds of the **Neuron Expedition** took place.

For more than a quarter of a century, **Alfred Bader Award** is granted annually to young Czech researchers (up to 35 years of age) in the field of organic and bioorganic chemistry (the applicants must not reach 36 years in the year of the contest). Winners receive a financial reward of USD 4,000. The deadline for bioinorganic chemistry and bioorganic chemistry is on 31 March 2021, the deadline for organic chemistry is on 15 June 2021.

The company L’Oréal organizes the contest **For Women In Science** each year since 2006. This contest is open to female researchers specializing in natural sciences up to 40 years of age. Projects of three female researchers are supported each year, each in the amount of CZK 200,000. The nearest deadline for filing applications is 28 February 2021.

Dream Chemistry Award is an international contest in which an award is granted to a young chemist for the idea of their dream scientific project in the field of chemistry or chemistry-related disciplines that the researcher wants to resolve. Applications are assessed based on the originality of the proposal, taking into consideration also the candidate’s CV. The most recent deadline for submission of applications was on 31 August 2020. The winner of the Dream Chemistry Award in 2020 was Claudia Bonfio from the University of Cambridge. She received EUR 10,000. Each year, five finalists receive EUR 1,000.

Otto Wichterle Premium is awarded each year by the Czech Academy of Sciences (CAS/AVČR) to the selected exceptionally high-quality and promising researchers of the Czech Academy of Sciences up to 35 years of age. A part of this award is a financial reward in the amount of CZK 330,000 distributed into three years. The researchers are nominated by directors of individual institutes of the Czech Academy of Sciences.

Let’s hope you get lucky! Upon obtaining institutional support and your own research grant, you become a full-fledged junior group leader (or principal investigator). The next part of our series will focus on the development of a research group.

INSPIRATION: [JAN KONVALINKA ON PRIMUS PROGRAMME](#)

Thanks to the [Primus](#) Research Programme, dozens of young people from the Czech Republic as well as from abroad got a chance to establish their own research group at Charles University. A new generation of researchers is successful in international grant competitions and significantly influences the internal environment of the faculties. Prof. Jan Konvalinka, Vice-Rector of Charles University, explains the benefits of the programme.



Photography: [Luboš Wiśniewski](#), Charles University

Why did Charles University create the Primus programme?

Primus is a start-up program for young researchers, enabling them to establish their own independent research groups at CUNI. It targets, above all, our younger colleagues from abroad, scientists from outside of CUNI or our own graduates and scientists who want to come back or have recently come back from a long-term scientific internship abroad. Over the course of time it becomes apparent that the period after postdoctoral internship abroad is critical for one's success in the scientific career. Therefore, it is extremely important to be able to establish your own group and get an academic freedom for several years during which you can quite effortlessly try various bold scientific hypotheses. Another long-term goal of Primus programme is to increase Charles University's success in obtaining international grants (for instance the grant of the European Research Council – ERC).

How does Charles University obtain financial means for granting 20 start-up grants per year?

This sum of money equals CZK 90 million per year which we get by the decision of the Rector and CUNI's Academic Senate from institutional resources for science (funds for long-term conceptual development of a research organisation). I cannot imagine any better use of these funds.

What is your overall experience with the Primus Programme?

I believe we can be very satisfied. Primus grant holders are successful in receiving other international grants. We have received two [ERC Starting Grants](#): in life sciences: Matyáš Fendrych (2018, Faculty of Science) and Filip Kolář (2019, Faculty of Science), one [EMBO Installation Grant](#): Peter Dráber (2019, First Faculty of Medicine) and one Swiss grant [PROMYS](#) Promotion of Young Scientists in Eastern Europe: Zuzana Musilová (2016, Faculty of Science). Robert Tropek (Faculty of Science) has recently succeeded in the [GAČR JUNIOR STAR](#) competition. Primus participants receive prestigious grants from private foundations as well.

What is the benefit of Primus for Charles University?

This does not concern only the funds from ERC and other grants we have received thanks to the PRIMUS projects. The most important thing is, that dozens of great young people from the Czech Republic as well as from abroad got a chance to create their own research group and significantly influence the internal environment of their faculties.

What is the long-term perspective of the Primus programme? Will it continue and in what form?

We definitely want to continue with the program. We will focus even more on the arrival of young scientists from abroad and we will help faculties to be able to include foreigners in their academic community as quickly as possible.

A big advantage of the [Primus](#) programme is its predictability, regularity, long-term stability of conditions, a schedule available in advance and high number of annually awarded grants. The applicant can be a scientist within 8 years after obtaining their PhD, with an international experience and excellent results. The grant of CZK 3–4 million per year is awarded for 3 years with a possibility of extension for another 2 years. The sixth round of the competition will be published at the beginning of January 2021 with the deadline for submitting applications in April 2021. Approximately 20–25 applicants succeed, the project evaluation results will be known before the end of June 2021.

In first five years (2016–2020), 112 grants were awarded, of which 54 grants were dedicated to life sciences and chemistry.

Primus [2016](#): Pavel Doležal (Faculty of Science), Petr Heneberg (Third Faculty of Medicine), Filip Kolář (Faculty of Science), Markéta Kubričanová-Žaliová (Second Faculty of Medicine), Jiří Míšek (Faculty of Science), Pavel Otáhal (First Faculty of Medicine), Martin Převorovský (Faculty of Science), Michail Rovatsos (Faculty of Science), Daniel Smrž (Second Faculty of Medicine), Pavel Škaloud (Faculty of Science), Petr Telenský (Faculty of Science); [2017](#): Karel Blaha (Faculty of Medicine in Plzeň), Eva Froňková (Second Faculty of Medicine), Ondřej Havránek (First Faculty of Medicine), Jiří Knot (Third Faculty of Medicine), Martin Margold (Faculty of Science), Petra Matoušková (Faculty of Pharmacy in Hradec Králové), Eliška Matoušová (Faculty of Science), Maksym Opanasenko (Faculty of Science), Jiří Reif (Faculty of Science), Roswitha Elisabeth Schmickl (Faculty of Science), Andrea Štofková (Third Faculty of Medicine), Robert Tropek (Faculty of Science), Karina Vargová (First Faculty of Medicine), Michal Vinkler (Faculty of Science), Marie Zikánová (First Faculty of Medicine); [2018](#): Pavla Čermáková (Third Faculty of Medicine), Matyáš Fendrych (Faculty of Science), Magdaléna Klánová (First Faculty of Medicine), Clément Lafon-Placette (Faculty of Science), Ondřej Novák (Second Faculty of Medicine), Radka Reifová (Faculty of Science), Karolína Škvárová (Second Faculty of Medicine), Michal Zápotocký (Second Faculty of Medicine); [2019](#): Christoph Allolio (Faculty of Mathematics and Physics), Martina Čečková (Faculty of Pharmacy in Hradec Králové), Peter Dráber (First Faculty of Medicine), Lukáš Frýček (Faculty of Science), Lukáš Grajciar (Faculty of Science), Klára Hlouchová (Faculty of Science), Miroslav Hons (First Faculty of Medicine), Zdeněk Mašín (Faculty of Mathematics and Physics), Zuzana Musilová (Faculty of Science), Veronika Nováková (Faculty of Pharmacy in Hradec Králové), Ilona Tietzová (First Faculty of Medicine), Pavla Tůmová (First Faculty of Medicine), Manuel Weinkauff (Faculty of Science); [2020](#): Jan Dobeš (Faculty of Science), Klára Grantz Šašková (Faculty of Science), Jan Mašek (Faculty of Science), Helena Pivoňková (Second Faculty of Medicine), Daniel Rozbeský (Faculty of Science), Ondřej Sedláček (Faculty of Science) a Lenka Šlachťová (First Faculty of Medicine).



PART 6: JUNIOR GROUP LEADERS

The sixth part of our series brings us to junior group leaders. They have the support of a research institution, have succeeded in a grant competition, have obtained financial resources for their project and lead their own independent research group. How to continue financing their team?

You have managed to obtain your first own grant – ERC, EMBO, GAČR or any other. Now, first of all, you need to put together a functional team. We recommend open advertising of all scientific and technical positions. The positions of PhD candidates and postdocs can be advertised free of charge at [EURAXESS](#), or as paid advertisements at [ResearchGate](#), [Research Jobs](#) for the Czech community, at the website of your institution and at websites visited by the scientific community (such as [TAIR](#)). It has proved very useful to use the network of one's personal contacts and send the advertisement to your local and foreign colleagues. Count with 1–2 months for advertising the position, 1 month for interviews and 3–9 months for the transfer of selected candidates from abroad. The most applications arrive from countries outside the EU. The candidates selected by you must obtain a scientific visa through the Czech Embassy.

Another thing that you will definitely have to deal with is the reconstruction or modification of the laboratory and the purchase of equipment. The administration of your research institution must help you with this. Get acquainted with the set processes and rules of purchasing devices, find out internal deadlines and specific employees, who is in charge of what, ask if there are framework contracts with suppliers, what are the financial limits for public contracts, what are the legal depreciation periods of specific devices, etc. Communicate your needs in a timely manner. It is a good idea to buy the equipment as soon as possible in order to take advantage of the maximum possible period for funding depreciation from your grant.

The purchase of devices as well as the purchase of consumables and services is best handled directly with sales representatives of the supplier companies. Websites often do not list prices or list prices that are 7–30 % higher than the price at which the given item can be purchased. Check the price of the device or material offered by all available suppliers. By placing a demand for the same thing with several suppliers, you may find out that the price may vary by tens of thousands of crowns. Communicating with suppliers is time consuming, but it can save you hundreds of thousands. The lab manager or the project manager can help you with all this. It is worth having such person in your team, even part-time. You need to have time to do science.

In addition to science, you will have to deal with interpersonal relationships and cultural differences within the team and at the institution, constant clutter and filth on the shared equipment, and long-established, illogical and difficult-to-understand stereotypes at your institution. “This is how we have been doing it for 20 years.” There are countless small administrative and operational things that are constantly tearing you away from science. Be prepared that the development of a team and bringing your own laboratory into full operation will take 1–1.5 years

With the time running fast, you are going to become more and more stressed and fearful whether you will be able to achieve the planned results and to publish the achieved results in a high quality standard. And to gain the necessary points for your CV and for future grant applications.

GRANTS

The grant awarded by the European Research Council offers you the greatest freedom and independence for your own research work. As an experienced researcher 7–12 years after obtaining your PhD (in the case of women, and additional period of 1.5 years is added for each childbirth), with the outputs of your own research group, you can apply for the [ERC Consolidator Grant](#). A proposal of a highly innovative and “high-risk high-gain” project is expected from applicants at this stage. It is possible to apply for EUR 2 million for a 5-year research project and an additional amount of EUR 1 million for instrumentation equipment. Approximately one fourth of the best applicants are invited for a personal interview in Brussels where they are required to defend the vision of their research in front of a committee consisting of 15 members (due to the COVID-19 situation, interviews are conducted online). The success rate of applicants is around 13 %. A new call of ERC Consolidator Grants will be probably announced on 21 January 2021 as a part of Horizon Europe, with the expected deadline for the submission of applications on 20 April 2021. The ERC grant is transferable to any place throughout Europe.

In the period of 2013–2020, 2557 ERC Consolidator Grants were awarded in Europe, of which only 17 were directed to the Czech Republic, 6 in the fields of chemistry and life sciences: 2014: [Petr Svoboda](#) (Institute of Molecular Genetics CAS), [Richard Štefl](#) (Masaryk University); 2015: [Michal Otyepka](#) (Palacký University in Olomouc); 2016: [David Doležel](#) (Biology Centre CAS); 2017: [Vladimír Hampl](#) (Charles University); 2020: [Robert Vácha](#) (CEITEC MU).

ERC applicants whose projects were highly evaluated, but who ended up right below the line due to the lack of financial resources, can receive support from the Czech Republic through the program [ERC CZ](#) administered by the Ministry of Education, Youth and Sports (MŠMT). In the period of 2012–2020, five calls of this program took place, where 4 ERC Consolidator Grants were financed from national resources in the fields of life sciences and chemistry: 2019: [Pavel Plevka](#) (CEITEC MU); 2020: [Zdeněk Sofer](#) (University of Chemistry and Technology Prague), [Marek Stibal](#) (Charles University), [Robert Vácha](#) (CEITEC MU).

An important European program supporting scientific excellence in the field of molecular biology and biochemistry is the [EMBO Young Investigator Programme](#). It was launched in 2000 and each year supports around 70 junior group leaders up to 40 years of age. The selected group leaders become a part of the European network of researchers for 4 years, which allows them to take advantage of countless benefits and services provided by the EMBO. The greatest benefit of the EMBO YIP program is international visibility in the scientific community, access to EMBO conferences, seminars and practical trainings, gaining valuable contacts and cooperation, tips and recommendations for leading a research group. In the second year, an additional support of EUR 15,000 is granted. And each year it is possible to apply for smaller grants up to EUR 10,000. EMBO YIP program can help you become a truly top research team leader.

The main Czech provider of grant support for basic research is the [Czech Science Foundation](#) (GAČR). The grants under the [GAČR Standard](#) program exist ever since 1993. These are intended for 2- to 3-year projects in basic research in all scientific disciplines. The amount of the budget is not limited. The project is investigated either by a single person or by a team of researchers of one or more institutions. The program is announced in February each year, with the deadline for submitting applications in the middle of April. The evaluation results are published at the beginning of December and the project implementation starts as of 1 January of the following year. The success rate of applicants in 2019 was 25 %. Applications are filled in electronic form in the application [GRIS](#) and submitted through the data mailbox of GAČR.

The Czech Science Foundation also supports international cooperation in basic research through the program [GAČR International – Bilateral](#), based on signed international agreements on cooperation with international partner organizations: **Germany** (Deutsche Forschungsgemeinschaft, [DFG](#)), **Korea** (National Research Foundation of Korea, [NRF](#)), **Taiwan** (Ministry of Science and Technology, [MOST](#)), **Brazil** (São Paulo Research Foundation, [FAPESP](#)) and **Russia** (Russian Foundation for Basic Research, [RFBR](#)). These are also 2- to 3-year projects in basic research in all scientific disciplines. Each national provider finances activities relating to a part of the project investigation taking place within their territory. The project evaluation takes place independently on both partner agencies (in the case of the GAČR it has a form of the peer review which utilizes the panel system of the GAČR and foreign opponents). The provision of GAČR's support for an international project is conditional upon its approval by both national providers.

