



## Perspectives from Štěpánka Vaňáčová

Group Leader at the Central European Institute of Technology (CEITEC) | EMBO Member and former Installation Grantee

Štěpánka Vaňáčová, Group Leader at the Central European Institute of Technology (CEITEC) at Masaryk University, didn't initially have a specific plan to have a career as a Group Leader. "I was really excited about working in the lab and studying the topics that I was interested in but was never thinking in terms of building a career," she says. "I've always considered myself as working in basic research. To be honest, I'm driven by curiosity how things work!"

Vaňáčová has noticed a change in newer PhD candidates. "They now think in terms of the career development, rather than being excited about

the topics and about the research itself," she says. "If I accept them in the group, I explain to them this is the main driving force – this is the fun! The fun is in the concept!"

Elected an EMBO Member in 2019, she joined the Fellowship Committee in 2021. She sees her role as repaying the EMBO help to return to the Czech Republic to establish her own lab. Vaňáčová says: "The EMBO Installation Grant in 2008 was the key. Without the EMBO grant and the Wellcome Trust International Senior Fellowship, I'm certain I would not be where I am right now."

### No regrets?

"At the beginning, it was a cultural shock after the seven years being abroad, because still things were developing here. But retrospectively, I don't have regrets," she says. "The EMBO Fellowship established me as an independent researcher, which is still a rare thing."

Vaňáčová is now a recognized leader in studying post-transcriptional RNA modifications but started her life in research in a different field. After a PhD at Charles University in parasitology, she moved to the University of California in Los Angeles for a postdoc position studying the human parasite *Trichomonas vaginalis*. "It's quite an interesting organism – it doesn't have mitochondria and it was really exciting to study it. But I was becoming more and more frustrated that we were limited in the tools available at that time to progress in the field," says Vaňáčová.

### Switching fields

Her attention turned to pioneering RNA research, and she switched fields to join Walter Keller's lab in Basel. Explaining her reasoning, she says: "It's about taking the next step to learn something new. This was a really significant step in my career. Since then, I always recommend to my students to, at some point of their career, make a significant change in the field, because I've learned to think about experiments and science from a completely different perspective."

With recent European Union funding, she and fellow Czech researchers now aim to combine their basic research on the RNA processing, synthesis and translation, to search for new RNA-based tools or even new RNA therapies.

### The role of EMBO

Vaňáčová sees EMBO as critical in improving national level research systems by establishing networks and by helping provide examples of best practice in conducting research. She says: "The most important thing about EMBO is that it joins together such excellent scientists from different kinds of disciplines. Not just life sciences – nowadays it's also computational people, chemists, biologists and others. And it makes this network and interconnection between the different fields, countries, nationalities."

## Meet scientists from the EMBO communities



### Zdena Palkova Increasing participation in the EMBO Programmes

**EMBC Delegate | Group leader at Charles University, Faculty of Science BIOCEV, on the future of the life sciences in her country**

The Czech Republic joined the EMBC, the international body funding body, as a member state in 1994. Palkova sees membership as important for the life sciences in the Czech Republic with opportunities to expand.

"We have a good number of short-term stays and exchanges funded by EMBO, but still not enough long-term fellowships and grants – so we are aiming for more applications from the Czech Republic especially for the EMBO Young Investigator Programme," she says. "We have a lot of applications to courses, and from my side I really appreciate the EMBO | EMBL Symposia because the quality of these meetings is always very high."

The Czech Republic joined the initiative increasing participation in the EMBO Programmes in 2022. After two years, Palkova sees positive improvements but believes it is too early to fully assess the impact of the scheme. "The initiative will clearly increase the recognition of EMBC in the individual countries. But we will see the impact later – things take time to be organized," she says. "Two dedicat-

ed training courses will be offered in 2024 – in Prague and Ceske Budejovice. For the organization of the courses in 2023 and 2024, we had more interested people than we have seats to offer."

Palkova has mixed views about the health of the life sciences in the Czech Republic, especially in terms of access to funding. "We have a good infrastructure, but there is often a lack of money for people. It is not easy to finance staff for labs – postdocs, PhDs, young scientists and others," she says. "We have relatively well-equipped labs in life sciences in many institutes. I would like to see more support for basic research in our country. It's difficult to get funding and it is becoming increasingly difficult."



### Karel Říha Advice for young researchers

**Senior Group Leader at the Central European Institute of Technology (CEITEC) at Masaryk University | EMBO Member and former Installation Grantee**

Karel Říha believes it is a great time to begin a research career, although he sees the core skills required as having evolved in recent years. "It's an extremely exciting time to do something creative," he says. "I would say look into big data. The ability to handle and interpret big data is becoming one of the essential tools for biologists. The next steps in biology are to be able to

synthesise all the knowledge, and our brains simply don't have a capacity anymore." He adds that modelling and artificial intelligence will play a very important role in future life science careers and thus encourages young researchers to look beyond their immediate horizons.

