

Montenegro and EMBO in numbers

1
EMBO Member^a

5
researchers from Montenegrin institutions attended EMBO-funded events abroad^b

^a Montenegrin citizen
^b 2020–2025

Facts and figures

Montenegro is a small country in the Balkans with a coastline on the Adriatic Sea. A parliamentary republic, Montenegro declared independence from a former union with Serbia in 2006 following a national referendum. It is a candidate country of the European Union, and a member of the North Atlantic Treaty Organization.¹

The country is one of the fastest growing tourism destinations in Europe. Travel and tourism account for 25% of its Gross Domestic Product.²

Montenegro was the first non-EU country to implement a Smart Specialisation Strategy focusing on strengthening innovation-related aspects of research. The strategy priority areas are sustainable agriculture, energy and sustainable environment, sustainable and health tourism, and information and communication technologies.³ Montenegro has participated in EU Research and Innovation programmes since 2008.⁴

There are four universities in the country. The University of Montenegro is the largest and provides 60% of all available study programmes. Montenegro has an average of 24,500 enrolled students per year in bachelor, masters and doctoral studies.⁵

Around 40% of Montenegrin adults attain a tertiary education⁶ and the country had 2,330 people working in research and development in

EMBC Delegates

Ivana Lagator and **Lidija Vukčević**
Ministry of Education, Science and Innovation

The EMBO Programmes are funded by the European Molecular Biology Conference (EMBC), an inter-governmental organization that comprises 32 members states.

Montenegro has been an EMBC Member since 2018.

Key figures

Population: 623,633⁷

R&D spending: 3.256% of GDP⁷

People employed in R&D: 2,330⁷

Universities: 4⁵

Horizon Europe funding:⁹

35 organizations including 4 SMEs involved in Horizon Europe activities

0 ERC principal investigators

6 Marie Skłodowska-Curie Actions funded researchers

2019. Gross expenditure on research and development (GERD) in 2019 was 17.98 million Euro or 0.5% of Gross Domestic Product. The main sectors financing GERD in 2019 were the government and higher education sectors.⁷

The European Patent Office received six applications from residents of Montenegro in 2024.⁸ Life scientists in Montenegro have access to funding from the Ministry of Education, Science and Innovation and through Horizon Europe and Marie Skłodowska-Curie Actions⁹ as well as EMBO.

References

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4. European Commission, Montenegro homepage
5. Agency for Control and Quality Assurance of Higher Education, Montenegro
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8. European Patent Office, Country Dashboard 2024
9. European Commission, Horizon Europe country profile

EMBO opportunities in Montenegro

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.

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.



Find more EMBO schemes at embo.org/funding

EMBO Courses & Workshops

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

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.



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Focus on Montenegro



Perspectives from Aleksandra Trifunovic

Professor in Mitochondrial Disease and Aging, Medical Faculty,
University of Cologne | EMBO Member



Why did you move to Sweden after your PhD in Belgrade?

I was born in the small coastal town of Bar in Montenegro when it was still part of Yugoslavia. I feel strongly connected to the whole region as my mother and father have roots in Montenegro, Northern Macedonia and Croatia, and I studied and spent a lot of time in Serbia. I moved to Belgrade for my university studies in the 1990s, a time when Yugoslavia was breaking apart and the country was under international sanctions, making it difficult to leave. So, I stayed and completed my PhD there. By the time I finished in 1999 I had just gotten married and together with my husband we decided to move to Sweden - one of the few countries in Europe then offering work permits to both of us.

Sweden didn't offer opportunities in my original research field, so I had to change my research field entirely. I joined Nils-Göran Larsson's lab at the Karolinska Institute and began working on mitochondrial biology, a field I knew little about at the time. It was the early 2000s, and transgenic mouse models were a big thing in biomedical research. I helped develop a mouse model for premature aging caused by mitochondrial dysfunction. I was initially drawn in by the

cutting-edge technology but soon became completely captivated by the fascinating world of mitochondrial biology. Since then, I have been fully immersed in mitochondrial research, and I truly love it.

To a certain extent moving to Sweden and starting research on mitochondria involved some degree of chance. That is why I always tell people that you do not need to have a completely planned and straightforward career path to succeed in science. It can also sometimes involve a bit of chance and luck.

What prompted you to move to Cologne?

In 2008 I was approached by my colleagues from the University of Cologne and asked if I would be interested in joining a newly established Cologne Excellence Cluster for Aging and Aging-Associated Diseases (CECAD). As my postdoctoral work mainly focused on the role of mitochondria in ageing and ageing-associated diseases, this was a perfect research environment for me to continue my research career. This was in 2009 and we did not regret this decision at all. Our daughter was just three when we moved and she integrated in Germany and Cologne super well.

