

# Switzerland and EMBO in numbers<sup>a</sup>

# 175

**EMBO Members<sup>b</sup>**

including:  
41 Basel  
25 Geneva  
26 Lausanne  
47 Zurich

# 17

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

were awarded to researchers from Swiss institutions to another institution  
**96** researchers from other nations received grants to attend Swiss institutions

# 41

**EMBO Young Investigators<sup>c</sup>**

# 8

**EMBO Courses & Workshops**

in Switzerland<sup>d</sup>

**1276** attendees at events in Switzerland

**840** Swiss participants at EMBO-supported conferences and workshops elsewhere

# 2

**former EMBO Installation Grantees<sup>c</sup>**

# 385

**EMBO Postdoctoral Fellowships<sup>c</sup>**

current or former

## EMBC Delegates

**Dr Doris Wohlfender-Bühler,**  
**Kevin Reymond**

State Secretariat for Education,  
Research & Innovation

**Professor Susan M. Gasser**  
Fondation ISREC

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

Switzerland has been an EMBC Member State since 1970. EMBO is registered in Switzerland as a non-profit organization.

# EMBO opportunities in Switzerland

## 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.

## 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.



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



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[embo.org](https://embo.org)

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# Facts and figures

Switzerland is a mountainous multilingual country at the heart of Europe and since 1848 it is a federal state consisting of 26 Cantons and more than 2,100 Communes. The country is a direct democracy allowing Swiss citizens a direct voice on political decisions. Switzerland is politically neutral and has bilateral trade and other agreements with the European Union. Switzerland is a member of the Schengen visa area.<sup>1</sup>

The country is home to multiple international organizations and institutions including the United Nations Office of Geneva, the World Health Organization and World Intellectual Property Organization in Geneva, the International Olympic Committee in Lausanne and Fédération Internationale de Football Association (FIFA) in Zurich.<sup>1</sup>

Switzerland was a founding member of the EMBC and EMBO is registered in Geneva as a non-profit organization.<sup>2</sup>

Switzerland has 12 universities<sup>3</sup> including the two globally ranked federal institutes of technology: the Eidgenössische Technische Hochschule Zürich (ETH Zurich) and the École Polytechnique Fédérale de Lausanne (EPFL).<sup>1</sup>

Around 51% of young adults in Switzerland attain a tertiary education.<sup>4</sup> In 2021, more than 90,800 people in Switzerland were employed in R&D work.<sup>5</sup>

Gross expenditure on research and development (GERD) rose by 16.7% between 2019 and 2021 to reach 24.6 billion Swiss francs representing 3.3% of Gross Domestic Product. The main sectors financing GERD in 2021 were business enterprise, providing 66%, and government, 27%.<sup>5</sup>

The European Patent Office granted 4,561 patents to residents of Switzerland in 2024 accounting for 4.2% of all patents issued by the EPO that year.<sup>6</sup>

## Key figures

Population: **9,002,763**<sup>10</sup>

R&D spending as percentage of GDP: **3.41%**<sup>7</sup>

People employed in R&D: **90,832**<sup>5</sup>

Patents: **4,561**<sup>6</sup>

Universities: **10**<sup>3</sup>

Horizon Europe funding:<sup>9</sup>

**2,500 organizations including 490 SMEs Involved in HE projects**

**22 ERC Principal Investigators**

**504 Marie Skłodowska-Curie Actions funded researchers**

Switzerland topped the Global Innovation Index in 2024 for the 14th year in a row.<sup>7</sup>

Life scientists in Switzerland have access to funding from the Swiss National Science Foundation<sup>8</sup>, private funders, Horizon Europe and Marie Skłodowska-Curie Actions<sup>9</sup> as well as EMBO.

## References

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# Focus on Switzerland



<sup>a</sup> At June 2025  
<sup>b</sup> Living and/or working in Switzerland  
<sup>c</sup> Working in Switzerland  
<sup>d</sup> 2020 to June 2025

# Perspectives from Annette Oxenius

Professor, incoming Vice President for Research, Eidgenössische Technische Hochschule Zürich (ETHZ) | EMBO Member, former EMBO Young Investigator and Postdoctoral Fellow



## What is your vision as Vice-President for Research at ETHZ?

ETH stands for research, innovation and teaching, and my role as Vice President is to ensure research and innovation stays at the forefront and that there is sufficient support both financially but also in terms of infrastructure and in recruiting the best people. We only exist by recruiting the best people and we must make it an attractive place for the best people in many disciplines.