Another program of the GAČR financing international collaboration is the [GAČR International – LA](#) (“Lead Agency“), within the scope of which it is possible to submit joint project proposals together with international partner organizations with which GAČR has agreements concluded. In 2020, such partner countries were **Austria** (Fonds zur Förderung der wissenschaftlichen Forschung, [FWF](#)), **Poland** (National Science Centre, [NCN](#)), **Slovenia** (Slovenian Research Agency, [ARRS](#)) and **Switzerland** (Swiss National Science Foundation, [SNSF](#)). The projects in all areas of basic research last for 3 years. Each national provider finances activities relating to a part of the project investigation taking place within their territory. The projects are evaluated on the basis of the “Lead Agency” principle. Only one joint grant project proposal is submitted, which is evaluated by only one of the national agencies on the basis of an international “peer review” system, the other party accepts the results of the evaluation process. GAČR has newly been participating in the European initiative [Weave](#) supporting 12 national grant agencies with the aim of supporting bi- and trilateral projects in excellent basic research. The financing of international projects through LA grants will be extended.

Take advantage of your international contacts and get involved in some of the running [COST Actions](#). COST supports the creation of international consortia for co-operation in a specific research field, meetings of the scientific community and education of students. Active members of a running COST Action from the Czech Republic may submit a separate research project in the program [MŠMT INTER-COST](#) of the Ministry of Education, Youth and Sports. This program is being implemented in the Czech Republic since 1993, during which time projects of Czech teams worth more than CZK 1 billion have been supported. Grant applications for international cooperation have so far been submitted exclusively in the Czech language and have been evaluated only by Czech evaluators. The deadline for the submission of applications is usually in the middle of December and the evaluation results are announced in the middle of May of the following year. The success rate of applicants is around 50 %. The fifth competition with the deadline planned for December 2020 was cancelled by the Ministry of Education, Youth and Sports. It is still uncertain whether the new call of the INTER-COST program will be announced in 2021.

International research cooperation is also intended to be supported by the program [MŠMT INTER-ACTION](#). 9 calls were announced in the period of 2017–2019. 2017: China, USA; 2018: Russia, USA; 2019: Bavaria, China, India, Israel, USA. Grant applications for international cooperation are submitted exclusively in the Czech language and evaluated only by Czech evaluators. In 2020, the Ministry of Education, Youth and Sports cancelled all calls. In 2021, calls INTER-ACTION with the USA and Germany (Bavaria, Saxony) are expected. Financing of projects under the new program INTER-EXCELLENCE II is planned to start in 2022.

APPLIED RESEARCH GRANTS

The Technology Agency of the Czech Republic (TAČR) is the main Czech provider of support for applied research, development and innovations. In most calls of the TAČR, the condition for granting support is the collaboration with a company (or another entity from the application sphere) and co-financing of the project from own resources of partner institutions. Academic institutions can usually apply for full funding of their costs, provided that all co-financing is covered by cooperating firms. In addition to projects focused on national priorities of applied research, TAČR also supports a number of international partnerships – in life sciences, such as [EuroNanoMed](#) or [BiodivRestore](#). In these programs, the project proposal is submitted by an international consortium, evaluated at the European level and, if successful, funded by national agencies. The [schedule of calls](#) for 2021 is available on the website of TAČR. Applications are filled in electronic form in the application [ISTA](#) and submitted through the data mailbox of TAČR.

Some transnational applied research programs are also administered and financed by the [Ministry of Education, Youth and Sports](#) (JPND: neurodegenerative diseases, E-RARE: [EJP RD](#) rare diseases, [JPI HDHL](#): healthy nutrition for healthy life, [JPIAMR](#): antimicrobial resistance).

With the launch of the new European framework program Horizon Europe, the composition of transnational programs (so-called co-programmed “Partnerships”) will change. In the field of life sciences, a number of Partnerships focusing on human health or environmental protection will continue or be established (the “[Green Deal](#)” initiative).

The [Ministry of Health Care of the Czech Republic](#) each year announces, through the [Czech Health Research Council](#) (AZV ČR), a public competition within the scope of the [Program for Support of Applied Health Research](#). Sub-program 2 is interesting, designed for the development of young researchers. The applicant, co-applicants and all professional collaborators must meet the condition of an age limit of a maximum of 35 years in the year of the competition announcement. Both sub-programs support projects with at least 80 % share of applied research and at least 20 % share of basic research. Priority topics are population aging, diseases of civilization, infections and antimicrobial resistance, development of new biotechnologies, search for new molecules with therapeutic effects, information and communication technologies in healthcare. Cooperation between research institutions and hospitals and companies is advantageous. The main result is considered to be a peer-reviewed professional article in a journal with IF (Jimp); utility model (F); patent (P); prototype, functional sample (G); software (R); methodology, treatment procedure (N); pilot plant, proven technology (Z). A new call is expected to be announced in May 2021, with the deadline in June 2021. Applications are filled in electronic form in the application [ISVP](#) and submitted through the data mailbox of AZVČR. The evaluation results will be published in February 2022. It will be possible to commence the projects as of 1 May 2022 and to implement them for no more than 44 months, i.e. until 31 December 2025. The success rate of applicants is around 20 %. The participating companies require co-financing of 30–50 % in the case of industrial research, 55–75 % in the case of experimental development.

[ZEMĚ \(EARTH\)](#) is a program of applied research of the [Ministry of Agriculture of the Czech Republic](#). It supports innovative agriculture and forestry through advanced methods and technologies and the state policy in the agricultural sector. The condition for submitting a project is the participation of at least one company. The maximum length of projects is 5 years (sub-program I) or 3 years (sub-program II). Eligible results are the original / review article in a professional periodical in WoS with the flags “Article”, “Review”, “Letter” (Jimp); utility model, industrial design (F); prototype, functional sample (G); results reflected in legislation and standards, directives and regulations of non-legislative nature binding within the competences of the relevant provider (H); methodology, treatment procedure, specialized map with professional content (N); patent (P); software (R); pilot plant, proven technology, variety, breed (Z). The next call is expected to be announced in April 2021, with the deadline for submitting applications in the middle of June 2021. Applications are filled in electronic form in the application [ISTA](#) and submitted through the data mailbox of the Ministry of Agriculture. The evaluation results will be known in the middle of November 2021. The implementation of projects commences as of 1 January 2022. In sub-program I, it is necessary to obtain 15 % co-financing of the project from the investigating institutions.

FELLOWSHIPS

As a research group leader, you cannot afford to travel abroad for a longer period of time, leaving your team. Most frequently, you send out your students (see part [2](#) and [3](#)) and your postdocs (see part [4](#)). You personally may find useful short-term fellowships for the development of international cooperation.

[EMBO Short-Term Fellowship](#) covers a 7- to 90-day research internship. The success rate of applicants is around 50 % and the applicants receive the results of the project evaluation within three months after submitting their application, which can be submitted at any time during the whole year.

[Germany](#) is open for foreign researchers within 12 years after obtaining their PhD through the [Humboldt Research Fellowship](#). The monthly fellowship of EUR 3,150 is granted for a period of 6–18 months. Applications may be submitted during the course of the whole year and are evaluated three times a year – in March, July and November. The success rate of applicants is 25 %. All the scholarship recipients are subsequently included in the life-long program [Humboldtians](#).

[Matsumae Fellowship](#) allows covering a 3- to 6-month internship of a researcher under 49 years of age in [Japan](#). The most recent deadline for submitting applications was on 30 June 2020, the next one is expected in June 2021.

It is possible to spend one academic year (3–10 months) at a research internship in the [USA](#) with the [Fulbright Scholarship for Researchers and Scholars](#) or with the [Fulbright-Masaryk Scholarship](#). The scholarship covers living costs, contribution to return air ticket, basic health care insurance and contribution to research and further professional development. The grant also includes minor contributions for family members. Online applications are submitted by 1 November each year. The deadline on 1 November 2021 is intended for internships taking place in the academic year of 2022/2023. The success rate of Czech applicants is 25 %.

AWARDS

The most significant result of basic research in automation, cybernetics, medicine, IT, natural sciences, can obtain [Werner von Siemens Award](#). The best project receives a financial reward of CZK 300,000. The next deadline for the submission of applications will probably be on 30 November 2021.

The Neuron Endowment Fund annually awards the **Neuron Award for Promising Young Scientists** (who obtained their PhD no more than 10 years prior to the announcement date, including an extension by the period of parental leave or long-term sickness). The prize is associated with a personal reward of CZK 500,000 and may be granted to as many as 7 candidates. Nominations are submitted by the Czech scientific community by the end of March 2021 in seven scientific disciplines (biology, chemistry, computer science, physics, mathematics, medicine and social sciences). The guarantor of the selection of laureates is a domestic and international scientific council composed of personalities of Czech and world science.

The Neuron Endowment Fund also supports Czech researchers in the “field research” around the world. This follows the famous era of the travelers Zikmund and Hanzelka. In the period of 2015–2019, seven calls of the **Neuron Expedition** took place.

For more than a quarter of a century, **Alfred Bader Award** is granted annually to young Czech researchers (up to 35 years of age) in the field of organic and bioorganic chemistry (the applicants must not reach 36 years in the year of the contest). Winners receive a financial reward of USD 4,000. The deadline for bioinorganic chemistry and bioorganic chemistry is on 31 March 2021, the deadline for organic chemistry is on 15 June 2021.

The company L'Oréal organizes the contest **For Women In Science** each year since 2006. This contest is open to female researchers specializing in natural sciences up to 40 years of age. Projects of three female researchers are supported each year, each in the amount of CZK 200,000. The nearest deadline for filing applications is 28 February 2021.

Otto Wichterle Premium is awarded each year by the Czech Academy of Sciences (CAS/AVČR) to the selected exceptionally high-quality and promising researchers of the Czech Academy of Sciences up to 35 years of age. A part of this award is a financial reward in the amount of CZK 330,000 distributed into three years. The researchers are nominated by directors of individual institutes of the Czech Academy of Sciences.

As years pass by, you obtain valuable experience in the implementation of both individual and partnership research projects. As an experienced senior group leader, you can coordinate even research consortia. This will be the topic of the seventh part of our series.



PART 7: SENIOR GROUP LEADERS

Here comes the seventh part of our series pertaining to financing of research careers in life sciences in the Czech Republic. We are now climbing the very summit of the research career. Well-known, renowned and respected senior group leaders represent the knowledge, scientific, pedagogical, moral and human excellence of the Czech Republic. They form the core of the Czech science.

As junior group leaders, you have completed your first research grants. You have gained your first experience with managing people. You act as correspondent authors in publications, you cover your own research teams. The outputs of your previous work, including the outlook for follow-up research activities, are evaluated after five years by an international panel. You have to be able to defend the existence of your research group. In the case of insufficient performance, the research group will be terminated. Based on excellent scientific outputs and a promising research program, you gain the trust of the scientific community and advance among senior group leaders. These are also evaluated every five years by an international panel, which issues recommendations for the institutions management regarding continued existence or termination of a given research group.

One learns and works hard on oneself for their entire life. For a senior group leader, a never ending strive begins for improving their own analytical, publishing, pedagogical, mentoring, managerial and many other skills. Expert coverage of the topic, asking key questions and challenges, refining arguments and opinions, establishing international cooperation, initiating innovative research projects, pushing the boundaries of knowledge, developing a research school, building an international reputation of research institutions, educating a new generation of talented researchers, educating the general public – this is all expected.

As the years go by, the amount of knowledge and experience grows, your self-confidence based on the results of your work grows, your scientific reputation and influence grow. Together with this, however, your moral responsibility for the functioning of the Czech research environment also grows, as well as your responsibility for international competitiveness, reputation and attractiveness of the Czech Republic, for the future of the next generation of scientists.

“Pursuing knowledge, sir, means a supremely active life. When you say science, you are simultaneously saying effort, patience, perseverance, dedication, honesty – all of which are requirements of active life – and moral life.”
“Are you thus subordinating science to ethics?”

“I would say: not science, but scientists. Everyone is subjected to ethics as a whole, and everything he lives through and everything he does, therefore including knowledge. Knowledge is a moral obligation, same as love and service to one's neighbor, like any of the moral commands. We do not worship scientists and philosophers for their talents, but for the great pursuit of truth – a moral act. That is why we feel that abuse of science is a sin, it is a sin against the Holy Spirit. The morality and usefulness of science is that it goes only, purely and strictly to knowledge, to truth; but every truth is or will be good for life one day.” **Karel Čapek**, *Talks with T. G. Masaryk*

GRANTS

The grant awarded by the European Research Council offers the greatest freedom and independence for one's own research work also for senior researchers. The application for the **ERC Advanced Grant** may be submitted by established and internationally known group leaders (“principal investigators”) with a strong CV evidencing their scientific and mentoring success in the past ten years. Not only the publication and non-publication results of the research are assessed; the ability of the researcher-mentor to develop the scientific career of younger researchers is also of great importance and the scientific achievements of the applicant's students are evaluated. A proposal of a highly innovative and “high-risk high-gain” project is also expected from applicants at this stage. It is possible to apply for EUR 2.5 million for a 5-year research project and an additional amount of EUR 1 million for instrumentation equipment. Project proposals are evaluated by 25 thematic panels, each consisting of 10–16 evaluators. The success rate of applicants is around 10 %. A new call of ERC Advanced Grants is expected to be announced on 20 May 2021 as a part of Horizon Europe, with the expected deadline for the submission of applications on 31 August 2021. The ERC grant is transferable to any place throughout Europe.

In the period of 2008–2020, 3,068 ERC Advanced Grants were awarded in Europe, of which 8 were received by researchers in the Czech Republic, 3 in the fields of chemistry and life sciences: 2008: [Josef Michl](#) and [Detlef Schröder](#) (Institute of Organic Chemistry and Biochemistry CAS), 2014: [Vojtěch Novotný](#) (Biology Centre CAS).

ERC applicants whose projects were highly evaluated, but who ended up right below the line due to the lack of financial resources, can receive support from the Czech Republic through the program **ERC CZ** administered by the Ministry of Education, Youth and Sports (MŠMT). In the period of 2012–2020, five rounds of this program took place, where 2 ERC Advanced Grants were financed from national resources in the fields of life sciences and chemistry: 2012: [Michal Pravenec](#) (Institute of Physiology CAS), 2013: [Julius Lukeš](#) (Biology Centre CAS).

