EMBL 50 YEARS | 1974–2024

Annual Report

2024

embl.org

European Molecular Biology Laboratory


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Acceleration in the right direction

We celebrated 50 years of growth and achievements, but EMBL is shaping its future today

The year 2024 offered a unique opportunity to reflect on the past while also looking forward.

It wasn't just because it was EMBL's 50th anniversary – which was certainly an auspicious occasion. In 2024, our three-year-old 'Molecules to Ecosystems' programme demonstrated that it is pointing us in the right direction. EMBL is accelerating toward its next 50 years...and beyond.

In 2022, when we started this research programme, I was excited by the expanded direction in which it would lead us. Our Traversing European Coastlines (TREC) project would take molecular biology expertise into the field. We would forge new collaborations. We would push technology, bringing it into environmental settings, too. We would harness the newest, most sensitive tools to ensure success across the entire organisation and across Europe more generally. And most importantly, we would broaden EMBL's perspective to address critical societal issues that benefit from an interwoven molecular perspective in multidisciplinary approaches.

This year's annual report offers a glimpse into the ongoing engagement that we sparked – involvement I attribute to our amazing staff and our programme's collaborative approach to studying life in context. The included stories highlight the steady pace of fundamental life sciences work that increasingly shed light on the complexity of living matter, biodiversity, and ecosystem changes. I believe our work has a new sense of urgency.

Transversal themes that framed some new research directions

The programme's transversal themes have been central in bringing together disciplines that look at research questions with broader perspectives. TREC – our planetary biology transversal theme's flagship project – finished its sampling phase mid-year, and scientists gathered for a symposium a few months later, where discoveries already started coming to light. More broadly, EMBL scientists are shifting from more classical research questions to approaches that take them in new directions, exploring organisms with extraordinary spatio-temporal resolution and in different environmental contexts.

Additionally, our new chemical library allowed researchers to better understand some of the root causes of decreasing insect populations, and our scientists continued to be pioneers and explorers in other ways as well, discovering new life forms and new ways cells divide and function, and essentially contributing to the body of knowledge that makes up an encyclopedia for life. New technologies and approaches like expansion microscopy have made for a rich year of research accomplishments.

Scientific and data services that pushed technology's limits

When the 2024 Nobel Prize judges recognised AlphaFold's creators for this display of open, AI-driven protein prediction data, it was a proud moment for us all, as it illustrated how EMBL can drive and enable scientific revolutions. Last year, we also launched the first major AI and life sciences meeting in Europe. The future of scientific research is in AI, as it holds the potential to accelerate science and advance knowledge faster than ever before. Indeed the recent launch of EMBL's AI strategy will enable a whole new era for the organisation, with implications for every one of our five missions.

EMBL's technology accomplishments were many in the past year. We continued to expand the emerging technology of high-energy X-ray imaging to capture tissues and whole organisms at high resolution. Our automated EasyGrid sample preparation allowed more scientists to employ Cryo-EM. We also opened a brand-new culturomics core facility with cutting-edge technology to expedite research on microbes and their microbial communities.

Redefined training that inspired

Our courses and conferences continued to expand offerings to reflect advances in how we conduct research, such as the many ways to leverage AI. The year also included a unique 'Unfold Your World' outreach project that mixed art with science, and we saw scientists from all career stages increasingly join us as visitors to experience EMBL's collaborative environment while learning more about new technologies. And EICAT's success in achieving two new cofunded EC programmes – ARISE2 and EIPODLinC – will allow EMBL to train up a whole generation of young scientists!

Collaboration that united European states

In addition to Bulgaria joining EMBL as our newest prospect member state, the year was marked by many new collaborations across Europe. The European Commission-funded Twinning Projects are bringing EMBL closer together with institutes in Slovakia and Portugal, enhancing Europe's broader scientific capacity. We have also worked intensively with the EC and European research infrastructures to best represent the voice of life sciences to decision-makers in the EU, our member states, and beyond.

Innovation that incited new partnerships and projects

One of EMBL's most interesting collaborations is its Agri-Tech partnership aimed at optimising agricultural research and development by effectively providing for, managing, and using agricultural biodata. The year offered increased work within this partnership, and likewise, we saw our long-term relationship with Nikon expand to accommodate more efficient innovation.

Of course, this is just a very small sample of the accomplishments that made such a productive year. I found the juxtaposition of immense productivity and success against the backdrop of our 50th anniversary to be very fitting, because growth and accomplishment aren't just parts of our history. They're EMBL's story of today and the foundations of the future.

This is my last annual report as I move on to lead the Francis Crick Institute in 2025 – another one of EMBL's close partners. I will miss the wonderful people I have worked with across EMBL's six sites, and I am proud of the new directions and momentum I have had the privilege to lead over the past six years. I have witnessed the commitment, curiosity, and creativity of countless people here and among our many partners.

To ensure a seamless transition until a permanent EMBL Director General is in place, Peer Bork and Ewan Birney will together lead the organisation as Interim Director General and Executive Director, respectively. I know that EMBL is in good hands and will continue to propel European science. I look forward to following its successes as it continues to address life science's biggest questions.

Edith Heard, FRS
Director General

Research

To perform excellent fundamental research

EMBL's research aims to understand the basis of life at a molecular level and in the context of different environments. Seven research themes offered significant, diverse findings and milestones in 2024. Here are just some top highlights:

Molecular Building Blocks: Scientists created an innovative approach to witness important interactions between molecular machines, potentially offering new opportunities for drug development.

Cellular and Multicellular Dynamics: New research showed how sea sponges move, informing us about how blood vessels evolve.