"I would advise you should try to, first, get a good environment – the good labs – to get your education, don't be afraid to go abroad and expose yourself to new environments, new ideas." Říha says. "Don't be shy to approach people with ideas."

Říha acknowledges his election as an EMBO Member in 2020 was a significant step in his career. "Honestly, I was really, really honoured," he says. "You feel satisfied that you're getting recognition. And you get connected in different ways – more senior ways. So, I'm a member and you start interacting with these people on a different level."

In his homeland, Říha believes the life sciences are making tremendous progress, especially as many researchers have studied or worked abroad and are now returning. "They bring great projects, great money. Of course, the question is whether the next ten years are going to be like that or not? In general, I think the trend is good," he says.



### Petr Svoboda From EMBO Fellow to EMBO Member

**Professor and group leader at the Institute of Molecular Genetics of the Czech Academy of Sciences | former EMBO Long-Term Fellow, Installation Grantee and EMBO Member**

"EMBO was the most important element in building my scientific career," he says. After working in the United States and Switzerland for eight years, Svoboda stresses the importance of the EMBO network in helping adjustment to the reverse culture shock on returning to the Czech Republic.

"The EMBO Young Investigator meetings were one of these things where you can calibrate your benchmark for quality – for communication, presentation, writing grants, managing groups," he says. "As a junior PI that's where I learnt from others how they manage a group."

Svoboda says that although moving in the right direction, more could be done in the Czech Republic to connect basic and applied research – including better advice to students about their choices.

"We study mechanisms which control gene expression and parasitic sequences – so it is basic research," he says about his group's work. "But at the same time, you never know when some of the mechanisms may turn out to be important for discovering something that can suppress viruses, improve genome stability or whatever."

He believes students should be advised that moving from academia into applied research can be a good career choice even though his country lacks the developed business culture that supports clusters such as Rehovot in Israel, or around MIT and Harvard in the Boston area.

"One problem of the Czech academic environment was that it was considered elite, and leaving it was considered failure. In US it's a little bit the other way around – people want to go to companies, maybe make a lot of money, work on drugs," he says.



# The Czech Republic and EMBO in numbers

**15** EMBO Members<sup>a</sup>

- 7 Brno
- 1 České Budějovice
- 7 Prague



Liběchov



Prague

The Czech Republic has been an EMBC Member State since 1994.

**21** EMBO Installation Grants<sup>d</sup>

- 8 Brno
- 3 České Budějovice
- 1 Liběchov
- 1 Novy Hradek
- 8 Prague

**1** HHMI/EMBO Young Investigator<sup>b</sup>

- 1 Prague



Brno

**66** EMBO Scientific Exchange Grants<sup>d</sup>

44 from the Czech Republic abroad  
22 to the Czech Republic

**9** EMBO Courses & Workshops<sup>c</sup>

- 9 workshops in the Czech Republic
- 433 Czech nationals attended EMBO Courses & Workshops throughout Europe

a Working in the Czech Republic  
b Former programme member, working in the Czech Republic  
c 2019 – 24  
d 1994 to February 2024

# EMBO opportunities in the Czech Republic

## EMBO Postdoctoral Fellowships

fund internationally mobile researchers for a period of up to two years. Five additional fellowships are reserved for those applying to work in participating countries\*. Applications open all year.

## EMBO Scientific Exchange Grants

fund research exchanges of up to three months to facilitate collaborations with research groups with expertise, techniques, or infrastructure unavailable in the applicant's laboratory. Applications open all year.

## EMBO Advanced Collaboration Grants\*

fund exchange visits of group leaders with scientists from EMBC Member States to develop or carry out collaborative projects, or to prepare joint grant proposals. Application deadline: 31 August 2024

## EMBO New Venture Fellowships

help early career scientists to explore topics outside their current area and enter a new research direction. They fund research visits of up to three months. Applications open all year.

## EMBO Core Facility Fellowships

support training for staff of core facilities that provide services to research institutions or universities. They fund international exchanges of up to one month. Applications open all year.

## The EMBO Young Investigator Programme

supports group leaders in the early stages of setting up their independent laboratories for a period of four years. Networking is a key aspect. Application deadline: 1 April.

embo.org | Information as of March 2024  
Contact: communications@embo.org  
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## EMBO Installation Grants\*

support group leaders establishing their laboratories in the Czech Republic and becoming part of an international young investigator network. Application deadline: 15 April.