A group of 2–4 independent researchers can apply for the **ERC Synergy Grant**. A proposal of a highly innovative and “high-risk high-gain” project is expected, which can only be implemented through mutual collaboration of applicants. Projects are up to 6 years long, with the maximum support up to EUR 10 million plus and an additional amount of EUR

4 million for instrumentation equipment. 89 projects have been supported in the previous four calls (2012, 2013, 2018 and 2019). [Josef Komenda](#) of the Institute of Microbiology CAS in Třeboň is a co-investigator of the project “Redesigning the Photosynthetic Light Reactions”, coordinated by Dario Leister of Ludwig Maximilian University of Munich.

The main Czech provider of grant support for basic research is the [Czech Science Foundation \(GAČR\)](#). The grants under the [GAČR Standard](#) program exist ever since 1993. These are intended for 2- to 3-year projects in basic research in all scientific disciplines. The amount of the budget is not limited. The project is investigated either by a single person or by a team of researchers of one or more institutions. The program is announced in February each year, with the deadline for submitting applications in the middle of April. The evaluation results are published at the beginning of December and the project implementation starts as of 1 January of the following year. The success rate of applicants in 2019 was 25 %. Applications are filled in electronic form in the application [GRIS](#) and submitted through the data mailbox of GAČR.

In 2018, the Czech Science Foundation announced the program [GAČR EXPRO](#) to support scientific excellence. The aim is to create the conditions for the development of excellent research, set standards for excellent science and help to overcome barriers that reduce the success of ERC project proposals and enable the acquisition of the necessary knowledge and experience to be enhanced by highly prestigious European grants. Project proposals can be submitted from all areas of basic research and are evaluated in eight thematic panels. The project is solved by one person or a team of researchers from one or two institutions. The grant in the total amount up to CZK 50 million is awarded for a period of 5 years. The deadline for the submission of applications is usually in April, the evaluation results are known at the beginning of November. The project implementation always commences as of 1 January of the following year. In the latest, third year, 123 project applications were evaluated and 16 projects were supported, with the commencement date on 1 January 2021 (13 % success rate). The next call will be announced in 2022.

In the period of 2018-2020, 74 GAČR EXPRO grants were awarded in total (36 in 2018, 22 in 2019 and only 16 in 2020). Grants were awarded to projects in the field of chemistry (EX3): [Jiří Čejka](#) (Charles University) [Pavel Hobza](#) (Institute of Organic Chemistry and Biochemistry CAS), [Martin Hof](#) (J. Heyrovský Institute of Physical Chemistry CAS), [Martin Pumera](#) (Brno University of Technology), [Lukáš Trantířek](#) (CEITEC MU); 2019: [Michal Hocek](#) (Institute of Organic Chemistry and Biochemistry CAS), [Pavel Jelínek](#) (Institute of Physics CAS), [Josef Michl](#) (Institute of Organic Chemistry and Biochemistry CAS); [Lukáš Palatinus](#) (Institute of Physics CAS), [Petr Slaviček](#) (University of Chemistry and Technology Prague); projects in the field of human biology and medical sciences (EX4): 2018: [Vítězslav Bryja](#) (Masaryk University), [Zdeněk Lánský](#) (Institute of Biotechnology CAS), [Pavel Plevka](#) (CEITEC MU), [Petr Šebo](#) (Institute of Microbiology CAS), [Leoš Valášek](#) (Institute of Microbiology CAS); 2019: [Petr Svoboda](#) (Institute of Molecular Genetics CAS); 2020: [Lumír Krejčí](#) (Masaryk University), [Jiří Neužil](#) (Institute of Biotechnology CAS); and projects in the fields of biology and agricultural sciences (EX5): 2018: [Milan Chytrý](#) (Masaryk University), [Michal Koblížek](#) (Institute of Microbiology CAS), [Josef Komenda](#) (Institute of Microbiology CAS), [Vojtěch Novotný](#) (Biology Centre CAS), [Petr Pyšek](#) (Institute of Botany CAS), [Tomáš Scholz](#) (Biology Centre CAS); 2019: [Jiří Fajkus](#) (CEITEC MU), [Rohit Ghai](#) (Biology Centre CAS), [Roman Grabic](#) (University of South Bohemia in České Budějovice), [Marek Jindra](#) (Biology Centre CAS), [David Storch](#) (Charles University); 2020: [Mary Anne O'Connell](#) (CEITEC MU), [Martin Reichard](#) (Institute of Vertebrate Biology CAS).

The Czech Science Foundation also supports international cooperation in basic research through the program [GAČR International – Bilateral](#), based on signed international agreements on cooperation with international partner organizations: Germany (Deutsche Forschungsgemeinschaft, [DFG](#)), [Korea](#) (National Research Foundation of Korea, [NRF](#)), [Taiwan](#) (Ministry of Science and Technology, [MOST](#)), [Brazil](#) (São Paulo Research Foundation, [FAPESP](#)) and [Russia](#) (Russian Foundation for Basic Research, [RFBR](#)). These are also 2- to 3-year projects in basic research in all scientific disciplines. Each national provider finances activities relating to a part of the project investigation taking place within their territory. The project evaluation takes place independently on both partner agencies (in the case of the GAČR it has a form of the peer review which utilizes the panel system of the GAČR and foreign opponents). The provision of GAČR's support for an international project is conditional upon its approval by both national providers.

Another program of the GAČR financing international collaboration is the [GAČR International – LA](#) (“Lead Agency”), within the scope of which it is possible to submit joint project proposals together with international partner organizations with which GAČR has agreements concluded. In 2020, such partner countries were Austria (Fonds zur Förderung der wissenschaftlichen Forschung, [FWF](#)), [Poland](#) (National Science Centre, [NCN](#)), [Slovenia](#) (Slovenian Research Agency, [ARRS](#)) and [Switzerland](#) (Swiss National Science Foundation, [SNSF](#)). The projects in all areas of basic research last for 3 years. Each national provider finances activities relating to a part of the project investigation taking place within their territory. The projects are evaluated on the basis of the “Lead Agency” principle. Only one joint grant project proposal is submitted, which is evaluated by only one of the national agencies on the basis of an international “peer review” system, the other party accepts the results of the evaluation process. GAČR has newly been participating in the European initiative [Weave](#) supporting 12 national grant agencies with the aim of supporting bi- and trilateral projects in excellent basic research. The financing of international projects through LA grants will be extended.

International research cooperation is also intended to be supported by the program [MŠMT INTER-ACTION](#). 9 calls were announced in the period of 2017–2019. 2017: China, USA; 2018: Russia, USA; 2019: Bavaria, China, India, Israel, USA. Grant applications for international cooperation have so far been submitted exclusively in the Czech language and have been evaluated only by Czech evaluators. In 2020, the Ministry of Education, Youth and Sports cancelled all calls. In 2021, calls INTER-ACTION with the USA and Germany (Bavaria, Saxony) are expected. Financing of projects under the new program INTER-EXCELLENCE II is planned to start in 2022.

APPLIED RESEARCH GRANTS

The **Technology Agency of the Czech Republic** (TAČR) is the main Czech provider of support for applied research, development and innovations. In most calls of the TAČR, the condition for granting support is the collaboration with a company (or another entity from the application sphere) and co-financing of the project from own resources of partner institutions. Academic institutions can usually apply for full funding of their costs, provided that all co-financing is covered by cooperating firms. The [schedule of calls](#) for 2021 is available on the website of TAČR. Applications are filled in electronic form in the application [ISTA](#) and submitted through the data mailbox of TAČR.

The **Ministry of Health Care of the Czech Republic** each year announces, through the **Czech Health Research Council** (AZV ČR), a public competition within the scope of the **Program for Support of Applied Health Research**. The program supports projects with at least 80 % share of applied research and at least 20 % share of basic research. Priority topics are population aging, diseases of civilization, infections and antimicrobial resistance, development of new biotechnologies, search for new molecules with therapeutic effects, information and communication technologies in healthcare. Cooperation between research institutions and hospitals and companies is advantageous. The main result is considered to be a peer-reviewed professional article in a journal with IF (Jimp); utility model (F); patent (P); prototype, functional sample (G); software (R); methodology, treatment procedure (N); pilot plant, proven technology (Z). A new call is expected to be announced in May 2021, with the deadline in June 2021. Applications are filled in electronic form in the application [ISVP](#) and submitted through the data mailbox of AZVČR. The evaluation results will be published in February 2022. It will be possible to commence the projects as of 1 May 2022 and to implement them for no more than 44 months, i.e. until 31 December 2025. The success rate of applicants is around 20 %. The participating companies require co-financing of 30–50 % in the case of industrial research, 55–75 % in the case of experimental development.

ZEMĚ (EARTH) is a program of applied research of the **Ministry of Agriculture of the Czech Republic**. It supports innovative agriculture and forestry through advanced methods and technologies and the state policy in the agricultural sector. The condition for submitting a project is the participation of at least one company. The maximum length of projects is 5 years (sub-program I) or 3 years (sub-program II). Eligible results are the original / review article in a professional periodical in WoS with the flags "Article", "Review", "Letter" (Jimp); utility model, industrial design (F); prototype, functional sample (G); results reflected in legislation and standards, directives and regulations of non-legislative nature binding within the competences of the relevant provider (H); methodology, treatment procedure, specialized map with professional content (N); patent (P); software (R); pilot plant, proven technology, variety, breed (Z). The next call is expected to be announced in April 2021, with the deadline for submitting applications in the middle of June 2021. Applications are filled in electronic form in the application [ISTA](#) and submitted through the data mailbox of the Ministry of Agriculture. The evaluation results will be known in the middle of November 2021. The implementation of projects commences as of 1 January 2022. In sub-program I, it is necessary to obtain 15 % co-financing of the project from the investigating institutions.

The **State Environmental Fund of the Czech Republic** (SFŽP) supports projects and activities in the field of environmental protection. It is possible until 30 April 2021 to submit applications for subsidies for **planting of deciduous trees** within the scope of the **National program "Environment"** with an allocated budget of CZK 200 million. On 30 November 2020, the submission of applications was closed for a subsidy for measures aimed at the protection and preservation of endangered natural habitats outside specially protected areas and for the protection of species on the red lists. The **Rondane** call is financed from Norway Grants.

ERC Proof of Concept Grants enable the holders of ERC grants financing of the verification of the application potential of the outcomes of their projects.

A new element in the **Horizon Europe** program is an entity similar to the ERC for the field of innovation, so-called **European Innovation Council** (EIC). Despite its focus on innovation in small and medium-sized enterprises, it also offers interesting opportunities for academic researchers. These are possible primarily through the program **EIC Pathfinder** (in H2020 it was the FET OPEN program), which finances consortia developing breakthrough basic research results into transformative technologies ready for more advanced applied research.

CONSORTIUM GRANTS

As years pass by, you obtain valuable experience in the implementation of both individual and collaborative research projects. As an experienced senior group leader, you can coordinate even research consortia.

Take advantage of your international contacts and get involved in some of the running **COST Actions** or initiate and coordinate the establishment of a new **COST Action**. COST supports the creation of international consortia for co-operation in a specific research field, meetings of the research community and education of students. Active members of a running COST Action from the Czech Republic may submit a separate research project in the program **MŠMT INTER-COST** of the Ministry of Education, Youth and Sports. This program is being implemented in the Czech Republic since 1993, during which time projects of Czech teams worth more than CZK 1 billion have been supported. Grant applications for international cooperation are submitted exclusively in the Czech language and evaluated only by Czech evaluators. The deadline for the submission of applications is usually in the middle of December and the evaluation results are announced in the middle of May of the following year. The success rate of applicants is around 50 %. The fifth competition with the deadline planned for December 2020 was cancelled by the Ministry of Education, Youth and Sports. It is still uncertain whether the new call of the INTER-COST program will be announced in 2021.

International scientific cooperation projects are funded by the European Union's Framework Programs for Research and Innovation (in 2014–2020 it was the program Horizon 2020, in 2021–2027 it will be the program [Horizon Europe](#)). The Framework Programs include the already mentioned ERC grants for independent researchers and small teams. However, most of the budget goes to large consortia projects of around 8 to 40 partner institutions from academic, private and public sphere, which address the European Union's key priorities through research and innovation. The EU priority topics in the Horizon Europe program are described in five clusters. The clusters relevant for life sciences are Health and Food, Bioeconomy, Natural Resources, Agriculture and Environment. Cluster projects are usually application-oriented. These projects are expected to present solutions of very specific problems. For example, the “[Green Deal](#)” initiative. Individual calls are published by the European Commission in a single system for the complete life cycle of projects – [Funding & Tenders Portal](#). For opportunities monitoring, there is a relatively well-functioning keyword search available.

The program [Horizon Europe](#) will also support thematically unlimited international consortia focusing on researchers' mobility. [MSCA Doctoral Networks](#) (in H2020 known as MSCA ITN) finances four-year projects of PhD students' mobility within the scope of the joint educational program of at least three research institutions from at least three European countries (participation of 6–10 institutions is expected). The project will support up to 10 PhD students for a period of 3–36 months. The maximum support per project is expected to amount to 360 person-months. MSCA will cover personnel costs (salaries and taxes) in the amount of EUR 3,450 per month (depending on the country of destination; part-time positions are possible in the case of taking care for a child), EUR 600 per month as mobility allowances, EUR 600 per month as family allowances, EUR 1,600 per month as a subsidy for research and EUR 1,200 per month as a subsidy for administrative and indirect costs. A new call will be announced on 4 May 2021, with the deadline for submitting applications on 16 November 2021.

[MSCA Staff Exchange](#) (in H2020 known as MSCA RISE) finances 4-year projects focused on mobility of researchers and administrative employees within the network of academic and non-academic institutions. Projects are submitted by consortia of at least three research institutions from at least three European countries (participation of 6–10 institutions is expected). The aim is to create cross-sectoral and interdisciplinary networks with an overlap to non-European countries to deepen the exchange of knowledge and skills. The maximum support per project is expected to amount to 360 person-months. The mobility of each employee is 1–12 months and up to 30 employees may be financed for the entire year. Personnel costs (salaries and taxes) are not covered. MSCA will contribute EUR 2,300 per month for each mobility, EUR 1,300 per month for research and EUR 1,000 per month for administrative and indirect costs. Compared to H2020, the fixed rates will be reduced. A new call will be announced on 7 October 2021, with the deadline for submitting applications on 9 March 2022.