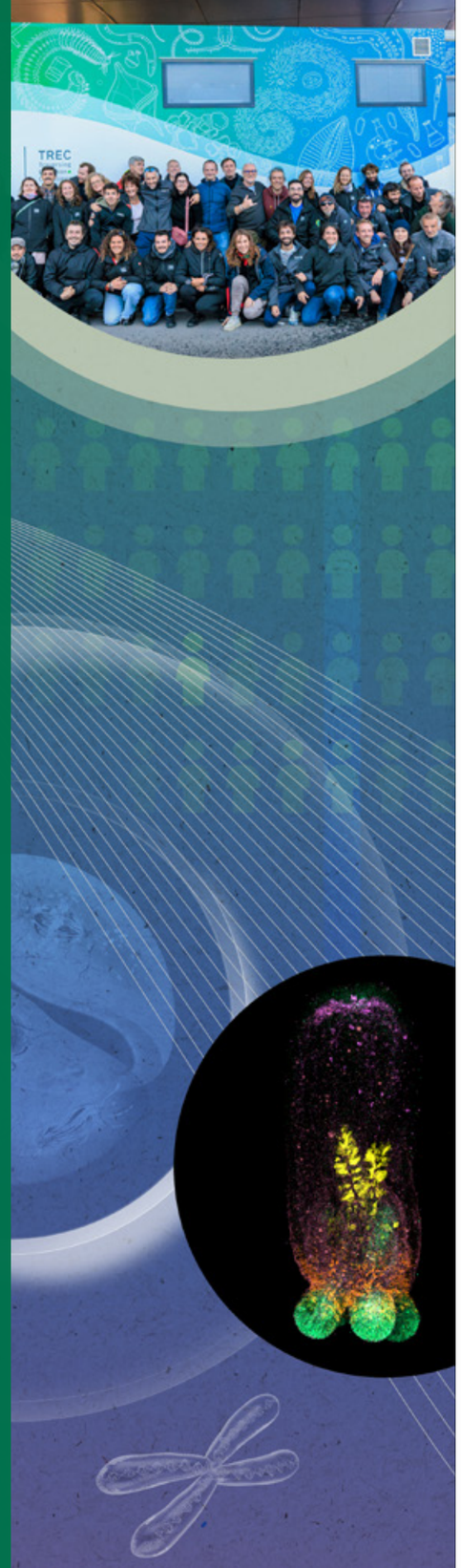
Microbial Ecosystems: Scientists continued intensive work on understanding gut microbiome impacts better, including developing a new machine-learning model that predicts the density of microbes in our guts to better understand disease-microbiome associations.

Infection Biology: By using organ-on-a-chip technology, scientists at EMBL Barcelona identified human antibodies that could target proteins responsible for severe malaria – an important finding to potentially advance vaccine development (see page 5).

Human Ecosystems: New research from EMBL Rome found that disrupted gut microbiomes in male mice could increase disease risks in future offspring – the first time scientists ever observed a paternal gut microbiome affecting the next generation.

Planetary Biology: TREC expedition sampling concluded in 2024 and began generating, analysing, and integrating data in the lab – the next phase of this work. Additionally, scientists used AI, proteomics, and computational biology to assess agrochemical impacts on insects (see page 7).

Theory@EMBL: As EMBL adds more theorists to its ranks, a new theoretical approach involving tiny Minecraft-like cubes was applied to understanding dynamic biological processes.

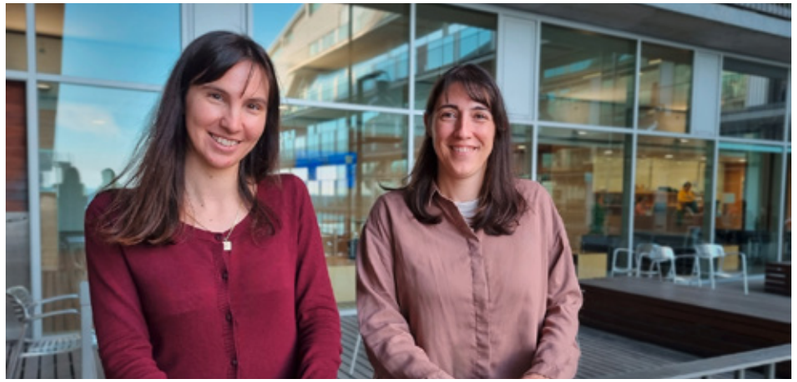


Stopping severe malaria by harnessing natural human antibodies

Malaria, particularly in its severe forms, remains a global health and economic burden, responsible for more than 600,000 deaths every year – most of them African children under age five. In 2024, researchers at EMBL Barcelona, the University of Texas, the University of Copenhagen, and The Scripps Research Institute discovered human antibodies that could recognise and target some proteins that cause severe malaria. This breakthrough could pave the way for future vaccines or anti-malaria treatments.

Using organ-on-a-chip technology, researchers successfully demonstrated that these antibodies prevent infected red blood cells from adhering to vessel walls, a key driver of severe malaria symptoms.

