



Perspectives from Leszek Kaczmarek

Professor at the Nencki Institute of Experimental Biology, Warsaw
EMBC President and Delegate, EMBO Member

As a member state of the EMBC, Poland, through EMBO, has supported life scientists across Europe since 1999. Could you talk about this commitment and your involvement?

In the 90s there was a general political motivation that Poland would join NATO, EU, and all these prestigious organizations, including those related to science, to get recognition as a country. For us in the scientific community the motivation, besides recognition, was to get access to opportunities such as fellowships, exchanges, and networking.

EMBC Membership entitled scientists from Poland to be elected to the EMBO Membership. I have been elected in 2000 and served on the Fellowship Committee and on EMBO Council. At EMBC, I chaired the Strategic Development Installation Grants (SDIG) board, was Vice President and am now President. I also co-organized EM-

BO-sponsored meetings that included promotion of EMBO activities, as we want more Polish scientists to benefit from them.

Could you comment on the new EMBO activities to increase participation throughout Europe? How did this come about and what do you foresee as the outcome?

Poland played a major role. The Polish community is poorly represented among EMBO Fellows. When fellowships were converted to job contracts, it meant that their number would decrease, or the budget needed to increase. Fortunately, EMBC increased the budget. But large countries that did not get much in return from fellowships, such as Poland, were not satisfied. The issue of lower participation was raised, discussed, and recognized at the SDIG meeting and EMBO Council. I think the biggest challenge

is that we are losing brain power. I am grateful to the EMBO communities to be so active and counterbalance this issue by these new activities. Let's see how they work.

What are the current trends in the life sciences landscape of Poland?

Biology has some traditional strongholds, but one must also consider medicine. There is a lot of biomedical, especially clinically-oriented, research. Top researchers from Poland are usually clinicians who participate in big consortia and publish large papers. Because we have a well-organized healthcare system, they can collect data from good patient cohorts. There is also an interest in lifestyle diseases and in neuroscience. Personally, I appreciate some very interesting studies in ecology and evolution.

What opportunities are available for life scientists in Poland?

In the last few years, Poland has become a heaven, especially for young group leaders. They are not under pressure to be in the mainstream and find conditions in which they are able and allowed to pursue their own ideas. We have good technical facilities and some excellent people to work with. There are fantastic funding opportunities: Since 2011, we have a special grant agency for basic research, the National Science Center, with a budget of over 250 million euros per year, of which about 40% goes to the life sciences and at least 30% to the support of young researchers. The Max Planck Society developed the Dioscuri programme and wishes to establish ten new, well-funded laboratories. There are EMBO Installation Grants and a new agency for academic exchange that supports people to come to Poland. Special credit for recognizing and supporting scientific excellence should also be given to the Foundation for Polish Science, headed by EMBO Member Maciej Zylicz.

Are there challenges?

One is that Polish scientists usually do not publish in high impact journals; it is very difficult to even get the manuscripts reviewed: if you come from a top place, you most often will get your paper to review. If you come from a country such as Poland, usually you will not. The problem is larger where professional, and not academic, editors are involved.

Another challenge is a lot of conservative structure, especially at the universities. The Nencki Institute is an Academy of Sciences institute. Every year we have a fair, open competition for group leaders, which works well. But at more traditional universities such system hardly exists.

What role does EMBO have in supporting researchers in the country?

First, there are the Installation Grants. They are mainly funded by the Polish Ministry of Education and Science, but selected by EMBO to support research and to offer great access to networking. Second, there is advice. Over the last years there was a strong emphasis on science and society, recognizing important issues in modern science, ethics, and publishing. Finally, there are the EMBO Press journals that may be useful.

What advice would you give to an early-career scientist considering a career in Poland?

Doing a PhD in Poland can be a good idea, because there are some very good laboratories. For postdoctoral research, it is probably better to go to a well-established laboratory elsewhere that offers good chances to publish in high impact journals (also due to the skewed review system, as mentioned above). Finally, being a group leader in Poland is an excellent idea. A young person who wants to come to Poland to start a laboratory should, however, really look at each institution and their parts to learn about the atmosphere.