You can also participate in a number of international partnerships, usually organizationally or financially supported by the EU Framework Programs. In life sciences, these include, for example [EuroNanoMed](#) or [BiodivRestore](#). In these programs, the project proposal is submitted by an international consortium, evaluated at the European level and, if successful, funded by national agencies. In the Czech Republic, this is the [Technology Agency of the Czech Republic](#) (TAČR). The deadline for submitting applications for the program [BiodivRestore](#) was on 7 December 2020. The budget of a 3-year project is EUR 1.5 million in average. The maximum support for a Czech partner in the consortium is EUR 150,000. 15 % co-financing by the Czech applicant is mandatory. Project proposals on behalf of the entire consortium are filled in electronic form, via the [EPSS Submission Platform](#), applications of the Czech partner are accepted by TAČR via the application [ISTA](#) and via data mailbox.

Some transnational applied research programs are also administered and financed by the [Ministry of Education, Youth and Sports](#) (JPND: neurodegenerative diseases, E-RARE: [EJP RD](#) rare diseases, [JPI HDHL](#): healthy nutrition for healthy life, [JPIAMR](#): antimicrobial resistance).

[Program LIFE](#) is a financial tool of EU for the environment and climate. It supports projects in the area of nature and landscape, environment and climate protection throughout the EU. Its aim is to contribute to the development of a low-emission, resource-efficient, climate-resilient and climate-friendly economy, and to help protect and improve the environment and biodiversity. Another LIFE call will be announced in the spring of 2021. The participation of Czech applicants in the LIFE program is supported by the Ministry of the Environment of the Czech Republic through the [National LIFE call](#).

The program [Interreg](#) is a tool of the European Commission for the use of research results for the development of regional cross-border cooperation. The supported projects implement intelligent solutions that provide answers to regional challenges in the areas of innovation, low-carbon economy, environment, culture and transport. The immediate impact of the project on a specific region is important in this respect. Czech Republic participates in the programs [Interreg Europe](#), [Interreg Central Europe](#), [Interreg Danube](#), [Interreg V-A Austria – Czech Republic](#), [Interreg V-A Czech Republic – Poland](#), [Interreg V-A Germany/Bavaria – Czech Republic](#), [Interreg V-A Germany/Saxony – Czech Republic](#) and [Interreg V-A Slovakia – Czech Republic](#). An aspect typical for Interreg projects is close cooperation with the local self-administration and users of the project outputs (stakeholders). Regional contact points (usually regional authorities) have a decisive influence on the project selection process. It is necessary to consult the project plan itself with the contact points and to obtain their consent and support for the project implementation and introduction of the project results in practice. The nearest deadline for submission of applications for 3-year Interreg projects will be on 15 January 2021 for Austria – Czech Republic co-operations and on 19 January 2021 for Bavaria – Czech Republic co-operations. The Interreg program is presented [here](#) by Jiří Koleček of the University of South Bohemia in České Budějovice.

FELLOWSHIPS

As a research group leader, you cannot afford to travel abroad for a longer period of time, leaving your team. Most frequently, you send out your students (see part [2](#) and [3](#)) and your sabbatical (see part [4](#)). You personally may find useful fellowships for the development of international cooperation or sabbatical programs.

EMBO Short-Term Fellowship covers a 7- to 90-day research internship. The success rate of applicants is around 50 % and the applicants receive the results of the project evaluation within three months after submitting their application, which can be submitted at any time during the whole year.

Matsumae Fellowship allows covering a 3- to 6-month internship of a researcher under 49 years of age in Japan. The most recent deadline for submitting applications was on 30 June 2020, the next one is expected in June 2021.

It is possible to spend one academic year (3–10 months) at a research internship in the USA with the **Fulbright Scholarship for Researchers and Scholars** or with the **Fulbright-Masaryk Scholarship**. The scholarship covers living costs, contribution to return air ticket, basic health care insurance and contribution to research and further professional development. The grant also includes minor contributions for family members. Online applications are submitted by 1 November each year. The deadline on 1 November 2021 is intended for internships taking place in the academic year of 2022/2023. The success rate of Czech applicants is 25 %.

AWARDS

The world's most prestigious award for the results of scientific work is the **Nobel Prize**. It has been awarded annually since 1901 pursuant to the last will of the Swedish scientist and entrepreneur Alfred Nobel for fundamental scientific research, technical discoveries or the contribution of human society. Nobel Prize in Chemistry is awarded by the Swedish Royal Academy of Sciences, and the Nobel Prize in Physiology or Medicine is awarded by the Karolinska Institute. Nobel Prizes are presented by the Swedish king on 10 December each year. In the almost a century-old history of the awards, Nobel Prize has only been received once by a Czech scientist – [Jaroslav Heyrovský](#) in 1959 for his discovery and development of the analytical polarographic method.

Körber European Science Prize is awarded each year since 1985 by the Körber Foundation in Hamburg. Extraordinary research projects by European scientists in the field of physics and life sciences are appreciated. The laureate receives a prize of EUR 1 million (until 2018, it was EUR 750,000). The laureate of this prize for 2010 was the plant biologist [Jiří Friml](#).

Excellent scientific work is also awarded with the membership in the EMBO. More than 1,800 top European molecular biologists, genetics and biochemists are **EMBO Members**. New EMBO members can be nominated by the existing members each year, until 1 December. Voting of EMBO members takes place between 15 December and 1 February. The Czech Republic has the following **EMBO members**: [Eva Bárťová](#) (Institute of Biophysics CAS), [Jiří Forejt](#) (Institute of Molecular Genetics CAS), [Mary Anne O'Connell](#) (CEITEC MU), [Václav Pačes](#) (Institute of Molecular Genetics CAS), [Ivan Raška](#) (Charles University), [Karel Říha](#) (CEITEC MU), [Peter Šebo](#) (Institute of Microbiology CAS), [Petr Svoboda](#) (Institute of Molecular Genetics CAS), [Štěpánka Vaňáčková](#) (CEITEC MU), [Jan Závada](#). EMBO members also include Czechs who live abroad: [Jiří Bartek](#) (Danish Cancer Society, Kodaň), [Jiří Friml](#) (Institute of Science and Technology Austria, Klosterneuburg), [Petra Hájková](#) (Imperial College London), [Josef Jiříčný](#) (ETH Zurich), [Jan Klein](#) (USA), [Jiří Lukáš](#) (University of Copenhagen).

EMBO Gold Medal is presented each year since 1986 for an extraordinary contribution in the field of life sciences in Europe. Proposals are submitted by the EMBO members. The laureates receive a prize of EUR 10,000 together with the medal. Among Czech scientists, this award was received by [Marek Basler](#) (2018, University of Basel) and [Jiří Friml](#) (2012, Institute of Science and Technology Austria, Klosterneuburg).

The **Czech Academy of Sciences (CAS/AVČR)** has been developing the scientific excellence of its institutes since 2007 through the **Academic Premium** in the annual amount of CZK 5 million for a period of 6 years. This support is granted to excellent researchers who carry out research work at the top international level and it should allow them to better develop their potential for the benefit of the CAS and the Czech science. Proposals are submitted by the directors of various institutes of the CAS and the chairman of the Scientific Board of the CAS.

Neuron Award has been granted since 2009 for a contribution to world science. This award is given to prominent scientists working at home and abroad who, with their discoveries of world importance or long-term work, have made a major contribution to the development of science, strengthened the name of the Czech Republic and are a role model and inspiration for other members of the scientific community. Nominations are collected until the end of March each year. The international scientific board of the Fund participates in the selection of the laureates. Each laureate receives a prize of CZK 1.5 million. Award winners in 2010: [Jiří Bartek](#), 2011: [Tomáš Klíma](#), 2012: [Marek Malík](#), 2013: [Jiří J. Víték](#), [Rudolf Zahradník](#), 2014: [Jiří Čížek](#), [Bohdan Pomahač](#), 2015: [Josef Koutecký](#), [Josef Paldus](#), 2016: [Josef Michl](#), [Jan Svoboda](#), [Milan Šamánek](#), 2017: [Otto Hrodek](#), [Emil Paleček](#), [Josef Svoboda](#), 2018: [Jan Klein](#), 2019: [Jiří Friml](#).

Since 2002, the company Česká hlava (Czech Head) together with the Office of the Government of the Czech Republic annually awards the **Česká hlava Award**. The national government award of Česká hlava (Czech Head) includes a financial reward of CZK 1 million. Nominations are collected until the end of June each year. Award winners in the field

of life sciences in 2002: [Karel Smetana](#), 2003: [Zdeněk Herman](#), 2007: [Antonín Holý](#), 2008: [Pavel Hobza](#), 2009: Jiří Homola a [Josef Koutecký](#), 2010: [Jan Svoboda](#), 2011: [Petr Widimský](#), 2012: [Pavel Klener](#), 2014: [Emil Paleček](#), 2016: [Jiří Forejt](#), 2018: [Jaroslav Doležel](#), 2020: [Václav Hořejší](#).

The Invention Award is granted for a discovery or extraordinary achievement made in the last few years in the field of basic or applied research, or for technological innovation, taking into account the perspective of usability in practice. Laureates receive a financial reward of CZK 250,000.

The most significant result of basic research in automation, cybernetics, medicine, IT, natural sciences, can obtain **Werner von Siemens Award**. The best project receives a financial reward of CZK 300,000. The next deadline for the submission of applications will most probably be on 30 November 2021.

Rudolf Lukeš Prize is awarded annually by the Czech Chemical Society's Expert Group of Organic, Bioorganic and Pharmaceutical Chemistry in cooperation with Experientia Foundation for an outstanding collection of original work in the field of organic, bioorganic and medical chemistry published in prestigious international journals in the last 5 years. The main goal of the prize is to increase the visibility of the best researchers and their successes, thus improving the motivation of the scientific community to achieve excellence.

Josef Hlávka Medal is awarded to doyens, founders and other distinguished personalities of Czech public universities, Czech science and arts as an appreciation of their life-long work for the benefit of the Czech science, arts and intelligence. Nominations are collected until the end of July each year. The award is presented on 17 November at the chateau of Josef Hlávka in Lužany u Přeštic and it is associated with a financial contribution of CZK 75,000.

The **Medaile Za zásluhy** is a lower state award of the Czech Republic. It is awarded by the President of the Czech Republic every year on 28 October on the occasion of the celebrations of the establishment of an independent Czechoslovak state.

INSPIRATION: **JIRÍ KOLEČEK ON INTERREG**

Jiří Koleček studied at the Faculty of Education at the University of South Bohemia in České Budějovice. He defended his rigorous thesis at Constantine the Philosopher University in Nitra. He obtained his work experience, above all, from his work at the Regional Development Agency of South Bohemia and in Technoexport, a.s. Nowadays, he works as a project manager of international projects at the Faculty of Fisheries and Protection of Waters at the University of South Bohemia in České Budějovice. He oversees or directly provides project support for international projects at the faculty. Apart from Interreg, this includes also H2020, Norway Grants and so on.



Photography: FROV JU

What is the Interreg programme?

Interreg is one of key instruments of the European Union. It supports international cooperation through project funding. It aims to jointly address program challenges and find common solutions in the areas of health, environment, research, education, traffic, sustainable energy etc. Between the years 2014 and 2021, 60 international programs, 15 transnational and 4 interregional projects were announced. They differ, above all, in terms of their regional scope. For Czech participants only some of them are relevant. In the specified period, the plan was to contribute EUR 1 billion for cooperation programs at the outer borders of the EU supported by the instrument of Pre-Accession Assistance (IPA). This was already the fifth period of the Interreg program.

In which Interreg programs can researchers from the Czech Republic participate?

The Czech Republic participates in the programs [Interreg Europe](#), [Interreg Central Europe](#), [Interreg Danube](#), [Interreg V-A Austria – Czech Republic](#), [Interreg V-A Czech Republic – Poland](#), [Interreg V-A Germany/Bavaria – Czech Republic](#), [Interreg V-A Germany/Saxony – Czech Republic](#) a [Interreg V-A Slovakia – Czech Republic](#). The programs exist for all neighbouring countries.

That's quite a big number. Is there any way to find your way around?

Of course, just look at the programs covered by INTERREG in your area and whether it is relevant for our applicants. In some cases, the partner's location is not important, since the decisive factor is the area of impact. If in doubt, you can always ask at the contact points.

Why should researchers get involved in the Interreg programs?

People who see any meaning in Interreg should participate. For both leaders of R&D teams and early-stage researchers, Interreg represents an excellent opportunity to support the impact of their R&D activities in practice, especially in the context of the regions concerned. After all, all projects have a potential impact on the entire EU. In this sense it places great emphasis on sharing experiences. Interreg is not a program primarily aimed at supporting education or basic research (unlike H2020 or Horizon Europe), nevertheless, it is directly related to these areas. Specifically, in projects, where the researcher demonstrates positive impacts of his/her activities in scope of the project on real issues in the respective program area, the results of the R&D activities can influence key regional calls (for instance in sustainable landscape management, circular economy or waste management, etc.). Thus, this is an extremely attractive tool for research teams planning to include projects emphasising direct socio-economic impacts in their portfolio. In the extent, they might also look for making possible changes in setting of the respective related politics. In this context, the projects use R&D activity outputs in cooperation with international partners seeking to apply them in practice in the regions.

How can I get involved in the Interreg programme?

At the regional level, the Interreg projects are characterised by a very close cooperation with local governments and with stakeholders, i.e. the outputs users, meaning those, who can benefit from the outputs. One of key specifics of the program is a dialogue, which starts with the definition of the project goal, continues with its realisation and finishes with communication about implementing the results into practice. Here, the important partners are represented by regional contact points (usually the regional authority, respective department, or in specific cases – the Ministry of Regional Development), or a joint secretariat of the corresponding Interreg program. Already during the project goal definition, these institutions can usually provide a highly relevant feedback and therefore, can be considered as key actors in relation to the future support of the project. For researchers who are not fully familiar with the Interreg projects or want to test the functionality of interregional/international partnerships beforehand, so-called Small Project Funds are particularly suitable, if they can find a common topic. These are bilateral projects providing support in the amount of thousands of euros, or lower tens of thousands of euros, but, from the point of view of project management, they still involve all program aspects. For standard larger consortia projects, we usually consider projects of a maximum duration of three years with the funding of a few hundreds of thousands of euros per partner. According to the type of the program, there have to be at least two (international) partners or more. Therefore, for the research teams, this can represent a very attrac-



tive possibility of involvement with other R&D institutions in Europe, but, above all, an opportunity to influence regional policies, possibility to provide transfers of good practice between regions and, last but not the least, undoubtedly contribute to socio-economical benefits within the program area. In the end, this is one of the main goals of the R&D institutions. Later on, individual teams and R&D institutions are evaluated, for example by the Ministry of Education, Youth and Sports (MŠMT), and therefore, in a more complex point of view, this can influence their financing from other resources.