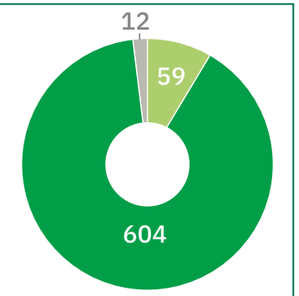
"This study opens the door to targeting new ways to protect people from severe malaria," said Maria Bernabeu, co-senior author of the paper and Group Leader at EMBL Barcelona. *"This is thanks to the international and interdisciplinary collaboration that is key to understanding diseases like malaria."*



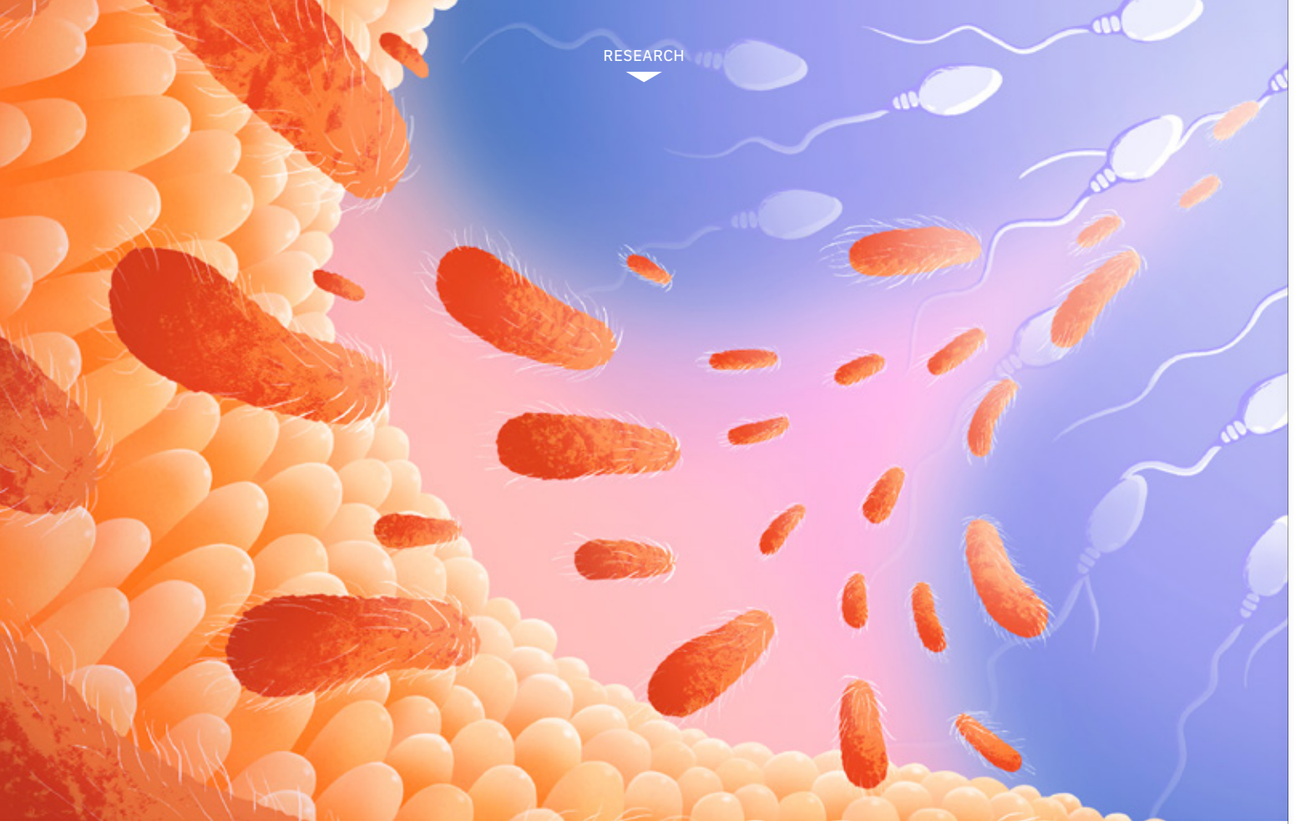
Viola Introini and Maria Bernabeu led a study at the PRBB on antibodies against virulent proteins responsible for severe malaria. Credit: Carla Manzanas/EMBL

COLLABORATIVE SCIENTIFIC PUBLICATIONS

In 2024, EMBL researchers produced 675 publications, mostly in collaboration with scientists within EMBL member or associate member states, as shown on this chart.



- By EMBL
- By EMBL in collaboration with organisations in member or associate member states
- By EMBL in collaboration with organisations in non-member states only



A study from the Hackett group at EMBL Rome shows that disrupting the gut microbiome of male mice increases the risk of disease in their future offspring. Credits: Joana Carvalho and Isabel Romero Calvo/EMBL

COLLABORATIVE GRANTS

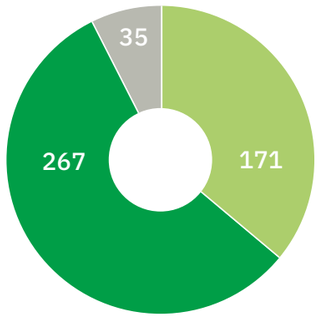
Beyond EMBL's member state funding, external grants support activities often done in collaboration with scientists beyond EMBL. These charts broadly break down the type of grants EMBL held in 2024.

473 grants:

Research grants: 292

Infrastructure grants: 158

Training and outreach grants: 23



By EMBL
By EMBL in collaboration with organisations in member or associate member states
By EMBL in collaboration with organisations in non-member states only