My mission is also to connect people across many disciplines because that creates a lot of innovation. We have 560 professors in 16 departments so how can we encourage fruitful exchange beyond that already existing? One way is by creating centres where people from different departments can contribute. I would like to further explore this approach in the life sciences and medicine.

## What has been your personal research highlight?

I think it is understanding how the immune response must be adapted to the type of viral infection that it is exposed to. With an acute flu infection, for example, you can mobilize your immune response and control the infection within maybe two weeks. With a herpes virus, where you do not get rid of the virus and always have reactivation events, the immune response must be tailored to cope.

With a chronic viral infection like HIV you really must tune down your immune responses and we have shown in my lab that if the T cell response is too strong and tries to eliminate all the virus infected cells, this leads to severe immunopathology that is lethal for the host. A killer cell normally gets fired up and kills the virus infected cells, but in the context of a chronic infection, where they see the antigen

repeatedly, the killer cells start to upregulate co-inhibitory receptors, and they stop functioning.

This ‘tuning down’ of immune responses has been discovered in chronic viral infections in mice and in humans in hep C or HIV infections. The same thing happens in cancer tumour-infiltrating T cells which see the antigens repeatedly and the T cells do not properly function. In cancer treatments, checkpoint inhibitors are used to block the co-inhibitory receptors and that reinvigorates the T cells in the tumour.

But if you have a systemic viral infection, with infected cells everywhere, you do not want the T cells to be overactive because they might kill vital structures in the body. This tuning down of the immune response in these very potent and aggressive immune cells has developed in the context of chronic viral infections to tolerate the infection and not kill the host.

## What prompted you to study immunology?

I got into immunology after reading a few textbooks and thinking it was highly interesting to understand how our body defends itself against all sorts of microbes. In the second year of my studies, I did a summer internship as a practical student in the lab of Rolf Zinkernagel and Hans Hengartner. It was just amazing. Flat hierarchy, everyone was on first name term with each other, international environment, really vibrant! I thought ‘this is where I want to go’.

In my PhD I worked on fundamental questions in immunology using experimental mouse models and at that time in the mid-late 90s there was a lot of research in immune responses in humans infected with HIV. For my postdoc, I decided to switch from a model organism to work on a real disease and moved to Oxford. I was really lucky to get a two-year postdoctoral fellowship from EMBO and that made it so much easier as you come with your own grant and your own ideas. I had two years funded by EMBO and a third year funded by the Swiss National Science Foundation.

## What was your career breakthrough moment?

After two months at Oxford, I was told about a big clinical trial in Switzerland with 120 patients chronically infected with HIV and on antiretroviral drugs. They would undertake ‘structured treatment interruptions’ during which the patients would be given a two-week ‘drug holiday’. The virus would rebound and then the patients would start another eight weeks of drug therapy. The idea was that by short exposure to the virus the patient would boost their immune response and after three or four of these cycles of auto vaccination the individual might be able to control HIV, even without antiviral drugs.

The Swiss-wide trail was led by the head of infectious diseases at the University of Geneva and with samples from all the patients longitudinally, always before and after treatment interruption, so there were ten or 12 consecutive samples over about a year. He wrote to different immunology centres including Oxford and asked what would you do if you had these samples and how much would it cost? I got the letter and thought ‘wow, this is a real clinical human trial!’ Since I was paid by EMBO, my salary was already taken care of, so I listed the consumables I would need and outcompeted because I was so much cheaper! It was just at the right time.

## How important has EMBO been to your career?

The EMBO Postdoctoral Fellowship was hugely important as I was able to move to the most exciting research environment. After that, the Young Investigator Programme allowed me to connect with a lot of people at the same career stage outside my own institution, encompassing all of Europe. It was great to have these exchanges and to think about projects that one could do together. Then I was elected an EMBO Member. I was really honoured and very grateful to be part of that community. It is also a sign of appreciation by the community of all the work that you have done. And that is very rewarding.