What is the system of evaluation of the project application, what is the success rate of applicants?

The question of evaluation is more complex, so my answer will rather focus on the applicants' success rate. From my experience, I would also like to emphasise the possibility, sometimes even a necessity, to consult the project goal already in the stage of its defining with the regional contact point. This is even more relevant for international programs. If there is a positive response from the contact point, the possibility of obtaining support is very realistic, in particular for R&D institutions. You could say, that if you receive a positive response there, and usually a lot of specific recommendations for further work on the goal, which are at least to be considered, your chances are very high. From my experience, the Czech contact points operate on an excellent level. It is in their interest to help with consultation of the project goals in a manner ensuring that the evaluation committee will subsequently work with the best quality projects. In the end, this is also in the interest of the applicants. At the same time, sometimes the applicant may overlook certain aspect of the call and the program. Therefore, it is very useful if he/she is notified on time, already at the contact point. Therefore, it usually doesn't happen that the application would be finished with a high effort, but the proposal would be ineligible. This is in no one's interest. Naturally, the evaluation committee has the decisive word. Furthermore, the Czech Republic supports the successful applicants with a contribution of another 5% from the national budget. We have achieved this amount with all large projects. It can look like a relatively small help, but it is noticeable in the total and we highly appreciate it.

What Interreg projects do the researchers from the Faculty of Fisheries and Protection of Waters at the University of South Bohemia in České Budějovice collaborate on?

Since 2010, we have successfully implemented more than 10 projects funded from Small Project Fund, in cooperation with our Austrian colleagues. Among the larger schemes, we earned a lot of experience from LakeAdmin project within the INTERREG IVA program. The experience included principles of management and communication with our partners, output users on the level of both countries and regions, as well as involvement of professional teams into expert work with the necessary impacts into practice. Through other big projects with partners, especially in cooperation with Austria and Saxony, we have managed to work on coordination of two 3-year projects ATCZ215 – Imageheadstart and ATCZ221 Algae4fish. We are also completing a very interesting project of monitoring non-native organisms in the Elbe river and its tributaries within the MOBIAQUA projects.

What are the topics of the projects?

The topic is always based on practical needs in the program area, since it is a part of the program definition. We try to combine this with the current focus of our R&D teams, to find suitable partners abroad as well as within the Czech Republic. ATCZ215 – Imageheadstart addresses advanced screening techniques and ground-breaking computer vision applications in the microworld. The point is, that we and our partners have great equipment and knowledge that many companies in the region are not aware of. We can offer them, of course, outside the scope of the project, a high-quality cooperation and thus support the regional competition. The goal of ATCZ221 Algae4Fish is a joint research, development, and a demonstration of innovative technologies using waste nutrients from agricultural production for the preparation of high-quality food for intensive aquaculture. Therefore, in a relatively conservative field, we offer an ecologically sustainable method granting the user an undeniably competitive advantage. Thus, under equal conditions, in both projects, the implementation is possible, and it has suitable mechanisms for further application of our outputs in practice. We perceive our role in a high-quality communication with people from practice, not only in presentation of outputs to the market on our own.

How do you evaluate the current experience with the Interreg program and the benefits it brought to your faculty and to the research community?

It is definitely a great way of communication with the relevant authorities at regional and national level responsible for policies in the addressed areas. Within the scope of the projects, we cooperate with colleagues from such authorities and they get the opportunity to find out what we are able to experimentally verify and confirm in practice. For individual teams it is, without a doubt, an opportunity to work with colleagues from other European regions which is always appreciated. It is obvious, that some of the outputs, apart from practices, appear in professional journals. Furthermore, we, meaning a big research infrastructure called CENAKVA, are explicitly evaluated for the quality of our international cooperation. This is also related to a further potential financing of the centre. Therefore, if the R&D activities and support of transfer of knowledge into practice is one of our main tasks, the secondary benefit from implementation of similar projects is clear. This is actually an obligation, if we want to be one of the best worksites within our field.

What kind of specific outputs have your researchers achieved thanks to the Interreg program?

There is a long list of them, so I will have to choose a recent one, and I hope my other colleagues will forgive me. As a part of the MOBIAQUA project in cooperation with our colleagues from TU Dresden, we have performed an unusually extensive and complex mapping of invasive species on the Elbe river and its tributaries – both in the Czech Republic and in Saxony. We have prepared an online application for fishermen where they can determinate the species of animals which they catch or otherwise discover in the area. Today, the application is being filled with a number of samples with pictures and other data. This is incredibly valuable for monitoring of further spread – not only for us professionally, but also practically for our colleagues from the river basin management or the conservation area administrations. To such extent, as academic workers, we would never be able to achieve this. It is possible to say that today we cooperate with thousands of fishermen.



Are there any other Interreg programs planned for the next 2021–2027 programming period? When will further calls be announced?

They are planned, but I dare not estimate the specific dates of specific calls, due to the current situation. From my experience, it is not important whether it is a month earlier or a month later. Now we have relatively enough time to look at the program proposals, consult the situation with our colleagues from the Ministry of Regional Development or at the level of individual regions, and above all, to talk to our partners from abroad, and within the rough or clear outlines we can start to plan our cooperation and specific goals. In practice we see that a vast majority number of projects is terminated during this specific preparatory phase, often because of seemingly trivial and solvable complications. Therefore, I strongly recommend getting in touch, consulting and preparing everything in advance.



PART 8: RESEARCH ASSISTANTS

The eight part of our series summarizes the possibilities of research assistants. They want to do science, but are not yet ready to lead their own team. Research assistants have extensive know-how and experience and that is why they are usually right-hand men and women of the group leaders.

You have completed your PhD studies and you have undertaken a postdoc internship abroad. You want to do science, but do not wish to be the group leader yet and be responsible for other people. You applied for a position of a group leader and for your own research grant, but you have not succeeded. You were a research group leader, but a recommendation was issued based on evaluation performed by an international panel that your research group be terminated because of a lack of outputs. In all these situations, you are in the position of a research assistant in a research group led by a junior or senior group leader.

Many group leaders are purposefully looking for a skilled, reliable, independent research assistant in their group. Such a person brings stability and continuity into the research group. They have extensive know-how and experience, they are guarantors of methodologies and processes, they develop new approaches, they solve subparts of the projects, they are good mentors for students and postdocs. They help with the preparation of grant applications, measurement, evaluation and interpretation of data, writing of professional publications, presentation of results at international conferences. They are right-hand men and women of the group leader.

The [Career Guidelines](#) of the Czech Academy of Sciences (CAS/AVČR) determine the career level of a postdoc for a maximum length of 5 years after obtaining their PhD degree. After that, they have to pass attestations and prove their scientific independence as researchers. They are expected to publish scientific works in domestic and foreign peer-reviewed journals on a regular basis and they are usually investigators of grant or program projects. However, if they do not succeed in this, it does not mean that they cannot continue in science. They can stay as team members at the position of a “research assistant”. At the same time, they have the opportunity to gain time, gradually work out and then advance in their career.

Research assistants can also find their place in shared service laboratories (core facilities). These facilities nowadays exist practically at all research institutions. Research assistants carry practical experience and know-how for the development of innovative methods, measurements and analyzes. They are able to master sophisticated instruments, invent new measurement approaches, analyze and interpret data. Therefore, their expertise is requested by various research groups, they participate in various research projects. They produce many co-authored articles resulting from many research collaborations.

As Czech research institutions open the positions of group leaders very rarely and irregularly and as it is very difficult and rare to get a chance to establish one’s own independent research group, many research assistants remain hidden in research groups of seasoned scientific aces. They keep writing grant applications, but prefer to submit them under the name of their boss to increase their chances of obtaining a grant. We assume that renowned group leaders will be more successful in grant competitions due to high competition.

The management of Czech research institutions is gradually starting to prioritize and support the existence of a larger number of small independent research groups up to a maximum size of ten people. Such trend will make it possible to increase the diversity of research topics, address more knowledge gaps, and implement more new high-risk high-gain projects. More promising young researchers will thus get a chance to show their talent and abilities. International advertising of available positions and open selection procedures can attract creative brains, fill more positions of group leaders, while maintaining the highest scientific excellence.

GRANTS

Research assistants assist in the preparation of grant applications for their junior group leaders (see Part 6) or their senior group leaders (see [Part 7](#)). We recommend trying to agree with your group leader and submitting your own project proposals. Primarily for the national calls: [GAČR Standard](#) grants, [GAČR International – Bilateral](#) grants, [GAČR International – LA](#) (“Lead Agency”) grants, [MŠMT INTER-ACTION](#), [MŠMT INTER-COST](#), applied research programs [TAČR](#), [National Program Environment](#), [Applied Health Research Support Program](#) (AZV), program [ZEMĚ \(EARTH\)](#) program of the Ministry of Agriculture of the Czech Republic. Available national programs are described in detail in the preceding two parts of our series.

In international competitions, research assistants have a chance to participate in the currently running [COST Actions](#). They can also succeed in [Interreg](#) cross-border cooperation programs. The supported projects implement intelligent solutions that provide answers to regional challenges in the areas of innovation, low-carbon economy, environment, culture and transport. The immediate impact of the project on a specific region is important in this respect. The Czech Republic participates in the programs [Interreg Europe](#), [Interreg Central Europe](#), [Interreg Danube](#), [Interreg V-A Austria – Czech Republic](#), [Interreg V-A Czech Republic – Poland](#), [Interreg V-A Germany/Bavaria – Czech Republic](#), [Interreg V-A Germany/Saxony – Czech Republic](#) and [Interreg V-A Slovakia – Czech Republic](#). An aspect typical for Interreg projects is close cooperation with the local self-administration and users of the project outputs (stakeholders). Regional contact points (usually regional authorities) have a decisive influence on the project selection process. It is necessary

to consult the project plan itself with the contact points and to obtain their support for the introduction of the project results in practice. The nearest deadline for submission of applications for 3-year Interreg projects will be on 15 January 2021 for Austria – Czech Republic co-operations and on 19 January 2021 for Bavaria – Czech Republic co-operations.

Research assistants may, in cooperation with non-profit organizations, get involved in applied research projects of **LIFE Program**. It supports projects in the area of nature and landscape, environment and climate protection. The involvement of Czech applicants in the LIFE program is supported by the Ministry of the Environment of the Czech Republic through the National call LIFE. One of the successful research assistants is **Hana Pánková** of the Institute of Botany CAS in cooperation with ČSOP Vlašim and the Ministry of the Environment of the Czech Republic with a joint project “**LIFE for Minuartia**”. The aim of the project is to increase the population of *Minuartia Smejkalii*, not only by revitalizing the habitats and building a gene pool bank, but also by the newly created rescue cultivation program in private gardens in cooperation with local residents. Another LIFE call will be announced in the spring of 2021.

FELLOWSHIPS

Research assistants can develop their career in science through short-term or long-term research internships abroad. **EMBO Short-Term Fellowship** covers a 7- to 90-day research internship. The success rate of applicants is around 50 % and the applicants receive the results of the project evaluation within three months after submitting their application, which can be submitted at any time during the whole year.

Matsumae Fellowship allows covering a 3- to 6-month internship of a researcher under 49 years of age in Japan. The most recent deadline for submitting applications was on 30 June 2020, the next one is expected in June 2021.

It is possible to spend one academic year (3–10 months) at a research internship in the USA with the **Fulbright Scholarship for Researchers and Scholars** or with the **Fulbright-Masaryk Scholarship**. The scholarship covers living costs, contribution to return air ticket, basic health care insurance and contribution to research and further professional development. The grant also includes minor contributions for family members. The deadline on 1 November 2021 is intended for internships taking place in the academic year of 2022/2023. The success rate of Czech applicants is 25 %.

MSCA Staff Exchange (in H2020 known as MSCA RISE) supports cross-sectoral and interdisciplinary networks with a reach to non-European countries by funding the costs of mobility of professionals who deepen collaboration and acquire new knowledge and skills leading to the common research goal of the consortium. The mobility of an individual employee lasts for 1–12 months. Personnel costs (salaries and taxes) are not covered. MSCA contributes EUR 2,300 per month for each mobility, EUR 1,300 per month for research and EUR 1,000 per month for indirect costs. A new call will be announced on 7 October 2021, with the deadline for submitting applications on 9 March 2022.

OTHER POSSIBILITIES

Research assistants have the opportunity to establish cooperation with companies and to finance joint applied research with the help of the **innovation voucher** provided by the Business and Innovation Agency (API). Small and medium-sized companies can buy expert know-how. The sixth call with 85 % financing is open until 31 December 2022. The Ministry of Industry and Trade of the Czech Republic (MPO) currently has the fifth call of the **Proof of Concept** program opened. Within the scope of this call, companies can obtain support to verify the application potential of new research and development results before their possible application in practice. The deadline for submitting applications for support is on 15 March 2021.

Research assistants may also be contract researchers, where they are instructed by the team leader to carry out the research activities or methodologies upon the order of a company or another institution (e.g. protected landscape area administrations) that usually set the research assignment. This work of a research assistant then has a direct financial benefit for the research team.



PART 9: RESEARCH INSTITUTIONS

The ninth part of our series presents grant possibilities for which research institutions or consortia of institutions compete. These competitions reflect primarily the activity and commitment of the top management of individual institutions.

Rectors, vice-rectors, deans, vice-deans, directors and deputy directors are elected representatives of colleges, universities, faculties, and research centers and institutes. Together with the appointed bursars and secretaries, they have full managerial responsibility for the efficient functioning, long-term direction and development of research institutions. They are the main drivers of modernization and progress. They design and implement long-term visions, concepts and strategic intentions. They set the organizational structure, corporate culture, research priorities, management and mentoring processes. They create internal regulations such as the statute, organizational rules, rules of procedure, salary guidelines, career guidelines, study and examination rules, management rules and much more. They announce open, transparent tenders for scientific and administrative posts. They administer institutional and grant financial resources. They are responsible for the scientific excellence, international reputation, attractiveness and competitiveness of the institution, for the contribution of the institution to the society.

