

Austria and EMBO in numbers

43
EMBO
Members^a

30
EMBO Young
Investigators^b

75
EMBO Postdoctoral
Fellows^c

EMBC Delegates

Hemma Bauert
Federal Ministry of Education,
Science and Research

Christa Schleper
Head of Archaea Biology and
Ecogenomics Unit, University of
Vienna

The EMBO Programmes are funded by the European Molecular Biology Conference (EMBC), an inter-governmental organization that comprises 31 members states.

Austria has been an EMBC Member State since 1970.

EMBO opportunities in Austria

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.

Maria Leptin | EMBO Science Journalism Fellowships

support science journalists and life scientists entering careers as science journalists covering life science research. 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 Courses & Workshops

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

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.

Find more EMBO schemes at embo.org/funding

embo.org
Information as of January 2025
Contact: communications@embo.org
Cover: Original image courtesy of Andy Li, Hansong Ma lab/University of Birmingham

Facts and figures

Austria has performed impressively in terms of investing in research and innovation despite several years of moderate growth. Austria has met the European target of investing 3% of the GDP in research and development for several years, achieving this target as early as 2015. In 2023, Austria's research investment percentage stood at 3.256%, making it one of the five EU countries (along with Sweden, Belgium, Germany, and Denmark) that meet the European R&D intensity target.

Austria benefits from a robust research and development (R&D) ecosystem, housing 96,270 full-time equivalent research personnel as of 2021. Public sector funding largely supports research at higher education institutions. Austria's R&D sector is recognized internationally, and the country excels in securing ERC grants, ranking second only to the Netherlands within the Horizon 2020 framework. The success of Austria in Horizon 2020 stems from a higher success rate in applications than the EU average and is supported by a mix of public and private funding, with €1.96 billion allocated for projects.

Austria's life sciences sector benefits from a strong research network and skilled workforce with a total of 17 universities, 13 universities of applied sciences and 25 non-university research institutes dedicated to or with high percentage of life science research activities. In 2020, the total number of life science students at universities and universities of applied science amounted to more than 77,000.

Recognizing the sector's importance, Austria initiated a strategy involving stakeholders to identify key areas for development supported by a €45 million funding initiative for 2024 to 2026¹. The strategy focuses on basic research, research infrastructure, personalized medicine, and scientific-business collaboration. With a spotlight on health amid the COVID-19 pandemic, Austria aims to advance in digitalization, medical devices, and immunology. The goal is to sustain Austria's reputation as a leading hub for life sciences research, business, and production, fostering innovation and competitiveness along the entire development pathway.

Key figures

Population: 9.2 million²

R&D spending: 3.256% of GDP³

People employed in R&D: 96,270⁴

Patents: 2,388⁵

Higher education institutions: 60⁶

Higher education enrolment: 393,234

Horizon 2020 funding⁷:
Number of signed grants: 3,184
235 ERC principal investigators
184 Marie Skłodowska-Curie Actions funded researchers

Focus on Austria



References
1. Austrian Research Promotion Agency (FFG), <https://www.ffg.at/en/AustrianLifeSciencesProgramme>
2. Statistics Austria, <https://www.statistik.at/en>
3. OECD, Gross domestic spending on R&D (indicator). DOI: 10.1787/8bb988b4-en
4. OECD, Researchers (indicator). DOI: 10.1787/20ddfb0f-en
5. European Patent Office, Patent Index 2022, <https://www.epo.org>
6. Federal Ministry of Education, Science and Research (BMBWF), "Austria's higher education system has four sectors", <https://www.bmbwf.gv.at/en/Topics/Higher-education--universities/higher-education-system.html>
7. European Commission, Horizon 2020 country profile https://dashboard.tech.ec.europa.eu/qs/digit_dashboard_mt/public/extensions/RTD_BI_public_Country_Profile/RTD_BI_public_Country_Profile.html?Country=AT

a Working in Austria
b Former and current programme members, working in Austria
c 2019–2023

Perspectives from Christa Schleper

Professor at the University of Vienna | EMBO Member |
EMBC Delegate | Former EMBO Young Investigator



These microorganisms compete with the plants for the fertilizer, and they also produce the greenhouse gas N₂O. After lot of basic work on these *Archaea* my objective has shifted and is now more focused to help change agricultural practices so that we can more efficiently use fertilizers and reduce the impact of nitrogen on the environment. We still do basic research, but we are running more applied projects now.