Marta Miączyńska Opportunity calls

Director of the International Institute of Molecular and Cell Biology (IIMCB), Warsaw
EMBO Member, EMBO Council Member

In the early 1990s, Marta Miączyńska travelled from Poland to the UK to take part in a student exchange programme. "The excitement I felt running experiments in the wonderfully-equipped laboratories convinced me to become a scientist," recalls Miączyńska. Opportunities in Poland were limited, but fast forward three decades, she says the landscape has changed dramatically: "The life science sector in Poland is really going places. Motivated young researchers can flourish: there are lots of grant opportunities, modern equipment, and great working conditions in many institutions. People who take the chance to come here don't regret the decision."

Miączyńska's research focuses on the roles of cellular proteins in transporting different components into and out of the cell. "My team studies fundamental mechanisms, but also how aberrations could become therapeutic targets," she says. "We want to identify the Achilles' heel of cancer cells so that other researchers and companies can take drug development to the next level."

Meet scientists from the EMBO communities

EMBO has been a regular part of Miączyńska's work: she has organized and attended scientific events and seen firsthand the benefits of the EMBO Programmes on the careers of researchers at IIMCB. "EMBO has connected me to a broader community of great scientists and provides wonderful interactions with people on the strategic level," she adds. "The EMBO Programmes have a tremendous impact, and I hope researchers in countries currently underrepresented in the life sciences will keep discovering them."



Sebastian Glatt Openness, sharing, and co-operation

Max Planck Research Group Leader, Małopolska Centre of Biotechnology, Jagiellonian University, Kraków
EMBO Installation Grantee (2016-21)

When Sebastian Glatt arrived in Kraków in 2015 to lead a Max Planck Research Group, he immediately set about building his team – underpinned by an installation grant. "The

EMBO Installation Grant was very supportive financially and brought amazing networking opportunities," explains Glatt, an Austrian-born structural biologist whose team has grown to nearly 30 members. "I had constant exchanges with top research groups all over Poland and the rest of the world. This network will benefit me for the rest of my career."

Glatt's group studies the mechanisms that enable cells to produce certain proteins on cue, which allow them to reproduce, adapt, or differentiate into specialized types. "Oftentimes we don't know what is happening at the fundamental level. It's crucial to understand it to learn how mutations might lead to disease," says Glatt, whose team has expertise in biophysics, genetics, and cell biology. "We hope to develop diagnostic and therapeutic tools for diseases that are currently incurable."

"Our group's success is largely a result of how the institute is organized: inspired by a culture of openness, sharing, and cooperation," says Glatt. "Ultimately it is about teamwork: it's an incredible feeling when you understand something from a different perspective and share that. Kraków is an academic powerhouse. There are lots of excellent scientists with the same spirit of being connected and working together in Poland. It's great to be here."

As an EMBO Postdoctoral Fellow, Vanessa Linke has crossed borders and disciplines. "It's a very exciting time to be a scientist in Poland," says Linke, who was born in Germany and conducted her PhD research in the USA. "People are very open to collaboration, there are lots of opportunities and a very international mindset."

Linke's research in the laboratory of EMBO Member Agnieszka Chacinska explores the mechanisms underpinning the stress responses of mitochondria, cellular structures that power eukaryotic cells and carry out several important functions. "Because mitochondria are so important for our cells, it's really bad when something goes wrong," she explains. "The hope is that it will be possible to inform better treatments for inherited diseases and neurodegenerative disorders."

A mass spectrometrists by training, Linke integrates fields such as biochemistry, biology, analytical chemistry, biotechnology, and data science. "One of the best aspects of my EMBO Postdoctoral Fellowship is the opportunity for cross-disciplinary interactions: this is something that has shaped and defined me as a scientist," Linke adds. "Thanks to EMBO, I'm part of a fantastic scientific community that extends across Poland, Europe, and the world. It's been a terrific experience so far."