To ensure scientific excellence, they recruit and regularly evaluate the leaders of research groups – bearers of research topics and projects who constitute the research community of the institution. To ensure the smooth running and continuous development of the institution, they employ and regularly evaluate specialists in economics, human resources, payroll, public procurement, study matters, law, project management, international relations, marketing, public relations, information technologies, property and building management and build a functional administrative and technical support team of these specialists. Each individual specialization is important and affects the functioning of the institution.

The top management sets the direction and rhythm of the institution. Enlightened and active management constantly initiates the preparation and implementation of new research and development projects. These are indispensable for ensuring the international competitiveness of any research institution.

GRANTS

In the previous parts of our series, we have shown how important international mobility is nowadays for one's scientific career in life sciences. Without international experience, it is almost impossible to obtain one's own research grant. Mobility enables obtaining and sharing of new experiences, knowledge and good practice. Mobility opens international cooperations, supports the existence of highly performing international interdisciplinary research teams and research schools. Mobility prevents confinement, inbreeding and creative stagnation. All prestigious research institutions use researchers' mobility for their development. The European Commission will support scientific mobility in the framework program [Horizon Europe](#).

MSCA Doctoral Networks (in H2020 known as MSCA ITN) finances four-year projects of PhD students' mobility within the scope of the joint educational program of at least three research institutions from at least three European countries (participation of 6–10 institutions is expected). The project will support up to 10 PhD students for a period of 3–36 months. The maximum support per project is expected to amount to 360 person-months. MSCA will cover personnel costs (salaries and taxes) in the amount of EUR 3,450 per month (depending on the country of destination; part-time positions are possible in the case of taking care for a child), EUR 600 per month as a contribution for mobility, EUR 600 per month as a contribution for family, EUR 1,600 per month as a subsidy for research and EUR 1,200 per month as a subsidy for administrative and indirect costs. A new call will be announced on 4 May 2021, with the deadline for submitting applications on 16 November 2021.

MSCA Staff Exchange (in H2020 known as MSCA RISE) finances 4-year projects focused on mobility of researchers and administrative employees within the network of academic and non-academic institutions. Projects are submitted by consortia of at least three research institutions from at least three European countries (participation of 6–10 institutions is expected). The aim is to create cross-sectoral and interdisciplinary networks with an overlap to non-European countries to deepen the exchange of knowledge and skills. The maximum support per project is expected to amount to 360 person-months. The mobility of each employee is 1–12 months and up to 30 employees may be financed for the entire year. Personnel costs (salaries and taxes) are not covered. MSCA will contribute EUR 2,300 per month for each mobility, EUR 1,300 per month for research and EUR 1,000 per month for administrative and indirect costs. Compared to H2020, the fixed rates will be reduced. A new call will be announced on 7 October 2021, with the deadline for submitting applications on 9 March 2022.

MSCA COFUND (in H2020 known as MSCA COFUND) represents an interesting co-financing opportunity for research institutions that themselves organize and finance the mobility of their PhD students or experienced researchers. Proposals of 5-year projects are submitted by universities, research institutions, local governments or foundations. The MSCA plans to provide a financial contribution of EUR 2,835 per month (currently EUR 1,935) per PhD student for a period of 4 years or EUR 4,025 per month (currently EUR 2,740) per experienced researcher for a period of 12–36 months and EUR 325 per month for indirect costs of each mobility. Maximum contribution per project is EUR 10 million. Approximately 50 % of costs is financed, the remaining 50 % of costs must be covered by the institution itself. The deadline for filing

applications under the most recent call was on 29 February 2020. A new call will be announced in autumn 2021. The success rate of applicants is around 50 %, almost every second project receives support.

The most successful Czech applicant for MSCA COFUND is the South Moravian Region that obtained EU support three times for its **SoMoPro** program administered by the South Moravian Centre of International Mobility (**JCMM**). SoMoPro I (2009–2013) EUR 3.8 million, SoMoPro II (2012–2017) EUR 4.7 million and SoMoPro III (2015–2020) EUR 3.8 million. In six calls, they selected and attracted to Brno in total 71 researchers from abroad (having evaluated 288 applications, i.e. 24 % success rate). South Moravian Region gradually invested EUR 6,264,000 in the development of human resources. With the COFUND program, it managed to increase its investment by an additional amount of EUR 6,036,000. The political representation of the South Moravian Region across the political spectrum is the only one that has on a long-term basis supported the development of science and research in the region and has been able to raise European money for the region.

International mobility and cooperation between leading and developing member states of the EU (so-called widening countries), including the Czech Republic, is supported from the framework program **Horizon Europe** by the program **Twinning**. These projects typically deepen the interactions of one Czech institution with 2–4 top foreign partners. The program does not fund the research itself, but only the mobility, jointly organized workshops and conferences and similar supporting soft activities. Considering the allocation of EUR 0.9 million for a 4-year project, Twinning projects are usually implemented by several research groups or entire institutes. A new call will be announced in spring 2021. The following institutions have experience with the Twinning program: Masaryk University (projects **BISON**, **INTEG-RNA**, **MEDGENET**, **TWINFUSYON**, **URBAN_X**), Mendel University in Brno (project **ASFORCLIC**), Charles University (project **MiCoBion**), Palacký University in Olomouc (project **NANO4TARMED**), University of Chemistry and Technology Prague (projects **MultiCoop**, **REPARES**).

The establishment and development of new centres of excellence is supported by the program **Teaming**. These projects combine the financing from ESIF resources (see the OP JAK below) for the construction, reconstruction and instrumentation equipment and financing from Horizon 2020/Europe program in the amounts up to several tens of million euros. Teaming projects are implemented in cooperation with at least one leading international partner institution. In the field of life sciences, the only project that has so far received full financing under this program is RECETOX at Masaryk University (**CETOCOEN Excellence**).

Scientific excellence at research institutions in the so-called widening countries is supported by the **ERA Chairs** program. The program is based on the establishment and filling of a position of excellent group leader. The host institution can establish a new research direction, recruit and pay a top senior researcher from abroad, build a new research group, gain new know-how and experience, and positively influence the research community and the functioning of the institution. The European Commission supports 6-year projects with an amount up to EUR 2.5 million. A new call will be announced in spring 2021. ERA Chairs in life sciences are established at Masaryk University (CEITEC MU, project **CEITEC ERA** ; RECETOX, project **R-Exposome**), Czech University of Life Sciences in Prague (Faculty of Agrobiological Sciences, Food and Natural Resources, project **DRIFT-FOOD**), Charles University (Faculty of Medicine in Pilsen, project **CHAPERON**), J. Heyrovsky Institute of Physical Chemistry CAS (**J. Heyrovsky Chair**).

Compared to the previous H2020 period, the **Horizon Europe** program will significantly strengthen the budget of the schemes designated to support extended participation (from approx. EUR 0.8 bn to EUR 1.7 bn). In addition to the aforementioned and proven programs Teaming, Twinning and ERA Chairs, new tools will be added in order to strengthen the **brain circulation**, a **hop-on system** motivating emerging or supported consortia to integrate partners from less efficient countries, but also large strategic projects linking at least two regions from the “widening countries”, including their complex innovation ecosystems (so-called **“Excellence Hubs”**).

The development of science and research institutions will be financed from national resources of the Czech Republic in the programming period 2021–2027 through the Operational Programs **OP Jan Amos Komenský**, **OP Environment** and **OP Fisheries**. The following new calls are being prepared within the scope of the OP JAK administered by the Ministry of Education, Youth and Sports (MŠMT).

2022: Top-level research: Support for research projects based on top teams, including support for the necessary infrastructure and an important element of internationalization, support for interdisciplinarity in R&D; **Ph.D. Infra:** Improvement of material conditions for doctoral study programs consisting in increasing the quality of existing educational capacities, including the necessary facilities, acquisition of modern equipment; **Open science I:** Support of the necessary infrastructure (repositories) and human resources for the implementation of the EOSC initiative, i.e. access to research data in the OA mode, including the preparation of data management plans; **MSCA I:** Support for projects that have succeeded in the evaluation of Horizon Europe but have not received funding; **Strategic projects of the Czech Republic – R&D:** Strategic projects from the list of recommended areas of research approved by the RVVI, or others that will represent a priority of the Czech government (including the link to the National Investment Plan); **Large research infrastructures:** support for the modernization of large research infrastructures financed from targeted support in 2023–2029, including the possibility of in-kind contributions to research infrastructures abroad (follow-up to the results of the 2021 international evaluation of R&D and infrastructure approved by the government in the second half of 2022); **Pre-seed I:** Support of research in the pre-application phase, support of verification of the application potential of partial research plans, including the proof-of-concept phase.

2023: Returns I: Support of researchers returning to work after their maternity / parental leave; **MSCA II:** Support for projects that have succeeded in the evaluation of Horizon Europe but have not received funding; **Research environment:** support for the development of the institutional environment at the level of research organizations, support for profit and maintenance of the HR Award, creation and development of administrative capacities, development of hu-

man resources management tools and career growth, creation of conditions for education, acquisition, development and maintenance of quality human resources in R&D&I, support of institutional setting for combining research work and parenting / long-term care of a family member, promotion of R&D results of research organizations; **Cross-sectoral:** support for cooperation between research organizations and the application sphere with an emphasis on specific joint research intentions, future applicability of results and building long-term partnerships; **Applylabs:** support for the introduction / equipment of application demonstration laboratories in research organizations to demonstrate the applicability of research results to the application sphere, development of intersectoral cooperation.

The Ministry of Education, Youth and Sports (MŠMT) annually announces **Centralized Development Programs (CRP)**. Their goal is to contribute to the fulfillment of individual priorities set out in the strategic documents of the MŠMT and the related strategic goals of individual universities. Only public universities are eligible applicants for the subsidy on the basis of the total allocation released by the MŠMT for the relevant year. The CRPs support thematically focused projects that are based on predefined priority themes / needs stimulating the joint solution of the project by several public universities. Based on the number of schools involved in the project (2–17, 18+), the rules of its possible submission and implementation are slightly modified. The purpose of the program is to support projects of a development nature and it is not possible to cover the standard activities of universities, nor research, development and innovation in the sense of Act No. 130/2002 Coll. on the support of research, experimental development and innovation from public funds. Projects may be synergistic in relation to projects implemented in the previous year, or projects considered in the future; however, no decision to award a grant for the relevant year gives rise to the entitlement to the allocation of any financial means for any subsequent years. The deadline for submitting applications for CRP 2021 grants was on 31 October 2020. The deadline for CRP 2022 is expected at the end of October 2021.

RESEARCH INFRASTRUCTURES

In addition to excellent human resources, modern instrumentation is important for cutting-edge research. The Ministry of Education, Youth and Sports (MŠMT) has been financing **large research infrastructures** since 2010. They also have their own website www.vyzkumne-infrastruktury.cz. A large research infrastructure is defined in Section 2 (2) d) of Act No. 130/2002 Coll., on the support of research, experimental development and innovation from public funds, as a “research infrastructure which is a research facility necessary for comprehensive research and development activities with high financial and technological demands, which is approved by the government and established for use also by other research organizations.” It is a unique research facility with high knowledge and technological demands, especially experimental instruments in the sense of laboratory equipment; sources of knowledge such as archives and collections; and information and communication technologies necessary for the implementation of knowledge-intensive research, development and innovation. It is accessible to users on the basis of the “open access” principle. It is accessible almost free of charge (only a percentage of actual costs are paid) to any researcher or research group, regardless of their affiliation. The costs of the construction, operation and other investment development are financed by the MŠMT.

In 2021, an **international evaluation** of large research infrastructures in the Czech Republic will be performed. It takes place every four years. The deadline for submitting complete documentation is on 10 December 2020. Based on the results of the international peer-review evaluation, the Czech government will decide on granting targeted support through the MŠMT to large research infrastructures in the period of 2023–2029 and on the updates of the Road Map of large research infrastructures in the Czech Republic.

Currently, 5 research infrastructures in environmental sciences are supported: **ACTRIS-CZ** (Milan Váňa, Czech Hydrometeorological Institute), **CENAKVA** (Otomar Linhart, University of South Bohemia in České Budějovice), **CzeCOS** (Michal V. Marek, Global Change Research Institute CAS), **NanoEnviCz** (Martin Kalbáč, J. Heyrovský Institute of Physical Chemistry CAS), **RECETOX RI** (Jana Klánová, Masaryk University) and 10 research infrastructures in the field of health and food: **BBMRI-CZ** (Dalibor Valík, Masaryk Institute of Oncology), **CCP** (Radislav Sedláček, Institute of Molecular Genetics CAS), **CIISB** (Vladimír Sklenář, Masaryk University), **CZECRIN** (Regina Demlová, Masaryk University), **Czech-BioImaging** (Pavel Hozák, Institute of Molecular Genetics CAS), **CZ-OPENSREEN** (Petr Bartůněk, Institute of Molecular Genetics CAS), **EATRIS-CZ** (Marián Hajdúch, Palacký University in Olomouc), **ELIXIR-CZ** (Jiří Vondrášek, Institute of Organic Chemistry and Biochemistry CAS), **METROFOOD-CZ** (Lenka Kouřimská, Czech University of Life Sciences in Prague), **NCMG** (Stanislav Kmoč, Charles University).

CERTIFICATIONS

It is important for research institutions to obtain quality certificates pursuant to European / international standards. One of the significant quality awards is the **HR Award**, awarded by the European Commission to research institutions that have implemented in their guidelines and processes 40 basic principles of fair treatment of human resources. The principles are summarized in two documents: The European Charter for Researchers and The Code of Conduct for the Recruitment of Researchers. As of 1 January 2021, HR Award was obtained by 556 European research institutions, of which 25 institutions and their parts are located in the [Czech Republic](https://www.czech-republic.eu/).



PART 10: SUMMARY

Final part No. 10 sums up the current state and offers recommendations for efficiency and competitiveness of the Czech research environment. This is a summary of all parts with included prospects of further development.

1) PRIMARY AND SECONDARY SCHOOL STUDENTS

“The interest in science can be developed since any age of the child. Children are like mushrooms, ready to absorb an incredible amount of knowledge and skills. It is only necessary to show them the possibilities and help them to find areas which they consider the most satisfactory”, Lumír Krejčí, the founder of the [Bioskop](#) educational laboratory at Masaryk University and a biochemist, sums up his experience.