Evaluating the link between chemicals and declining insect populations

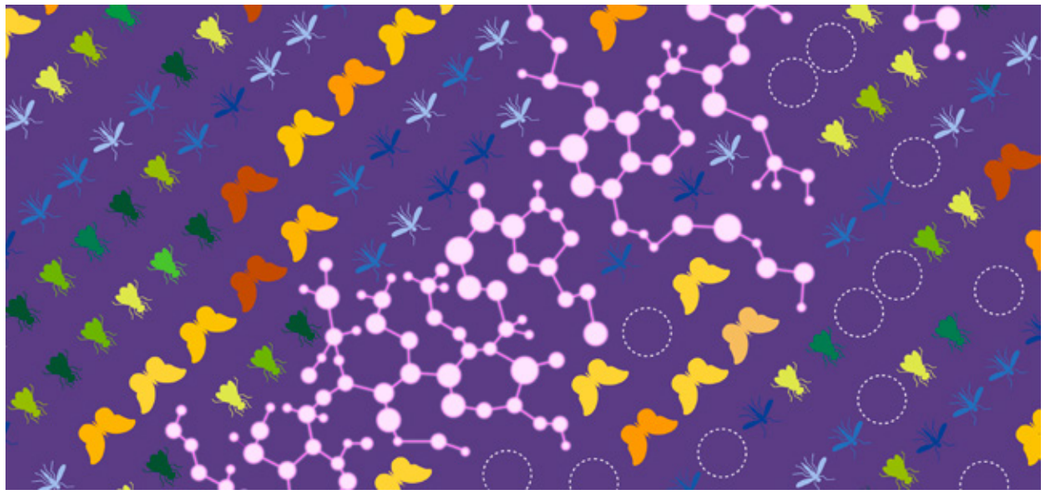
Employing a library of more than 1,000 chemicals, EMBL scientists and collaborators investigated how agrochemicals affect insect populations. Scientists have speculated that insect populations decline an average 2–3% per year, prompting researchers to explore potential causes, such as habitat loss due to overdevelopment, climate change, and chemical use.

EMBL scientists found that exposure to non-fatal amounts of 57% of the studied chemicals altered behaviour in fruit fly larvae, while higher levels compromised long-term survival after acute exposure. When the ambient temperature increased by four degrees, these effects were more pronounced.

With help from collaborators, they incorporated a variety of cutting-edge tools to reach their conclusions, including AI, computational biology, and proteomics.

The findings underscored how chemical use contributes to a worldwide insect population decline – findings that provide avenues to improve chemical safety assessment, environmental protection, food security, and animal and human health.

"Insects – even those that can seem like pests – are critical to the planet. They pollinate the plants we eat, and they're an important part of the food web," said Lautaro Gandara, first author of the paper reporting these findings and a postdoctoral fellow in EMBL's Crocker Group. *"One of the biggest takeaways from this work is that even small amounts of certain chemicals have impacts."*



An illustration uses a variety of colours to signify the original diversity in fly, mosquito, and butterfly populations in the upper left area. A chemical effect alters the populations, not only decreasing the overall number of insects but also affecting their diversity. Credit: Isabel Romero Calvo/EMBL

Scientific Services

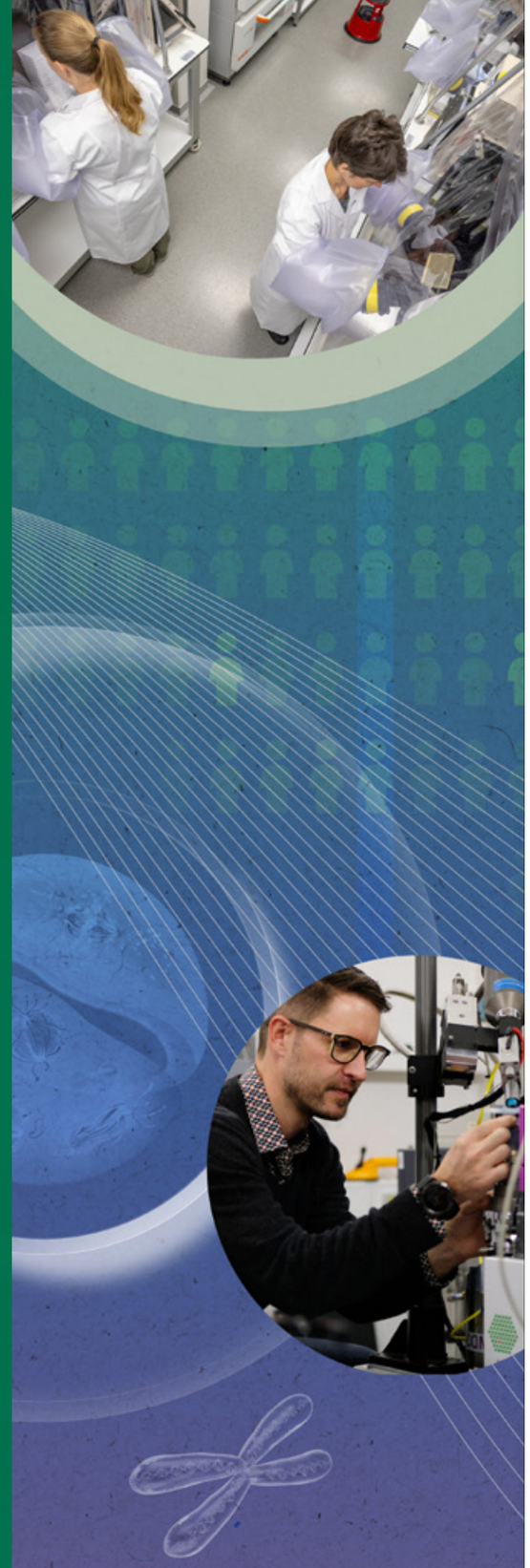
To offer access to research infrastructures and vital services to scientists in EMBL member states and beyond

EMBL's scientific services encompass over 40 bioinformatics and data resources and over 20 experimental services in structural biology, imaging, genomics, proteomics, metabolomics, *in vivo* gene editing, chemical biology, and mobile labs.

Each year, EMBL prides itself on its technological offerings to users, and in 2024, this included establishing a new core facility, the Microbial Automation and Culturomics Core Facility. But the year's highlights go far beyond that:

Experimental services and facilities: When EMBL's Traversing European Coastlines (TREC) researchers wanted to understand coastline ecosystems and organisms better by imaging live animal behaviour, EMBL Heidelberg tech developers created a microscope made to travel – fast in imaging samples, small in size, and giant in resolution (see page 10). With a European science collaboration, EMBL Hamburg structural biology services provided important expertise to uncover molecular details of how we absorb vitamin B1. Their goal: prevent dangerous hidden B1 deficiencies.