# Meet scientists from the EMBO communities



## Daniel Ballmer Giving back to society

Postdoctoral researcher at the Swiss Tropical and Public Health Institute, Basel | EMBO Postdoctoral Fellow

Daniel Ballmer is well aware of the potential impact of his research on *Plasmodium falciparum* – the deadliest of five malaria parasites and the most prevalent type in Africa. In 2023 children under five accounted for three quarters of the 569,000 malaria deaths in Africa.

“I seek a balance between what interests me personally from a cell biologist standpoint, which is finding how at the mechanistic level the parasite cell works and adapts to different environments, and the broader public health perspective,” Ballmer says. “It is important to feel that I am giving back to society, and working on malaria offers an ideal balance.”

After undergraduate and Masters’ degrees in Basel, Ballmer obtained his DPhil at the University of Oxford studying African trypanosomes – a single cell parasite that causes African sleeping sickness. In 2024 he moved to the Swiss Tropical and Public Health Institute (Swiss TPH) to study the molecular mechanisms that drive gametocyte development in *P. falciparum*.

Ballmer says that applying for his EMBO Postdoctoral Fellowship was an intellectually satisfying experi-

ence. “I had never written a research proposal before, and you really must have a clear experiment outline with questions that you want to address,” he says. He describes Swiss TPH as a unique institution combining basic research, drug screening, clinical trials and advising and supporting health system around the world. “It is very rewarding to be part of this,” he says.



## Magdalini Polymenidou A clear vision of her goal

Associate Professor of Biomedicine, University of Zurich | EMBO Member, former EMBO Young Investigator

Magdalini Polymenidou studies the fatal neurodegenerative diseases amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTD). She fell in love with the topic during a postdoctoral role in San Diego. “It was the beginning of an era in the field, and I was exactly at the right place at the right time,” she says.

It is a rewarding but challenging task. “Everybody in my team feels the urge to do something for people suffering from these diseases, but at the same time it is so difficult to crack this problem,” Polymenidou says. “We are doing everything we can right now, but it will be the next generation of patients that will be helped.”

Despite the complexity of the research, she is confident that a solution will be found. “There is real evidence that we can do this,” she says, pointing to the development of an antisense oligonucleotide against SOD1 mutations as an example.

“We are learning that it is possible to reverse neurodegeneration. We need to have the right drugs to target the mechanism that is killing neurons,” she says. “That is what my lab is studying.”

Polymenidou spent six months in industry in the United States after completing her PhD at the University Hospital in Zurich. “My PhD supervisor invited me to do a sabbatical in industry so I had that opportunity,” she says. “It was an enriching experience, and it helped to see on the other side of the wall. It was great but also reinforced my passion for academic science and the freedom that comes with it.”



## Philippe Rieu Combining plant and structural biology

Postdoctoral researcher at the University of Geneva | EMBO Postdoctoral Fellow

The desire to combine plant biology with structural biology made it relatively easy for Philippe Rieu to choose a laboratory for his postdoctoral research. “There are only a few labs in Europe doing plant biology plus structural biology,” Rieu says.

After his PhD in France, Rieu moved to the Structural Plant Biology Laboratory at the University of Geneva, under the leadership of former EMBO Young Investigator and Postdoctoral Fellow Michael Hothorn. He was encouraged to apply for an EMBO Postdoctoral Fellowship.

“The Fellowship is great for carrier development and for making new connections,” Rieu says. “I wrote my proposal when I had just arrived in the lab. The topic was completely new for me, and it was good to have to do this at the very beginning.”

Rieu combines techniques from genetics, biochemistry and structural biology to study the role of inositol pyrophosphates in regulating the phosphate starvation response in plants, using *Arabidopsis* as the model organism. He conducts basic research but is conscious of the potential wider application.

“The mechanism is conserved between *Arabidopsis* and other land plants so our research might be able to be applied by others,” he says. “Most fertilizers now in use contain phosphates and nitrates and are extracted from mines in only a few countries. If we want crops that are more tolerant to limited phosphate it is crucial to understand how the mechanisms work at the molecular level.”