Let's support organisation of knowledge and creative competitions for individuals and teams as well. This supports the best and most diverse opportunities for getting excited about science. Apart from ability and talent, a motivation is also important. As a state, let's invest in the establishment and operation of first-rate open laboratories, such as Bioskop, where children and students can experience basic natural processes and life principles through various courses, clubs and summer schools. Such “educational” laboratory can find use not only in Brno, but in České Budějovice, Hradec Králové, Liberec, Olomouc, Ostrava, Pardubice, Pilsen, Prague, Ústí nad labem and Zlín as well. We should systematically search for motivated talents among secondary school students. Let's provide them with an individual learning plan for long-term internships in research laboratories.

2) BACHELOR'S AND MASTER'S DEGREE STUDENTS

“The selection of a mentor in all stages of studies is essential, because it can either accelerate your scientific career or put an end to it. Choose carefully, choose the best quality. Have a healthy self-confidence and a clear goal. Without any goal or a plan, you cannot move forward,” says Jiří Nantl, the Director of CEITEC MU.

Let's not fear studying abroad. The development of Czech talents nowadays is financed, above all, by private foundations: [Bakala Foundation](#), [The Kellner Family Foundation](#), [Krsek Foundation](#). We are very thankful to the enlightened patrons for sending a lot of talented students abroad in order to gain experience. Without the support of private donors, studies abroad would be entirely unavailable for most students. We kindly ask the Czech government to establish a long-term program to support talented students, and to send at least a hundred of the best students to a university abroad each year. Let's invest into our future. At the same time, we ask the government of the Czech Republic to establish a long-term program aiming to attract talented foreign students to study at Czech universities. The arrival of creative minds is bound to improve both the quality of students and the quality of studies. Let's open the Czech Republic to the world!

The development of scientific career in life sciences will be also enabled by the existence of student grant agencies at individual faculties and annual funding of short-term research projects of bachelor's and master's degree students. Let's teach students to define research questions and plan research projects. The project thinking ability can be utilised also in basic or applied research, as well as anywhere else, even outside science.

3) PHD STUDENTS

PhD students are most frequently “exploited” as cheap labour. Usually they depend on the will of a single mentor. Let's support the establishment of superior PhD schools inspired by [International Max Planck Research Schools \(IMPRS\)](#) or [CEITEC MU](#). Let's select only the best applicants for the PhD studies with a potential and motivation to perform science. Let's provide them with complicated challenges, let's be highly demanding with them. At the same time, let's guarantee a scientific as well as human excellence of mentors to the PhD students, a fair relationship between students and tutors and a regular feedback. Let's create dignified conditions for them to work full time (40 hours per week), let's strive for their professional development. Let's support their analytical and presentation skills, their ability to publish. Let's support their short-term international research internships, long-term cooperation, PhD studies with double guidance such as joint doctorates, industrial doctorates or co-tutelle. Let's allow students to establish themselves in the international research community. We definitely shouldn't write our PhD students' articles or even their doctoral theses. If they cannot do it on their own, they don't stand a chance in becoming independent researchers. It is necessary to defend the value of the PhD title.

The internal grant agencies of research institutions are very important for the development of a scientific career, because they teach PhD students to shape their thoughts and to prepare and execute research projects. We should value creativity, enthusiasm for work and outstanding quality and innovativeness of the doctoral theses. Let's appreciate responsible mentors whose genuine care for PhD students enables them to grow towards scientific independence.

4) JUNIOR POSTDOCS

Before the end of doctoral studies, it is necessary to clearly know what to do next. A doctoral thesis defense and the day of obtaining the PhD academic degree is a fundamental milestone in the professional career of every researcher. On the “D-day” the time starts running– the days, months and years since the completion of the PhD studies are counted relentlessly. Upon obtaining the PhD title, a limited time slot opens, during which it is possible to apply for research fellowships and grants. Should the applicant fail to submit the application within the limited time window, the possibility of receiving the financial support of the given program is lost forever.

The necessary condition for success in science is researchers’ mobility. Nowadays, without any long-term international experience, it is almost impossible to receive a research grant and, therefore, one’s own scientific independence. After the completion of their degree, we have to send the best and most promising PhD candidates abroad for 2–5 years. They need to obtain scientific independence of their PhD tutors, experience a different working environment, amplify their expertise and knowledge, become a part of the international research community, obtain contacts and establish cooperation, have time to create and publish a piece of valuable work, have time to find their own research niche and shape their main research topic. There is constantly a high demand for smart postdocs. The offers of vacancies can be found on [Euraxess](#). The advertised positions are usually available immediately. There is also a big number of public as well as private programs which provide a long-term financing for research internships for postdocs. The best quality applications are usually the ones resulting from a close cooperation of the postdocs and their mentors. The sooner the postdoctoral internship applications start to be arranged and the research project is defined, the better, more thoughtful, readable and attractive the final application is. Therefore, the applicant’s chances to succeed in tough international competition are higher (the success rate is between 3 to 25 %). It is not uncommon that the preparation and “ripening” of a project application may take as long as a whole year. Let’s not underestimate the preparation of the applications. The competition is enormous. The key to success is to start on time and well in advance.

Let’s open the Czech research institutions to postdocs from abroad. Let’s motivate the arriving postdocs to obtain a fellowship ([MSCA Individual Fellowship](#), [EMBO Postdoctoral Fellowship](#), [HFSP Postdoctoral Fellowship](#) and more) as a part of their professional development. One project can compete in all of the available programs. GAČR Postdoctoral Individual Fellowship, first time announced in spring 2021, shall be a first national program supporting the professional development of postdocs. Postdoctoral positions are offered also by individual research institutions or their parts. The postdoctoral remunerations are also included in most of the research grants.

5) SENIOR POSTDOCS

A strong curriculum vitae (“track record”) supported by specific valuable outputs of individual’s own research work is the best valorisation of the years spent in postdoc internship. At the same time, this is only a half of further success. The second (even more important) half is an idea of their own innovative research project. Such project must be entirely new and different from the problems solved in the mentors’ groups. A senior postdoc must present a knowledge gap in the current understanding and suggest a solution on how to fill this knowledge gap. These days, there is generally the highest demand for novel and “high-risk high-gain” research projects. Let’s not fear pushing the boundaries of knowledge.

For filing any grant application, a support of a research institution is needed. The Czech research institutions only rarely and irregularly open and offer positions for independent junior research group leaders. In the Czech Republic there is a general lack of strong institutional support of young researchers, regular establishment of new research groups, starting new research directions and will to continually rejuvenate institutions. “There is no place, there are no resources” is the most common explanation of why it cannot be done. It is necessary to be continuously proactive, choose an appropriate institution on time, find an experienced mentor who will help to understand the system and to consult research projects, and agree on time on the support and approval of the given institution for the submission of your grant applications. A very tough competition of project suggestions and research ideas awaits the senior postdocs. The scientific independence is based on obtaining institutional support and their own research grant.

The biggest weakness of the current Czech science is the insufficient number of positions offered to junior research group leaders, which could be staffed by senior postdocs. The Experientia Foundation deserves a great acknowledgement, because it supports establishment of new research groups in organic, bioorganic and medicinal chemistry from private resources by means of [start-up grants](#) Charles University invests in the establishment and development of new scientific groups. It gets institutional resources reserved for science via the [Primus](#). Program. “I cannot imagine a better use of resources,” states Jan Konvalinka, Vice-Rector of Charles University. The value of investment in new research groups increases by obtaining prestigious international grants and by positive changes in the internal environment of Charles University. A similar program can be operated also at other Czech research institutions. Masaryk University starts the [MUNI Award JUNIOR](#) program. Let’s get inspired by the approach of Charles University and Masaryk University. Each year, we should open international competitions for junior group leaders’ positions. Let’s invest regularly into personal development at the institutions.

The Czech Republic also needs a national program for supporting scientific excellence and the establishment of new research groups. In 2020, the program [GAČR JUNIOR STAR](#). was started. However, the financial resources allocated for this program are quite insufficient. Let’s allocate more resources for support of innovative and risky projects of young researchers. This way, we could support more promising researchers, provide them with a chance to fulfil their desires, and, over the course of five years, let them show their potential and abilities.

Unfortunately for Czech science, the potential of the [EMBO Installation Grant](#) program has not been for a long time successfully utilized. The research projects are evaluated by an international committee of EMBO members, and the Czech Republic thus receives very good quality assessments. Nevertheless, it is impossible to find a few tens of thousands of euros a year in the Czech national budget to cover at least three perspective researchers from the field of life sciences. Usually only 1 grant per year is awarded. We waste the energy of applicants as well as that of EMBO evaluators. Without increasing the funding for EMBO grants, we will only pretend to support scientific excellence.

6) JUNIOR GROUP LEADERS

By obtaining the institutional support and a research grant, they establish their own research group. They put together a functional team, recruit students and postdocs, renovate or adjust the laboratory, buy devices and equipment, expendable supplies and services, address interpersonal relationships and cultural differences within the team and at the institutions. Bringing the laboratory into operation or its relocation can take from 1 to 1.5 year before it is fully up and running. Let's provide young researchers with the best possible administrative and technical support. Their greatest benefit for every institution is that they can fully dedicate themselves to research questions. At the same time, let's not hesitate to terminate ineffective research groups with lack of prospects based on the evaluation of an international panel of evaluators.

Nowadays, the international science committee or the International Scientific Advisory Board is an integral part of the organisational structure of every high-quality research institution. It regularly evaluates the scientific performance of individual research groups in international context, participates at selection procedures for group leaders' positions, consults the long-term strategic goal, utilization of resources and operation of the institution, shares experience and good practice from abroad, defines strengths and weaknesses of the institution, shares tips and recommendations for elimination of deficiencies, observes the high level of scientific excellence, international reputation and competitiveness of the institution. It is a valuable and functional tool for independent evaluation and true strengthening of research excellence of the institution.

The European Commission chooses the strategy of a single account [ECAS](#) (European Commission's main authentication service) for all grant calls. The Czech Republic, on the other hand, finances the development from various grant applications: [GRIS](#) (GAČR), [ISTA](#) (TAČR, Ministry of Agriculture of the Czech Republic, the Ministry of the Interior of the Czech Republic), [ISVP](#) (Czech Health Research Council), [AIS](#) (SFŽP).

The most problematic programs are programs of international cooperation announced by the Ministry of Education, Youth and Sports (MŠMT) – [INTER-ACTION](#) and [INTER-COST](#). Regarding these programs, it is unknown until the last moment whether and when they will be announced. MŠMT is unpredictable, it is impossible to plan anything or communicate something in the long-term perspective. The instruction documentation and forms of grant applications have so far been available only in the Czech language, they had to be filled in the Czech language and were evaluated by Czech evaluators only. Therefore, these programs exclude and discriminate foreign group leaders working at the Czech research institutions. At the same time, grant applications are incomprehensible to foreign co-workers participating in a research project. In 2020 MŠMT cancelled all programs. In 2021 calls for INTER-ACTION program with USA and Germany (Bavaria, Saxony) are expected. Financing projects from new INTER-EXCELLENCE II program is planned for 2022.

If the Czech Republic is to be a country of excellent research, we have to be internationally understandable. The language used worldwide in current research in life sciences is English. Therefore, it is necessary for all grant calls to be written in English and to be evaluated by foreign evaluators.

7) SENIOR GROUP LEADERS

They should represent knowledge, scientific, educational, moral and human excellence of the Czech Republic. It is expected that they offer professional oversight over the solved topics, ask key questions and provide challenges, refine arguments and opinions, establish international cooperation, initiate innovative research projects, push boundaries of knowledge, develop research school, build international reputation of the research institution, educate new generation of talented researchers and public. They are responsible for the functioning of Czech Research Area, international research competitiveness, reputation and attractivity of the Czech Republic and for the future of the next generation of researchers. They use the broadest offer of grant calls for basic as well as applied research, they get involved in international consortia most easily.

We should appreciate creativity, work enthusiasm and outstanding quality and innovativeness of scientific results. Let's reward responsible mentors whose care for students and postdocs helps them reach research independence. Let's not hesitate to terminate ineffective research groups with lack of prospects. Without compromise, let's suppress any fraud, manipulation of scientific data, unfair treatment, misuse or fail to use research results correctly.

8) RESEARCH ASISSTANTS

They are research group leaders' right-hand men and women. They help to create stability and continuity of the groups. They have extensive know-how and experience, they are sponsors of methodologies and procedures, they develop

new approaches, they solve subparts of the projects, they guide students and postdocs. They help with the preparation of grant applications, measurement, evaluation and interpretation of data, writing of professional publications, presentation of results at international conferences. The research assistants can also find use in shared service laboratories (core facilities) where they control sophisticated devices, figure out and develop new approaches to measurement, analyse and interpret data. Their expertise is requested by various research groups, they participate in various research projects.

Let's enable research assistants to submit project applications for grant competitions under their own name, we should allow them to realise their own research projects. Let's give them a chance to grow in independent group leaders or service laboratory expert leaders.

9) RESEARCH INSTITUTIONS

The top management sets the direction and rhythm of the research institution. It has full management responsibility for efficient functioning, setting of long-term objective and development of the institution. It is a key driver of modernisation and progress, it suggests and realises long-term goals, concepts and strategic intentions, it sets the organisational structure, corporate culture, research priorities, management and mentoring procedures, it creates internal regulations, announces open transparent selection tenders for scientific and administrative jobs, it manages institutional and grant financial resources, it is responsible for scientific excellence, international reputation, attractiveness and competitiveness of the institution, for benefits of the institution to the society. Enlightened and active management continuously initiates preparation and realisation of new research and development projects.

The scientific excellence of research institutions in life sciences can be systematically developed through national programs (Jan Amos Komenský operational program, [large research infrastructures](#), [Centralised development programs](#), etc.) and European programs (Research Infrastructures, MSCA, [Twinning](#), [Teaming](#), [ERA Chairs](#), brain circulation, hop-on, Excellence Hubs, etc.). The success depends on clear vision, concept and long-term intention of the research institution. We shouldn't distribute national resources equally. Only high-quality, well-thought, justified and functional long-term purposes should receive the financial support.