What is your personal research focus?

I work on understanding mitochondrial function and how it communicates with the rest of the cell. My lab is interested in understanding the signaling pathways in response to mitochondrial dysfunction in the context of aging and different metabolic diseases.

Mitochondria are organelles inside almost every living eukaryotic cell. They are considered the powerhouse of the cell because they produce most of the cell's energy in the form of ATP. Over the last ten years or so, we started understanding that while the powerhouse aspect is important, there are many other different pathways regulated by mitochondria, which also act as an important signaling hub in the cell.

Mitochondrial dysfunction comes in many flavors and the cell reacts to these perturbations of mitochondrial function in different ways. Those stress responses might be both beneficial and maladaptive, and this is what I am studying in the context of different physiological settings. For example, during development of the skeletal muscle or ischemia reperfusion injuries in the heart or kidney.

Where might your research lead?

We work a lot on mitochondria proteostasis mechanisms by studying various mitochondrial proteases. A big part of our work focuses on understanding how mitochondrial proteases monitor and regulate quality control of respiratory chain (OXPHOS) complexes. We have discovered that, while in normal conditions the removal of faulty OXPHOS complexes keeps energy production intact, in the disease states when the majority of OXPHOS becomes unstable, this surveillance mechanism actually worsens the disease's phenotypes.

We are now working to develop a screen for a potential inhibitor of this quality control protease. The idea is that in future you can use these inhibitors to treat people who have mitochondrial diseases. We have also discovered this might be important during ischemia and reperfusion that happens during heart attack or stroke. Similarly, ischemia and reperfusion also happens during an organ transplant when you cut the blood supply and keep the organ for some time

without oxygen. It is when you replace the oxygen supply that the organ has a sudden oxidative stress and we think we can manipulate these proteins and prevent this.

We think this might be used in future for example in kidney transplants when you could store the kidney in the inhibitor. Most people do not think about transplantation as a problem, but it involves completely cutting oxygen supply to an organ and then having to revive it, which inevitably comes with ischemia-reperfusion injury. We always have this kind of benefit in the back of our mind but my primary driving force is to understand how and why the processes work in this way.

How did you react to election as an EMBO Member?

Becoming a Member is amazing. It is recognition of your work and I was really very proud and happy to hear the news. I attended the Members' Meeting in 2024 and it was great to meet other Members and talk to different people from different areas of research.

I have also organized several editions of the EMBO-FEBS Lecture Course series on Mitochondrial Biology (*Mitochondria in Life, Death, and Disease*), which play an important role in our scientific community, particularly for early-career researchers. We make a point of asking invited speakers to provide broad introductions to their fields, ensuring the course is truly educational and inclusive.

The course covers a wide range of topics, from unicellular organisms to plants and humans, and brings together researchers from different disciplines who don't typically interact. My involvement began in 2002, when my postdoctoral supervisor, originally set to lead a part of EU-funded lecture series on mitochondria, asked me to step in. That experience introduced me to many key members of the field and solidified my commitment to fostering this community.

I'm especially pleased that EMBO continues to support the series, and we are now encouraging younger colleagues to take on organizational roles to ensure the course continues to evolve and thrive.

Meet representatives of the EMBO communities

Maria Bolevich A journalism journey across Europe

Science journalist and former
Maria Leptin | EMBO Science
Journalism Fellow 2024



The life of a freelance science journalist can be financially and professionally challenging but Maria Bolevich reveals in the opportunity for discovery.

A reporter for more than 12 years since completing her degree in her hometown of Podgorica, Montenegro, Bolevich has specialized in science, health and environmental journalism and has written for major science news outlets.

"As a journalist, my role is to help inform and educate the public," she says. "I need to translate complex scientific concepts and technical information into accessible language and engaging formats."

Bolevich says her reporting necessarily involves working with scientists, doctors and educators, and she needs to be able to quickly build trust and understanding.

"A good journalist in these fields must also understand the ethical implications of science, medicine and technology, and the possible public reaction to emerging issues," Bolevich says.

Her application for a Maria Leptin | EMBO Science Journalism Fellowship was highly ranked by the advisory board, and she began a two-month internship in Brussels in May 2025. The Fellowships offer science journalists an opportunity for a funded sabbatical to delve deeper into current research and technologies, while free from the pressure of having to produce daily or weekly content.

Bolevich is not wasting the opportunity offered by the Vrije Universiteit and has spent time with a variety of research and technology groups - an experience that she is appreciating and enjoying as she shared during a visit to EMBO.

"The university involved me right away, and everyone was willing to help. They gave me such a warm welcome," she says. "I can honestly say this feels like a dream come true."

Bolevich's fellowship was funded from the pilot phase of the scheme.