How might this knowledge be applied?

We are looking for biological nitrification inhibitors in plants. These are substances that plants can excrete through their roots to modify the microbiome in their own soil, to inhibit the bacteria and *Archaea* that metabolize ammonium. Looking to find such biological nitrification inhibitors or BNIs is a new research field globally with the aim to breed crops in the future that produce these inhibitors by themselves and thus are dependent on far less fertilizer to be applied.

I'm pretty sure we have some candidate substances already. We are currently testing them. A lot of wild plants produce BNIs, but the modified plants humans have created through breeding to be more productive and resistant, wheat for example, have lost the BNI capacity because the question of nitrogen efficiency was not considered back in those times.

What sparked your interest in this field?

I'm really a fundamental researcher, and I also love to go to the extreme environments like the hot springs. This is how I got into the field – through the fascination of these places and investigating how the *Archaea* can grow in these extreme conditions. Also, I love to travel to these unusual places: volcanic areas in Kamchatka, Iceland, the Azores, Yellowstone, and southern Italy.

How important was your EMBO Young Investigator award?

This was really a game-changer for me. I had just established my own lab, and I was bringing in a technology from the US, so-called metagenomics. I analyzed DNA directly from the environment which is how I later discovered the *Archaea* in the soil and also more recently another lineage, the Asgard *Archaea* from the deep ocean in Norway. It was not so easy back then as I was running a group, and I just had a baby. When I joined the Young Investigator Network it increased my visibility and strengthened me a lot. I had a mentor who was very helpful, and the award gave me this particular kick to be more self-confident as a group leader.

As an EMBC delegate, how important is EMBO for Austria?

EMBO is well known here and very important. Many of the renowned scientists in Austria are EMBO Members or former EMBO fellows, and it is a very nice network. I like it that also the smaller countries like Austria have a strong voice on the EMBO Council. I'm very impressed with the whole organization and have a lot of admiration for how EMBO was founded based on a vision 60 years ago and how successful it is nowadays. Whenever I think about novel topics, I look at how EMBO is thinking about them, for example gender equality, selection procedures or sustainability in science. EMBO clearly has a leadership role on all levels.

How do you see the life sciences in Austria developing?

I think Austria is already a great place for life sciences and biotechnology. Vienna is really amazing in this sense. Our institute has moved to the Vienna BioCenter campus a few years ago and this is a sparkling place for the life sciences in all senses. There are many different institutes, and there is a lot happening. It is a very vibrant atmosphere.

Meet scientists from the EMBO communities



Tuncay Baubec The freedom to choose your own direction

Professor at Utrecht University |
EMBO Young Investigator and
former Fellow

Tuncay Baubec knew at high school in Austria that he wanted a career in the life sciences. "Biology was my favourite subject at school," he says. After a PhD in Vienna and an EMBO-funded postdoctoral position in Basel, Baubec moved to Utrecht University in the Netherlands where he is Chair of Genome Biology & Epigenetics.

"You have to decide on a certain direction, and for me it was epigenetic modifications because sometimes they don't obey the underlying DNA sequence," he says. "For the last 15 to 20 years I've been working on these modifications and trying to understand how they regulate genes in different organisms from plants to animals. And I still find it fascinating!"

Baubec says his EMBO Fellowship was instrumental in furthering his career. "It allowed me the freedom to decide what I wanted to do, and the training was also very helpful," he says. "We had group leader training for postdoctoral researchers which prepared me to run a lab."

