

# Slovenia and EMBO in numbers

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

Slovenia has been an EMBC Member State since 1997.

**1** EMBO Postdoctoral Fellow



Ljubljana

**4** EMBO Courses & Workshops<sup>b</sup>

154 Slovenian nationals attended EMBO Courses & Workshops throughout Europe

**11** EMBO Scientific Exchange Grants<sup>c</sup>

3 coming to Slovenia

8 going abroad

## EMBC Delegates

**Boris Turk**

Head of Department of Biochemistry and Molecular and Structural Biology, Jozef Stefan Institute, Ljubljana

**Andrej Ograjensek and Tomaz Boh** (Advisors)

Ministry of Education, Science and Sport, Ljubljana

<sup>a</sup> working in Slovenia  
<sup>b</sup> 2019–24  
<sup>c</sup> to February 2024

# EMBO opportunities in Slovenia

## EMBO Postdoctoral Fellowships

fund internationally mobile researchers for a period of up to two years\*. Applications open all year around.

## EMBO Scientific Exchange Grants

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

## 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. Application deadline: 31 October 2024.

## 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. Application deadline: 31 December 2024.

## 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 Installation Grants\*

support group leaders establishing their laboratories in Slovenia 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.

## Grants for participation at EMBO Courses & Workshops\*

Researchers at any career stage and from any discipline in the life sciences can apply for a grant of up to 700 euros to cover registration fees, travel and accommodation for participation in an EMBO Course or Workshop.

## 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 (APC) for Open Access publication in the EMBO Press journals for scientists working in Slovenia 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).

[embo.org](https://embo.org) | Information as of June 2024  
Contact: [communications@embo.org](mailto:communications@embo.org)  
Cover: Original image courtesy by EMBO Member François Nédélec

\* Slovenia 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 Slovenia







## Perspectives from Gregor Anderluh

Director of the National Institute of Chemistry, Slovenia | EMBO Member

interesting because there are not many groups of toxins that do that. Most of our research is basic research although we have some studies oriented towards application.

For example, we used one of these toxins in a sensing application that allow us to discriminate different proteins based on size and charge. This may be relevant for biomedical applications, as these molecules are present everywhere and they are part of the human immune system helping to remove unwanted cells from the body.

**Have you had a eureka moment?**  
Oh, yeah! It was a plant sphingolipid, a particular group of lipids that basically only exist in plant plasma membranes, and the eureka moment was when we identified the receptor for the toxins. For a long time, we didn't

know why the toxins bind to plant membranes so avidly and with such a great affinity. They bind to some plant membranes more than the other ones and it wasn't clear why this is happening. When we discovered that, it was really like 'oh, wow!'

**Where might this lead?**  
Food production is a big issue. A lot of crops are damaged by these microorganisms and it's not an easy task studying this because microbes use all sorts of different proteins in the pathogenesis process. If you block this one group there may still be other factors that do the damage. In principle we are also looking for molecules that would inhibit this cycle as a kind of a prevention measure that you could use in agronomy. But it's a tough problem and it will be difficult to design any meaningful inhibitors.

establish a collaboration on a project. It is good to stay out of your comfort zone and find something new."

His personal research is in proteases and specifically in the basic mechanisms of molecular signalling pathways to understand their role in inflammation associated diseases. "We are also trying to use proteases as a means for minimally invasive diagnosis and drug delivery," Turk says. "Proteases are really good markers of inflammation and you can image them with fluorescence so there are studies now into image guided surgery for cancer treatment."

bacteria and the phage work together almost in a symbiotic relationship.

Originally studying horizontal gene transfer, she became interested in phages after realizing that gene manipulation by mobile genetic elements can be very common.

"When I started discovering this, I saw that there was even more control, not just the interruption, but it's also excision in some cases," she says. "In this case it was a machinery that is used for natural competence, but also in some cases for escape from the phagosome, and in this case the phage excision was essential for the bacteria to survive inside the human host."

Vesel's EMBO Fellowship was awarded on her second attempt to apply, and she gives credit to the EMBO team for providing clear instructions and encouragement. "You're guided through the process, so it made it much easier also to apply," Vesel says.



## Nina Vesel Unusual behaviour in phages

EMBO Postdoctoral Fellow at the University of Ljubljana

After her bachelor degree from the University of Ljubljana's Faculty of Biotechnology, Nina Vesel obtained a Masters in the Netherlands and her PhD at the École Polytechnique Fédérale de Lausanne in Switzerland. She returned to her alma mater as a postdoc and was awarded an EMBO Postdoctoral Fellowship in 2023.

Vesel works in the ERC Phagecontrol research group, led by Anna Dragoš. The lab focuses on *Bacillus subtilis* and the phage called SPβ, a regulatory switch phage which integrates in a specific gene involved in making spore coat during sporulation. Vesel says her work is particularly interesting as the

## Meet scientists from the EMBO communities

**How would you describe the state of the life sciences in Slovenia?**

Slovenia had not previously invested a lot in research and development, and this was reflected particularly in life sciences research where you need equipment that is quite costly. But new legislation was passed in 2021 with the aim to reach government investment of 1% of GDP which is really very ambitious. Now we can think about returning some of our scientists from abroad or bringing excellent researchers into Slovenia.

The other important factor is that pharmaceutical industries are now building big plants here in Slovenia. There will be a lot of attention in this field.

**What advice would you give to a student just starting off?**

There is definitely a future in life science research, and I would recommend it. Come to Slovenia! Not only because our country is nice and very

beautiful, but because we have top level groups and you can do excellent science.

**How important were your two EMBO Scientific Exchange Grants?**

I appreciated them a lot. They were aimed at learning new approaches, for example a very productive visit to Trento where they were developing planar lipid bilayer approaches and then Oxford for structural biology. This allowed me the opportunity to see how things are done and then to develop them here in Ljubljana.

**Tell us about your personal research and its aims?**

In my group we study how toxins damage the lipid membrane. We are studying some of the most important toxins from bacteria and from animals. At the moment we are studying cytolysins produced by microbes and how they affect plant plasma membranes. In the plant world this is in-



## Boris Turk Funding, networking, collaboration

Head of Department of Biochemistry and Molecular and Structural Biology, Jožef Stefan Institute, Ljubljana | EMBO Member | EMBC Delegate

Boris Turk has been Slovenia's EMBC Delegate for 14 years, and also served

as vice-president of the organization which funds EMBO. He says EMBO is highly valued across its member countries for opportunities in funding, networking and collaboration. "You feel like being really a member of a big family," he says. "People from the larger countries in EMBC are equally aware that this is also crucial for them. It's not just for small countries."

Turk says EMBO's Fellowships and EMBO Scientific Exchange Grants are crucial for researchers seeking to build an independent career. "You can become independent of your supervisor and start thinking independently," he says. Turk successfully applied both for a FEBS and EMBO Fellowship for a postdoctoral position in Sweden, and subsequently also benefited from a scientific exchange grant. "I had a grant for three months. It was great," he says. "You can learn new techniques or