Molecular data services: The 2024 Nobel Prize for Chemistry recognised the protein structure predictions made possible through the AlphaFold2 algorithm. EMBL partnered with Google DeepMind to make the predictions freely and openly available to all via the AlphaFold Database – increasing AlphaFold's impact on the scientific community. EMBL-EBI has since integrated structure predictions into its existing life sciences data infrastructure (see page 9). Additionally, the EMBL-EBI MGnify microbiome-protein database helped researchers identify cocktails of enzymes that can reduce food waste by upcycling animal bones and other by-products.



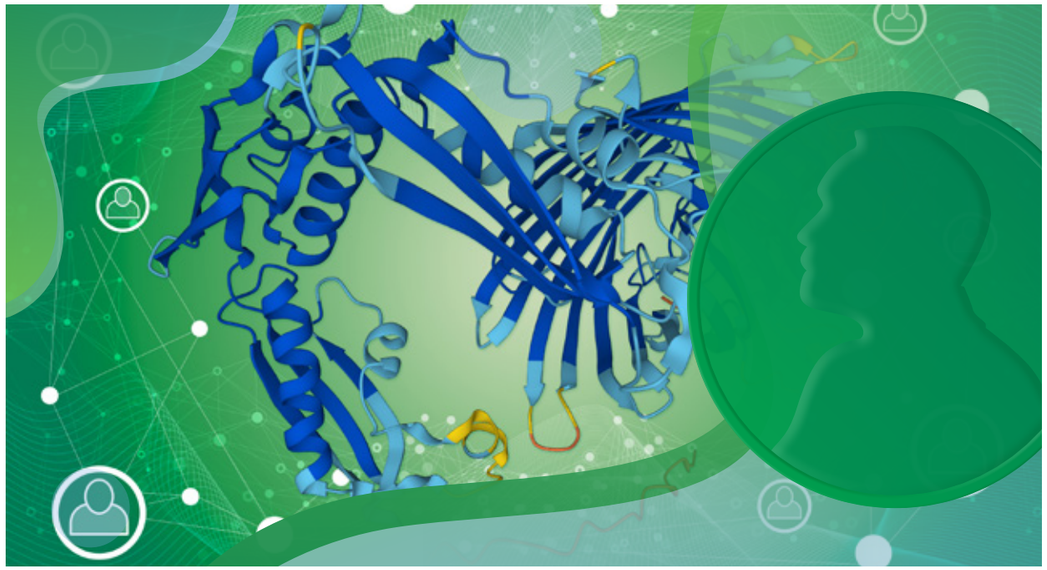
Computational protein design and protein structure prediction win Nobel Prize in Chemistry

The 2024 Nobel Prize for Chemistry was awarded to David Baker, Demis Hassabis, and John Jumper, recognising their contributions to 'computational protein design' and 'protein structure prediction' – work that culminated in AlphaFold, a revolutionary artificial intelligence algorithm that can accurately predict the structure of proteins.

EMBL partnered with Google DeepMind to make the AlphaFold2 predictions freely and openly available to all through the AlphaFold Protein Structure Database.

The team from EMBL-EBI has integrated the structure predictions into the existing life sciences data infrastructure, storing, indexing, integrating, and displaying them to enable the impact of the original AI breakthrough that has already had such important impacts on life science research, already.

"Public data were essential to the development of AlphaFold," said John Jumper, Senior Director at Google DeepMind and one of the new Nobel laureates. *"The careful curation of such large data resources, representing the collective output of an entire subfield of biology, is exactly what enables our machine learning models to generalise well across such a huge range of proteins, enabling further breakthroughs in machine learning in other scientific areas."*



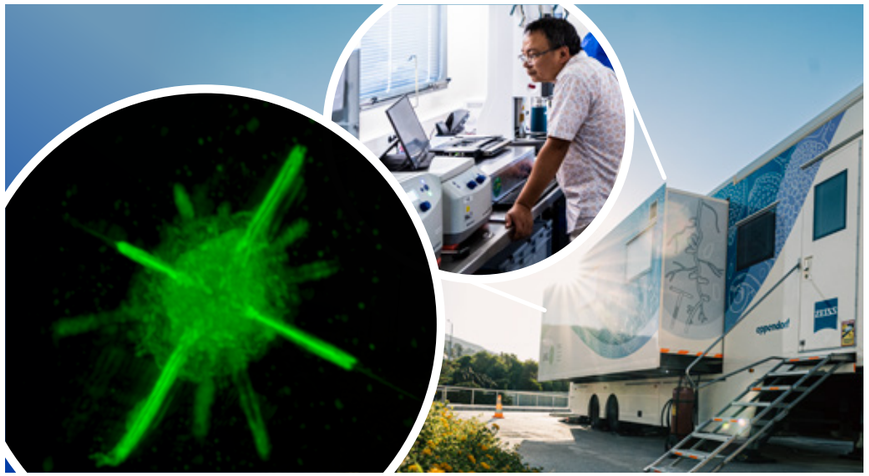
AlphaFold accession number: AF-C1A9D3-F1. Credit: Karen Arnott, Creative Team/EMBL

A new EMBL microscope hits the road

When EMBL scientists were looking to take the organisation's world-class advanced microscopy from lab to field, as part of the Traversing European Coastlines (TREC) expedition, the Prevedel Group was prepared. Serendipitously, this research group realised that a recently developed microscopy approach could potentially be downsized.

Within the researchers' self-proclaimed 'house of microscopy', they combine optical, mechanical, and software engineering to construct new microscopes and fill existing gaps and limitations in the field of biological imaging.