Vanessa Linke Bridge building

EMBO Postdoctoral Fellow, International Institute of Molecular Mechanisms and Machines, Polish Academy of Sciences, Warsaw



Poland and EMBO in numbers

15 EMBO Members^a



Gdansk (1), Poznan (4), Warsaw (9), Wroclaw (1)

18 EMBO Installation Grants^b



Gdansk (1), Krakow (3), Poznan (4), Warsaw (10)

EMBC Delegates

Leszek Kaczmarek (also EMBC President)
Professor, Nencki Institute of Experimental Biology

Maria Klimkiewicz Wroclaw
Chief expert, International Cooperation Department, Ministry of Science and Education

The EMBO Programmes are funded by the European Molecular Biology Conference (EMBC), an inter-governmental organization that comprises 30 Member States. Poland has been an EMBC Member State since 1999.

1 EMBO Young Investigator^b

Warsaw (1)

59 EMBO Scientific Exchange Grants^c

7 Coming to Poland
52 Going abroad



2 EMBO Postdoctoral Fellowships^c

2 Going abroad



4 EMBO Courses & Workshops^c

1 Practical courses
3 Conferences

802 Participants
833 Polish nationals attended EMBO Courses & Workshops throughout Europe



Krakow

^a working in Poland
^b current or former, working in Poland
^c 2016–2020

Opportunities in Poland

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*, and an interview is guaranteed provided their application passes initial quality screening. Applications open all year around.

EMBO Scientific Exchange Grants

support new international collaborations, enabling the transfer of expertise unavailable in the applicant's laboratory. They fund research visits of up to three months. Applications open all year around.

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: 2 May 2022.

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 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.

embo.org
Information as of January 2022
Contact: communications@embo.org
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EMBO Installation Grants

fund group leaders in the early stages of setting up their independent laboratories in Poland for three to five years. Networking is a key aspect. Application deadline: 15 April.

EMBO Advanced Collaboration Grants*

fund exchange visits of group leaders with scientists in other EMBC Member States to develop or carry out collaborative projects, or to prepare joint grant proposals. Applications open all year around.

EMBO Courses & Workshops

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

EMBO Lecture Courses*

train PhD students and postdoctoral researchers. Application deadline: 1 March.