## EMBO Courses & Workshops

stimulate exchanges of the latest scientific knowledge and provide training in experimental techniques. Application deadlines: 1 March and 1 August.

## EMBO Early Career Lecture Courses\*

are designed to provide training for PhD students and postdoctoral researchers. Funding is available for courses in the Czech Republic. Application deadlines: 1 February, 1 June and 1 October.

## The EMBO Lecture Series\*

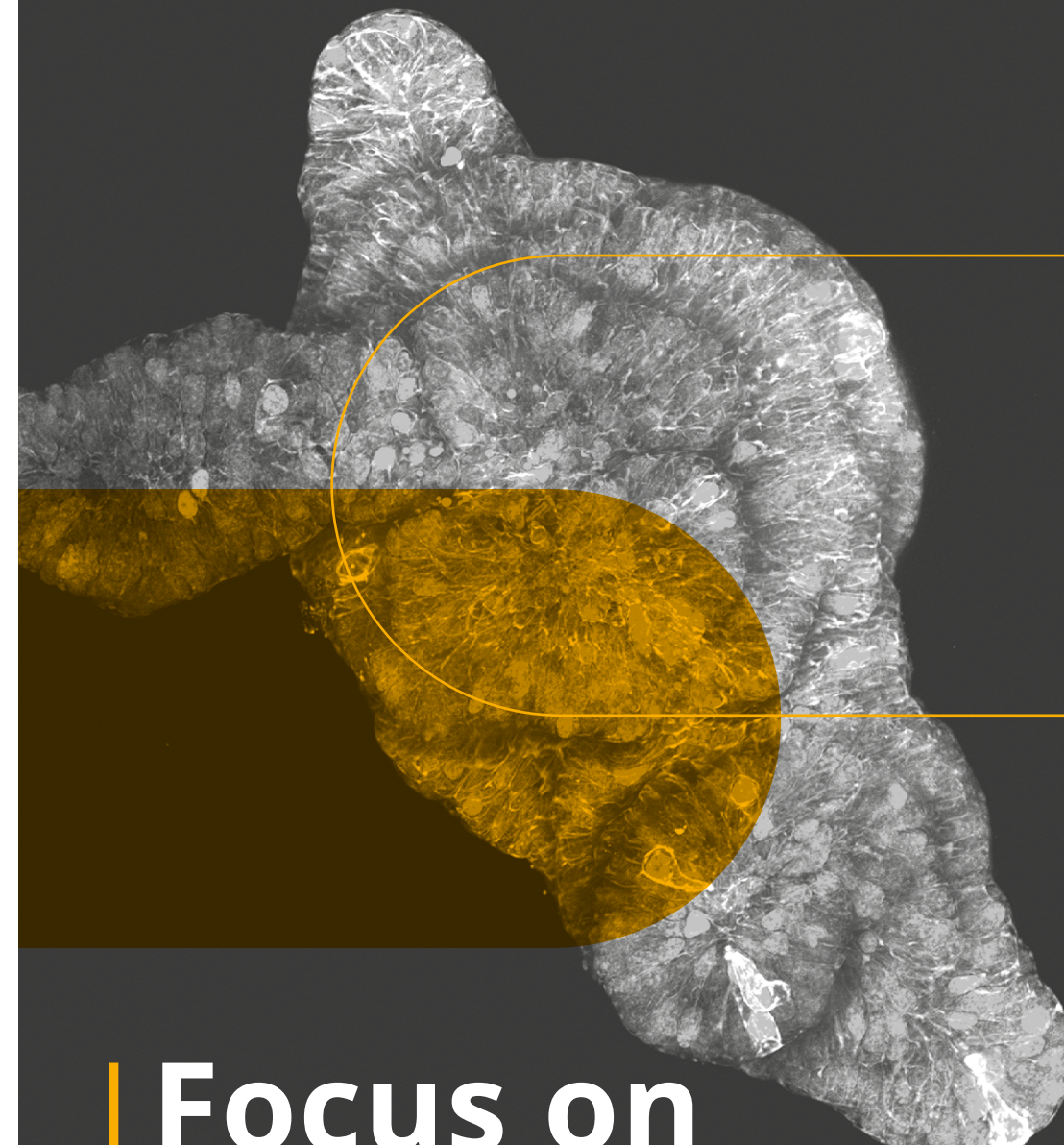
scheme provides funding to invite EMBO Members, Associate Members and Young Investigators to give lecture series in institutions in the Czech Republic. Applications open all year.