"We do our research inspired by the biology that surrounds us at EMBL," said Robert Prevedel, Group Leader at EMBL Heidelberg. *"I consider that one of the strongest points of our lab. Being positioned in EMBL interdisciplinary research allows us to build practical prototypes and then see their application in collaboration with scientists not only from Heidelberg but also from across Europe."*



EMBL scientists, Ling Wang and Robert Prevedel, downsized an Optical Coherence Microscope to fit inside the EMBL Advanced Mobile Laboratory. With this innovation, TREC scientists were able to image samples right after collection. Credit: Daniel Yee, Kinga Lubowiecka, and Creative Team/EMBL

SCIENTIFIC SERVICES

EMBL experimental services support academic and industry users in Europe and beyond.

>3,800
Experimental services users

473
Scientific publications enabled

OPENLY ACCESSIBLE DATA RESOURCES

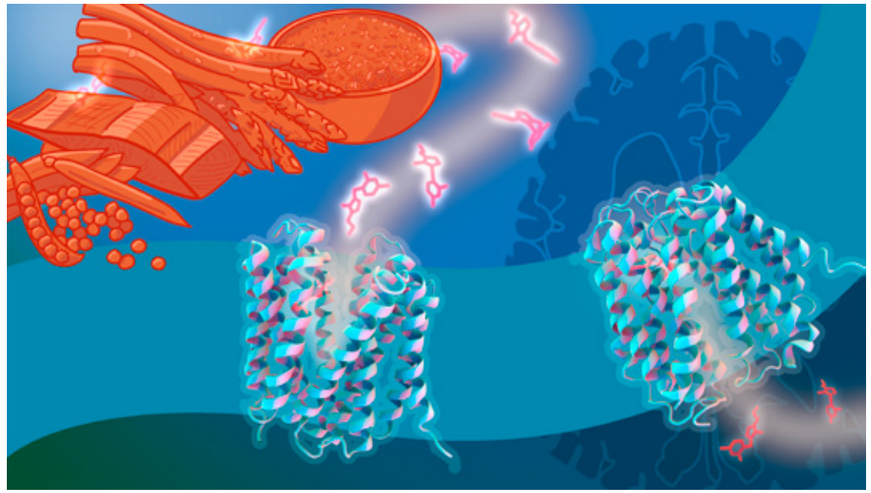
EMBL-EBI maintains the world's most comprehensive range of freely available and up-to-date molecular data resources. Developed in collaboration with scientists worldwide, these open databases, tools, and software can be accessed by anyone around the world.

123 million
Requests to EMBL-EBI data resource websites on an average day

41.5 million
Unique IP addresses

>110,000
Scientific publications enabled by EMBL-EBI data resources

EMBL-EBI researchers are exploring the genetic diversity found in ancient environmental DNA to help modern agricultural practices. Ancient environmental DNA found in the soil can help researchers understand how the ancestors of crop plants adapted to historical climate change. Credit: Karen Arnott/EMBL-EBI



EMBL Hamburg structural biology services provided expertise to help uncover molecular details of how we absorb vitamin B1, paving the way to preventing dangerous hidden B1 deficiencies in patients. Credit: Isabel Romero Calvo/EMBL

Training

To train scientists, students, and visitors at all levels

EMBL training aims to foster scientific inquiry and share knowledge among scientists, students, and visitors at all levels in the life sciences. Each year, EMBL also provides important science education programmes and public engagement activities.

Courses, conferences, and scientific visitors: AI increasingly helps advance life science research, and a new EMBO | EMBL conference helped show how AI is making a difference in biology and bioinformatics. At EMBL Rome, the presence of EMBL's Advanced Mobile Laboratory allowed for a unique scientific workshop on flow cytometry.

PhD and postdoc fellow training and support: The European Commission renewed funding for EMBL's unique infrastructure training programme, ARISE2, helping to provide training and support that advances research infrastructure management and technology development (see page 13). Additionally, EMBL Fellows' Career Service launched new online resources for early-career researchers at EMBL and beyond, aimed at providing comprehensive career guidance.

Science education and public engagement. A beautiful tribute to EMBL's 50th anniversary was a large-scale collaborative art-meets-science project that involved and invited teenagers from member states to learn more about the roles of proteins in nature, health, and disease. Also 'large' was a life-size game inspired by the TREC expedition that was used in public outreach to provide an inside view of the world of coastal ecology research (see page 15).

EMBL ARISE2 programme receives EC funding

EMBL received renewed funding from Marie Skłodowska-Curie Actions COFUND for ARISE2, the next phase of its innovative ARISE (Career Accelerator for Research Infrastructure Scientists) fellowship programme. ARISE2 is a unique fellowship programme with a strong data science/AI focus for talented scientists, technology developers, engineers, and mathematicians, allowing them to help develop or improve technologies for life science research while accruing expertise for a career in research infrastructures.

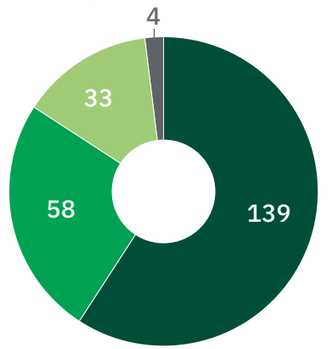
Technological advancements are revolutionising scientific discovery, ballooning the volume of data generated by life sciences research. The five-year ARISE2 programme has adapted to the science community's changing needs and will support 50 talented fellows at EMBL and 18 partner organisations.

"ARISE2 specifically addresses the gap in technology development and professional training within Europe's research infrastructure landscape," said Monika Lachner, Interim Head of EMBL's International Centre for Advanced Training.