For its development, the Czech research area needs a long-term stability, predictability, transparency, clear goals and a plan. The sooner we start to think of, define and prepare the purpose of our research, the better quality, detailed and more valuable the final project proposition will be. The project application can take the whole year to prepare and ripen. We find ourselves in the middle of December 2020. When, by whom and what calls financed from the public resources of the Czech Republic will be announced in 2021? What type and form of projects does the Czech state want to finance and why? How will the Czech Republic support science excellence in 2021, 2022? What is the concept of Czech science for 2021, for the next ten years? We kindly ask the [Research, Development and Innovation Council \(RVVI\)](#) to provide us with an annual overview of simple prospects of national science support for the next year, with a brief summary of all planned calls, deadlines and priorities with relation to the research programs and calls financed by the European Commission and private investors. Let's inform the research community on time, so that it can work efficiently. We should support a broad public discussion of the professional community about strengths and weaknesses of Czech science, its deficiencies and needs. Let's fund the existence of scientific portals and discussion forums. Together, let's seek the best possible reputation of the Czech science abroad. It depends only on us, it is our presentation.

Dear readers, please send your comments, opinions, experiences and recommendation related to financing of life sciences in the Czech Republic to the email address redakce@vedavyzkum.cz. We wish you a lot of success and breakthrough discoveries in your scientific career.



EPILOGUE: PROJECT SUPPORT

This epilogue is dedicated to all researchers who need and require an administrative support. It is dedicated to all project managers and to all administrative workers providing high-quality support and creating conditions for excellent science. The biggest benefit of researchers for society is brought when they can fully work on scientific questions.

It is now January 2021. The Czech research institutions are an integral part of the European Research Area (ERA). Researchers working in the Czech Republic (approximately 25 % of whom are foreigners) must face tough international competition. They have to compete for limited grant resources. International reviewers critically evaluate results of their work. The researchers have to make great effort to become successful among international competition, to get financing for their own research, to defend their work. A long time ago, enlightened management of research institutions has started to build a functional administrative and project support in order to minimise researchers' administrative load, so that their success for grant obtaining is higher and realisation of research projects is easier. At most of the Czech research institutions such support is a matter of course. Only in exceptional cases, the opinion persists that a professional researcher does not need any project nor administrative support, and that he/she should (can) do everything on his/her own.

If the research institute wants to be successful in obtaining and implementing national and international research grants, it must first invest in functional project support and administration. No effort, no result. The examples of good practice (CEITEC MU, Institute of Organic Chemistry and Biochemistry CAS, University of Chemistry and Technology Prague, Charles University) show that the initial investment pays off, returns and pays off interest. If I pay a person with whose help I can get and well implement a research grant, the researcher will have more time for his/her own research work. For every CZK gained from international grants today I earn a bonus of CZK 0.135 from national resources on institutional support. International projects raise international reputation of the institution.

We asked the researchers to share their opinions and experience. How does the project support (administration) make their everyday work easier? Why is it good or useless to have a project manager on hand?

Petr Cígler (Institute of Organic Chemistry and Biochemistry CAS): "Professional and high-quality support in preparation and administration of the projects is crucial to me because of two reasons. The first reason is, that in the competitive environment of European projects it is very hard for me to understand all details of the call documentation, which usually includes around 100 pages of text. I highly appreciate consultations with project professionals, their text reviews and formalisation of the project. This is not only a proofreading of my text, but active participation in the preparation of some parts of the project. Secondly, it is important for me that everything runs smoothly in the process of implementation of the granted projects in terms of drawing the grants and that project reports include all formal requirements. In both situations we have above-standards and very effective support at our institute. For example, thanks to them, last year I could realise 11 different projects at the same time. Without the project support, I guess that their preparation and administration would occupy me in average for one whole additional day in a week."

Filip Kolář (Faculty of Science, Charles University): "For me the project support is essential, and I cannot imagine my work without it, since it gives me time, energy and motivation for my own work = research and mentoring. Apart from the baseline delivered by the faculty, it is approximately a 30–50% workload paid from the grant in order to let me do what I am supposed to do. This means that I don't have to occupy myself with looking for invoices, filling orders, training of team members on how to do their administration... or more detailed control of the utilisation of the grant. I don't do any of it, but only thanks to this extra position... A big part of this person's job is to help foreign members of the team in our environment. Everything changes fast, in good direction, but..."

Hana Macíčková Cahová (Institute of Organic Chemistry and Biochemistry CAS): "Without project support I would be lost in most of the documents and I would spend an unbelievable amount of time dealing with them. Without project support I wouldn't even get some of the grants, because I would make many mistakes caused by misunderstanding of the instructions. Without the project manager I wouldn't even know of some of the possibilities. I, myself, cannot imagine, how would the situation here, at IOCB, look like without the existence of the project office. Therefore, I would like to express my gratitude and thanks to every person helping us at the project office."

Iva Mozgová (Biology Centre CAS): "Since 2019 I have been building my group "from scratch" with the help of ERC-CZ and Prémie Lumina quaeruntur from the Czech Academy of Sciences. This required complete planning, repairs and acquisition of laboratory and growing areas, arrival of 8 foreigners from abroad, establishment of all individual subprojects and entry to the institutional system of administration. In these two years I came to the conclusion that the project manager is an integral part of the team. It is very useful if this is a person with their own initiative, ability to improvise and predict. Such person can prepare the agenda for discussion beforehand and avoid "passing" more tasks on you or waiting until Monday, when you figure out their work for the rest of the week. It has worked for me when there is one person managing the whole portfolio of active projects, who knows conditions of providers and individual grants, communicates with such providers, manages finance, knows deadlines and formal requirements. This, of course, does not relieve me of the obligation to be familiar with such obligations as well – the responsibility is mine, as I am the group leader, and I have to bear the final decision on the use of granted finance. Nevertheless, there is a big difference between theoretical knowledge of formal requirements and their execution. However, in the past two years, even with the administrative help, I've had quite little time left for my own focus work. Without the project manager I wouldn't be

able to invest my time in PhD students and postdocs and their projects, and the overall concept of research program suggested in grant application would become uncoordinated chaos. I often hear someone saying that the preparation and administration of the project can be done by the applicant himself/herself. I agree, that it can be done, I've tried it and I believe that we have the necessary intellectual capacity. The remaining question is – how much capacity and motivation would then be left for our own scientific work, which wouldn't visibly move in the pace we would like to see? For me personally, my own self-confidence and motivation for work are conditioned by a visible output. Even with the help of the project manager, from this point of view, the establishment of the group presents a big challenge. After two years of quite intense work, I finally feel that I am beginning to get back to my own scientific work. To be able to stay with it, I will probably always aim to allocate a corresponding amount in the grant applications for active help with the preparation and administration of the projects."

Marek Mráz (CEITEC MU): "I can imagine that in the perfect world the grant applications would be so simple, that we wouldn't need any administrators of grant support (the science would definitely appreciate this). Nowadays though, it is absolutely necessary to have a good project manager, above all for finding the grant schemes where a scientist can apply, and for administration of requests for big international projects."

Vojtěch Novotný (Biology Centre CAS): "The project manager is the group leader's right-hand man/woman. The selection of the project manager is equally important as the selection of the scientific part of the team. It is sad to see a scientist running around offices with invoices in his/her hands, usually they do it wrong and even if they manage to do it well, it is better to dedicate their time to something else, like science for instance. The project manager belongs to a rare type of creative administration – they find new possibilities of financing, new ways to carry out often complex and internationally fragmented supply and logistics tasks in accordance with regulations, which had not predicted anything like this. Generally, the project manager monitors budgets, supply and personnel of the research team, and based on such experience, helps to draw up proposals for new projects. There were times when I did not have any project manager on hand, but this was a long time ago. It is hard to remember how scientists could survive in those ancient times."

Tomáš Pluskal (Institute of Organic Chemistry and Biochemistry CAS): "I highly appreciate support of the Project Office at the IOCB with preparation of applications for grants of GAČR, ERC, MSCA and others. The preparation of administrative sections of these grants, above all, the preparation of the budget, is a very complicated task, and its details are not understood by many. I cannot imagine how I would be able to prepare a purposeful budget proposal for various years in advance for an international project without any help of our cheerful and experienced project managers. Besides, our project office publishes detailed calendar of deadlines and requirements of individual grant calls, which makes it even easier for us, the group leaders."

Tomáš Slanina (Institute of Organic Chemistry and Biochemistry CAS): "Without project support I cannot imagine being able to actively use more than one type of a grant, which is a situation happening to probably all research groups. The possibility to cooperate with professional grant and project managers is, within the administrative part of the grant calls and a specific utilisation of active projects, indeed, priceless and it allows us to focus more on the scientific tasks."

Michal Straka (Institute of Organic Chemistry and Biochemistry CAS): "The project manager and administrative support are very useful if they're available and know what to do. I don't deal with big projects, but there are various offices at our institute which significantly facilitate my work with GAČR grants. For me it is handy to have such people around, since they solve problems brought by surplus administration. But even without it, we would still need such people."

Štěpánka Vaňáčková (CEITEC MU): "The conditions of financial support vary with different schemes, they often bring big administrative burden in the form of scrupulous adherence to formal requirements, where specific means can be allocated, how to correctly draw up project workloads, how to account for everything at the end of the year, what can I pay etc. The project department is important for supervision over the financial resources – monitoring of announced calls, their deadline, eligibility, conditions... The competitive research in the Czech Republic cannot be performed without institutional support (and at most places it is not) and research group leaders have to get at least 2–3 simultaneous grants from different resources. It is not within our abilities to realise all administration related to all grants and at the same time, perform science and education. If the support would follow the style of Wellcome Trust, which has a minimum administrative burden and provides sufficient financial resources, then, I believe, we could evade the administrative support. But that is more of a fairytale."

If we take a look at project needs of researchers at individual research institutions, we will get very detailed responses. The need is the same everywhere. Good-quality and functional project support must provide:

- ✓ Monitoring of open grant calls (grants, fellowships, awards);
- ✓ Knowledge of guidelines, forms, rules, conditions and requirements of the providers;
- ✓ Sharing current information and documents by means of workshops, websites, email;
- ✓ Individual consultations of information and discussion of project goals;
- ✓ Help with the preparation, finalisation and submission of grant applications;
- ✓ Calculation of budgets, allocation of personal costs and investments;
- ✓ Gathering of required administrative and legal documents;
- ✓ Monitoring of application evaluating process;
- ✓ Assistance with the conclusion of a legal acts, consortia and grant agreements;
- ✓ Formulation of data management plan;
- ✓ Assistance with project realisation, allocation of project workload, monitoring of costs;
- ✓ Assistance with problem solution and project changes;

- √ Assistance with preparation of interim and final project reports;
- √ Conclusion of the project and document archiving;
- √ Development of cooperation with project centers of partner research institutions;
- √ Base documents for strategic decisions of institution management.

We recommend to all researchers and students: don't be afraid to contact project office at your institution and request a consultation, discussion, assistance. The professionals will gladly help you. We are excited about each of your achievements. Good luck with the realisation of your bold research projects!

Institute of Biophysics CAS (Ivana Mužíková)

Biology Centre CAS (Renata Novotná)

Institute of Biotechnology CAS (Magdalena Schneiderová)

Institute of Botany CAS (Pavla Růžková)

Czech University of Life Sciences in Prague (Josef Beránek): [Faculty of Agrobiolgy, Food and Natural Resources](#) (Alžběta Lindová), [Faculty of Forestry and Wood Sciences](#) (Martin Čabrada), [Faculty of Tropical AgriSciences](#) (Tereza Žáková), [Faculty of Environmental Sciences](#) (Petra Málková)

Institute of Physiology CAS (Kristýna Kněžů)

University of South Bohemia in České Budějovice (Lucie Brucknerová): [Faculty of Fisheries and Protection of Waters](#) (Martin Viček), [Faculty of Science](#) (Tomáš Mozga), Faculty of Agriculture (Michal Marušák)

Masaryk University (Ida Součková Olšová): [CEITEC MU](#) (Monika Hamanová a Alice Valterová), [Faculty of Medicine](#) (Jitka Blažková), [Faculty of Science](#) (Martin Hovorka)

Mendel University in Brno (Ondřej Veselý): [Faculty of AgriSciences](#) (Klára Kamlerová), [Faculty of Forestry and Wood Technology](#) (Olga Komzáková), [Faculty of Horticulture](#) (?)

Institute of Microbiology CAS (?)

University of Ostrava (Markéta Arce): [Faculty of Medicine](#) (-), [Faculty of Science](#) (Jan Ševčík)

University of Hradec Králové (Martin Sedláček): [Faculty of Science](#) (Inesa Kotásková)

Jan Evangelista Purkyně University in Ústí nad Labem (Lenka Stiborová): [Faculty of Environment](#) (?), [Faculty of Science](#) (Magdaléna Zelená)

Charles University (Jitka Batková): [First Faculty of Medicine](#) (Kristýna Matějková), [Second Faculty of Medicine](#) (Renáta Bourahí), [Third Faculty of Medicine](#) (Jaromír Chlapec), [Faculty of Pharmacy in Hradec Králové](#) (Martin Hubáček), [Faculty of Medicine in Hradec Králové](#) (Eva Macourková), [Faculty of Medicine in Plzeň](#) (Jana Šíková), [Faculty of Mathematics and Physics](#) (Milada Menšíková), [Faculty of Science](#) (Jan Vyskočil)

Palacký University in Olomouc (Gabriela Pokorná): [Faculty of Medicine](#) (Eva Hrouzková), [Faculty of Science](#) (Lenka Copková)

University of Pardubice (Monika Vejchodová): [Faculty of Chemical Technology](#) (?)

Institute of Analytical Chemistry CAS (?)

Institute of Inorganic Chemistry CAS (?)

Institute of Vertebrate Biology CAS (Lenka Polačiková)

Institute of Experimental Botany CAS (Jana Nová)

Institute of Experimental Medicine CAS (Jan Prokšík)

J. Heyrovský Institute of Physical Chemistry CAS (Barbora Šmídová)

Institute of Chemical Process Fundamentals CAS (Martina Dobroňová)

Institute of Macromolecular Chemistry CAS (Karel Havlíček)

Institute of Molecular Genetics CAS (Věra Chvojková)

Institute of Organic Chemistry and Biochemistry CAS (Veronika Palečková)

Global Change Research Institute CAS (Jarmila Grégrová)

Institute of Physiology and Genetics CAS (?)

University of Chemistry and Technology in Prague (Hana Štěpánková)

Brno University of Technology (Luděk Hanák): [Faculty of Chemistry](#) (?)