## EMBO Press\*

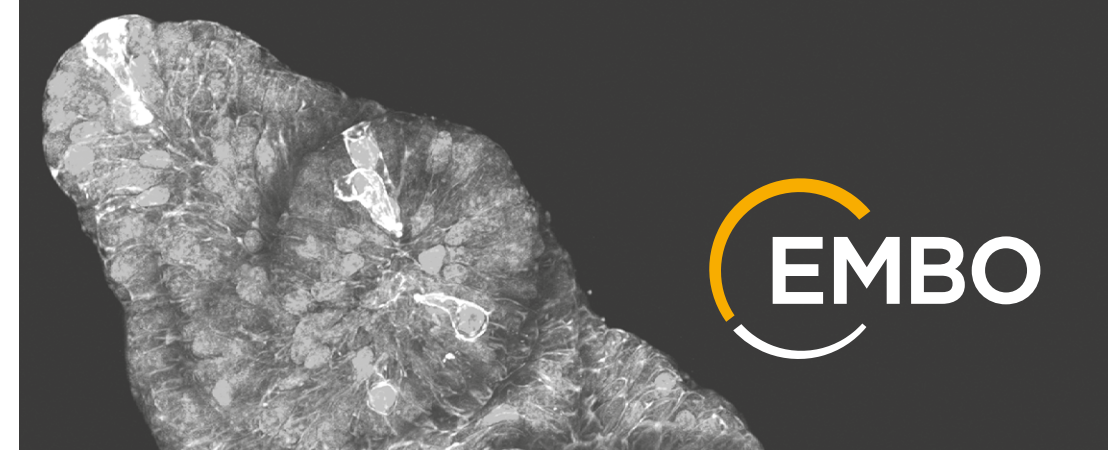
publishes five journals that serve the global life science community: The EMBO Journal, EMBO Reports, EMBO Molecular Medicine, Molecular Systems Biology, and Life Science Alliance, which is published in partnership with Rockefeller University Press and Cold Spring Harbor Laboratory Press. EMBO is waiving the Article Processing Charge for Open Access publication in the EMBO Press journals for scientists working in the Czech Republic provided they are not covered by a Springer Nature Open Access Agreement and do not have scientific publishing support or alternative funding available.

Find more EMBO schemes at [embo.org/funding](https://embo.org/funding)

\* The Czech Republic is one of the participating countries in the increasing participation schemes. The aim of the schemes is to increase participation in the EMBO Programmes throughout Europe.



# Focus on the Czech Republic



# Facts and figures

The regions now forming the Czech Republic have a long history of involvement in science and technology. The Charles University was established in 1348 as the first 'Studium generale' north of the Alps and east of Paris' and the famous Prague Astronomical Clock from 1410 is the oldest still in operation.<sup>2</sup>

The Charles University remains the country's largest, and there are now 62 higher education institutions<sup>3</sup> across the country, with more than 280,000 enrolled students<sup>4</sup> including more than 50,000 in life sciences fields.<sup>5</sup>

Around 35% of young adults in the Czech Republic attain a tertiary education.<sup>6</sup>

In 2021, nearly 85,000 people in the Czech Republic were employed in R&D work.<sup>7</sup> In addition to specialized research institutions, such as the scientific institutes of the Czech Academy of Sciences<sup>8</sup>, and support from the Technology Agency of the Czech Republic the country supports a range of research-business networks including Digital Innovation Hubs.<sup>9</sup> The European Patent Office granted 219 patents with first patentees residing in the Czech Republic in 2022<sup>10</sup>, and the Czech Patent Office received 505 patent applications.<sup>11</sup>

Research and development in the Czech Republic benefit from major inward investment. Gross expenditure on research and development (GERD) increased slightly from 2015 to 2021, to 2.0%.<sup>12</sup> The main sectors financing GERD were business enterprise, providing 36.1% in 2021, the Czech government (32.3%) and inward investment (30.5%).<sup>13</sup> Total R&D spending rose 68% between 2012 and 2021 to reach 122 billion Koruna.<sup>14</sup>

Life scientists in the Czech Republic have access to national funding through the Czech Science Foundation (GACR).<sup>15</sup> They also receive funding through Horizon Europe projects, European Research Council grants, and Marie Skłodowska-Curie Actions<sup>16</sup> as well as EMBO<sup>17</sup>.

## Key figures

Population: 10,873,553<sup>18</sup>

R&D spending: 2.0% of GDP

People employed in R&D: 85,000

Foreign researchers: 6.1%<sup>19</sup>

Patents (European Patent Office): 219

Higher education institutions: 62

Higher education enrolment: 280,000

Horizon 2020 funding:<sup>20</sup>

1,891 organizations including 370 SMEs involved in H2020 projects

38 ERC-funded principal investigators

234 organizations funded through Marie Skłodowska-Curie Actions

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