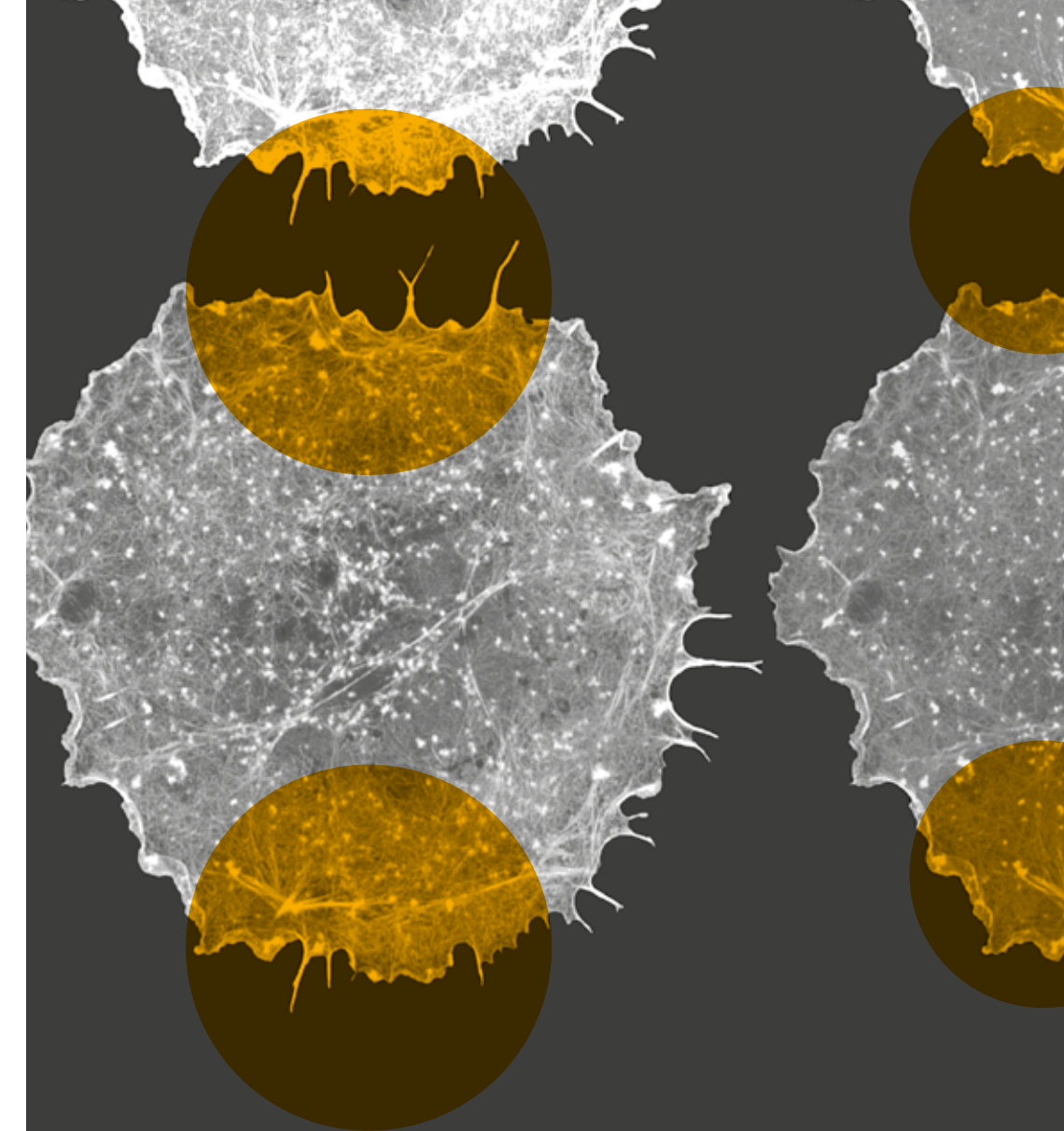
EMBO Lecture Series*

fund series of lectures of EMBO Members and Young Investigators at different institutions. Applications open all year around.

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.

* Poland is one of nine participating countries. The aim of the schemes is to increase participation throughout Europe.



Focus on Poland

Facts and figures

Poland has a history of pioneering education and research. The country's oldest educational institution, Jagiellonian University in Kraków¹, was founded in 1364; its largest is the University of Warsaw². Today, there are around 350 higher education institutions, with more than 1.2 million students enrolled³. Around 44% of young adults in Poland attain a tertiary education⁴, and biotechnology is one of the most popular fields of study⁵.

In 2019, 271,000 people in Poland were involved in R&D work⁶. There are specialized research institutions, such as the scientific institutes of the Polish Academy of Sciences⁷ and Łukasiewicz Research Network institutes, which connect science and economy⁸. The European Patent Office granted 278 patents with first patentees residing in Poland in 2020⁹, and the Polish Patent Office granted 2,308 patents for inventions in the country¹⁰.

Scientific research in Poland has benefited from increases in investment. Gross expenditure on research and development (GERD) more than doubled between 2005 and 2019, to 1.32%¹¹. The main sectors financing GERD were business enterprise, providing 50.7%, and the Polish government, providing 38.8%. Public and private science spending in 2019 exceeded 6.5 billion euros.

Life scientists in Poland have access to a variety of national funding options, for example through the National Science Centre or the Foundation for Polish Science. They also receive funding through Horizon 2020 projects, European Research Council grants, and Marie Skłodowska-Curie Actions¹² as well as EMBO¹³.

Key figures

Population: **38,151,000**¹⁴

R&D spending: **1,32% of GDP**¹¹

People employed in R&D: **271,000**⁶

Foreign researchers: **2,2%**¹⁵

Patents (European Patent Office): **278**⁹

Higher Education Institutions: **349**¹⁶

Higher Education enrolment: **1,215,307 students enrolled**³

Horizon 2020 funding¹²: **2,834 organizations and 520 SMEs involved in H2020 projects**

30 ERC principal investigators

425 Marie Skłodowska-Curie Actions funded researchers

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