Selected as an EMBO Young Investigator in 2020, Baubec says the support from EMBO has helped develop and maintain important networking and collaboration opportunities. "The network is very helpful, meeting other researchers at the same level and exchanging research leading to collaboration. I can only be very grateful about both the Fellowship and Young Investigator grant and they are highly recommended for everyone," Baubec says.



Amrita Singh Forging new paths

Postdoctoral researcher at the
Institute of Science and Technology,
Austria | EMBO Postdoctoral Fellow

EMBO Fellow Amrita Singh is the first in her family to pursue a PhD abroad and has clear advice to other Indian students considering a career in the life sciences: start planning now.

"Even if you're in a lesser-known institute, with the internet you can always reach out to learn more," she says. "The other advice would be to start applying for fellowships and grants early on because that also helps a lot."

After a Master's degree from the Tata Institute for Fundamental Research, Singh moved to Münster in Germany for her PhD and is now in Austria at the Institute of Science and Technology Austria (ISTA) in Klosterneuburg.

"When the EMBO Fellowship Committee approves your project it is a very big confidence boost," Singh says. "For female researchers, especially at the early career stage, this funding is flexible and supports the idea of having family and career together."

Singh also attended the *EMBO Self-Leadership Workshop*. "It was excellent," Singh says. "To become a leader, first you have to understand yourself before you understand other people."

Singh intends to return to India and ideally run her own lab. "My idea was always to learn and go back," she says. "I want to give a chance to students in lesser-known institutes to get the same exposure to international science."



Sebastian Glatt The benefits of an unusual career path

Professor of Systems Genetics at the
University of Veterinary Medicine in
Vienna | EMBO Member and former
Installation Grantee

Sebastian Glatt completed his Masters and Doctorate with a pharmaceutical company in Vienna before moving into academic research with a postdoctoral position at EMBL. It is a career path he says is seen as highly unusual.

"It was good to have this in my very early career," he says. "I've seen the good and the bad on both sides of industry and academia."

After eight years at EMBL, an EMBO Installation Grant enabled Glatt to start his own lab at the Malopolska Centre of Biotechnology in Krakow, Poland in 2015. In late 2024, he returned to his hometown of Vienna as a professor at the University of Veterinary Medicine.

Glatt says being part of the EMBO Young Investigator Network provides access to excellent and highly motivated researchers who know how to move science forward.

"EMBO is really a super active community," he says.

Glatt says his research seeks to understand how the right protein is made at the right speed in the right context, and how genetic information is translated from mRNA into a protein.

"This single bond on the tRNA basically links the RNA world with the protein world, and you have our whole life evolution in one place," he says, adding that his research has potential human health impacts.

"This is the sweet spot between the clinical side and the basic research," he says.

What is your personal area of research?

I'm working on *Archaea*, a specific group of microorganisms, which are as old as bacteria on this earth. They have played important roles in evolution but also have important ecological aspects, and one of my goals is to understand the role of *Archaea* in ecology better.

Many of the *Archaea* are adapted to extreme environments such as hot springs, but my most surprising finding was of a lineage which is found in every soil, and also in every other moderate environment that contains oxygen - so-called ammonia oxidizing *Archaea*. I am trying to find out how they can compete with bacteria in all these common environments including on the human skin.

Do you have a specific objective for your work?

When I discovered the ammonia oxidisers in soils 20 years ago, I started to investigate how these *Archaea* have diversified so much, first in hot springs but then in soils which are more moderate environments. They are the only group of *Archaea* that compete with aerobic bacteria globally.

These *Archaea* are important because when humans use artificial fertilizer in agriculture 70% leaks into the environment because of organisms like these ammonia oxidizing *Archaea* and also some bacteria which take the ammonia from the fertilizer and oxidise it to nitrite and nitrate. Nitrite is water soluble and leaches into the rivers and lakes where it causes eutrophication and it poisons the groundwater.