MULTIDISCIPLINARY POSTDOC PROGRAMMES

69
new postdocs

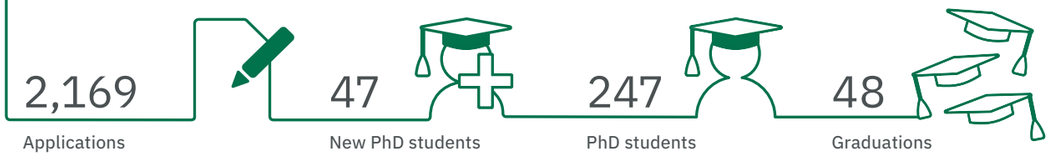
234
postdocs in total*



62
postdocs leaving in 2024

*Does not include former PhD students finalising their projects via a bridging postdoc contract.

EMBL'S INTERNATIONAL PHD PROGRAMME



Sharing scientific expertise

COURSES AND CONFERENCES

8,246 participants from **101** countries attended courses and conferences hosted by EMBL sites

77.8% of participants were from EMBL member or associate member states

COURSES

46 courses

100% of courses rated as ‘very good’ or ‘excellent’ by the majority of participants

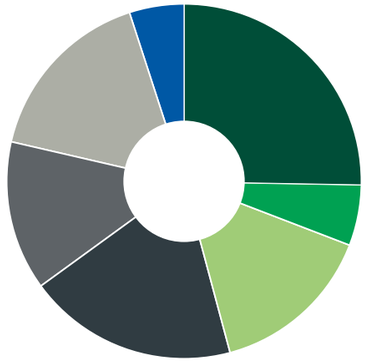
CONFERENCES

24 conferences

100% of conferences rated as ‘very good’ or ‘excellent’ by the majority of participants

SCIENTIFIC VISITORS

604 visitors



- 153 Master’s students and trainees
- 34 Master’s graduates
- 91 Visiting researchers
- 115 Visiting technical experts
- 82 Visiting postdoctoral fellows
- 99 Visiting predoctoral fellows
- 30 Visiting group leaders

65% of visitors from EMBL member states

A new EMBO | EMBL conference provided a forum for researchers to share how AI is making a difference in biology and bioinformatics. Credit: Jens Hedinger/EMBO

CONNECTING COMMUNITIES

EMBL’s public engagement is aimed at fostering a pipeline of scientists and building community awareness of the role molecular biology plays in understanding ourselves and the planet.

265 Activities delivered

>14,000 People engaged

>100 Countries reached

These numbers include public engagement activities delivered as part of the TREC project

A life-sized game inspired by TREC and used during its public outreach provided an inside view of the world of coastal ecology research. Credit: Massimo Del Prete, Vincenzo Lullo, Michele Fontana /EMBL, Xavier Sanjuan Samara.

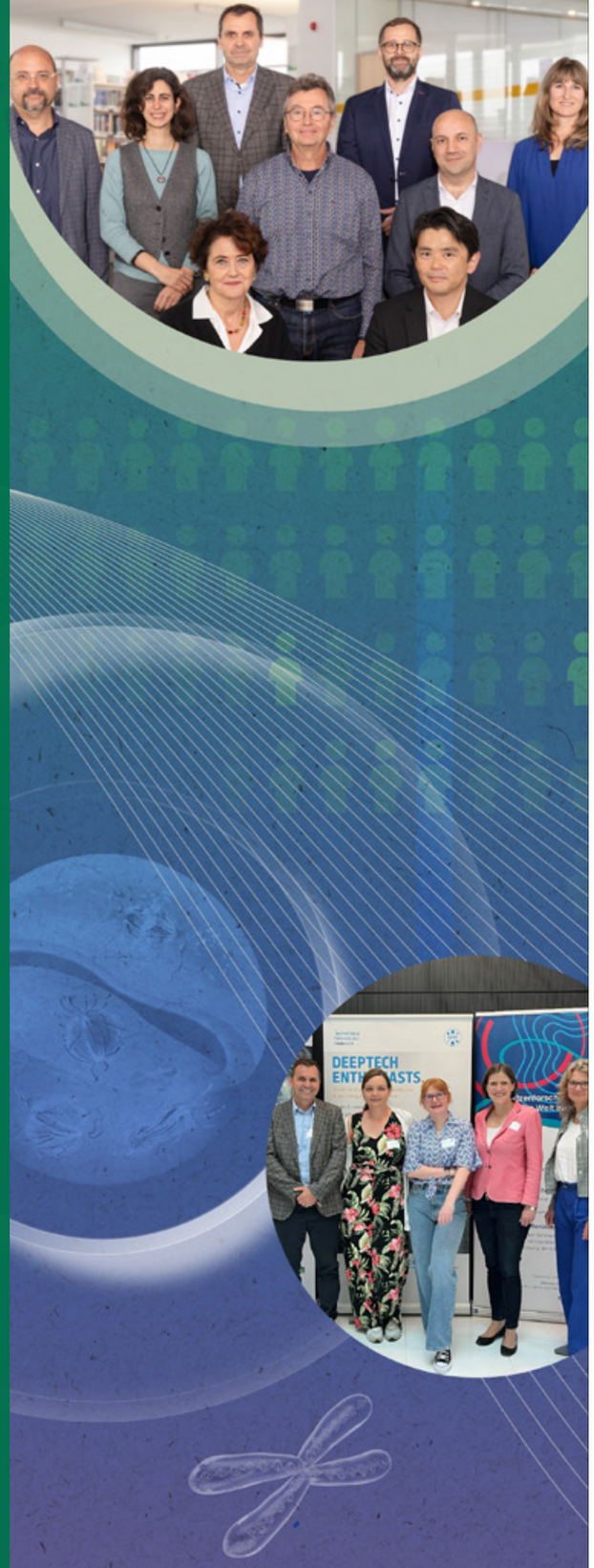
Innovation & Translation

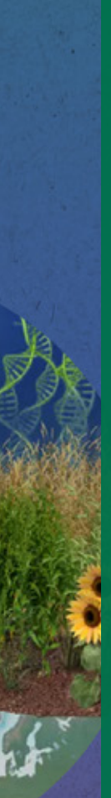
To engage in technology transfer and industry relations

EMBL's strengths in research, services, and training make it a perfect industry partner and a breeding ground for research that sows the seeds for technology transfer. EMBL's tech transfer arm, EMBLEM, is pivotal to that success.

Translating EMBL science: Umlaut.bio was an important EMBLEM spin-off in 2024. This pioneering biotech company is focused on developing 'first-in-biology' therapeutic molecules that modify tRNA to develop cancer and autoimmune therapeutics. Additionally, work carried out at EMBL Rome led to the development of a powerful epigenetic editing technology, which unlocks the ability to precisely program chromatin modifications – having an impact during development and in human disease. Proteomics, transcriptomics, and microscopy expertise at EMBL Heidelberg assisted research that discovered how a common, FDA-approved, over-the-counter cough syrup ingredient has potential to treat fibrotic lung disease, paving the way for clinical trials for a previously untreatable condition (see page 17).

Partnerships and training: An increased emphasis on entrepreneurial training included an event in Hamburg at Start-up Labs Bahrenfeld, organised by EMBL, EMBLEM, DESY, and HEREON. Additionally, in 2024, EMBL-EBI continued its work in an EMBL Agri-Tech Partnership, addressing global food security challenges through optimised agricultural research and data-driven innovation.





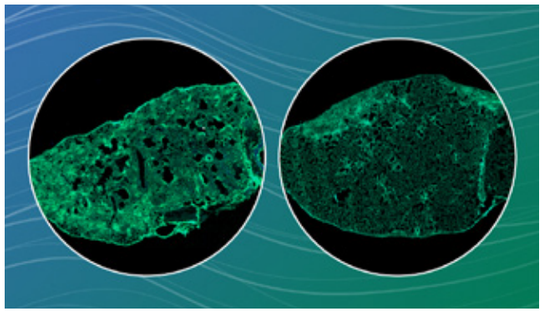
Common cough syrup ingredient shows promise in treating serious lung disease

A common over-the-counter ingredient in many cough syrups may have a greater purpose for people suffering from lung fibrosis, which is related to any number of serious health conditions.

Scientists from EMBL Heidelberg were part of a collaborative effort to discover an effective treatment for lung fibrosis and found that the best candidate may be one that is already available as a cough medicine around the world, dextromethorphan. The study showed how dextromethorphan can impede the collagen that forms scars inside cells, reducing lung fibrosis.

EMBL scientists employed a variety of 'omics' technologies and microscopy to screen for a potential treatment for fibrosis, testing a library of FDA-approved drugs.

"After learning that lung fibrosis has no cure available, I wanted to discover novel drugs for this condition," said Muzamil Majid Khan, EMBL Research Associate.



Lung fibrosis occurs after accumulation of scar tissue in the lung (left image shows a mice lung with scarring tissue) which was reduced after treatment with dextromethorphan (right image). Credit: Muzamil Khan and Creative Team/EMBL

TECH TRANSFER IN NUMBERS

EMBL's innovation and translation activities include industry collaborations, public-private partnerships, forums for knowledge exchange, invention disclosures, and the creation of spin-off companies. EMBLEM, EMBL's technology transfer arm, enables much of this, and in 2024, it helped develop and conclude collaborations between 53 industry partners and 36 EMBL scientists and supported the creation of EMBL's newest spin-off, Umlaut.bio.

€20,972,000
Income

727
Licences, collaboration and service agreements concluded

24
Inventions disclosed

10
Priority patent applications filed

13
Patents granted

Integrating European Life Sciences

To foster collaboration between scientific communities in Europe and around the world

EMBL was created with a mission to foster, enable, and strengthen collaborative links between the organisation and its member states through institutional dialogue, strategic alliances, and science policy discourse.

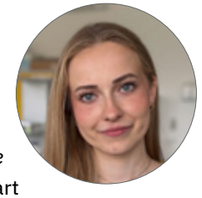
TREC providing research, services, and engagement across borders: A flagship project for EMBL's Planetary Biology transversal theme, TREC presented diverse opportunities to collaborate with long-time partners and build relationships with new ones as researchers traversed Europe's coastlines for the project's field sampling phase.

Strengthening collaborations across member states: EMBL is always engaging with an array of collaborators and partner organisations. In 2024, as EMBL celebrated its 50th anniversary, such engagements were especially meaningful. Most notably, Bulgaria became EMBL's newest prospect member state, paving the way to enhance cooperation with the Bulgarian life science community. EMBL also hosted several high-level visits in 2024, including a delegation from the Spanish Ministry of Science, Innovation, and Universities.

Steering science and policy in Europe: EMBL continued to play a key role in nurturing science policy discussions, including with a position paper on the upcoming European Framework Programme for Research and Innovation (FP10). Through a series of workshops and high-level events in Brussels, EMBL was, and continues to be, particularly active in engaging EU stakeholders on using artificial intelligence in science, helping to shape EMBL's and Europe's leadership in the field.

Capacity building on a global scale: EMBL has an important role to play in the global scientific ecosystem. In 2024, the first EMBL-UNESCO fellows visited EMBL Heidelberg and EMBL-EBI, completing research residencies that focused on infection biology. By participating in the World Economic Forum's Bioeconomy initiative and annual meeting in Davos, EMBL amplified the voice of life sciences in key global forums.

Sharing scientific expertise to empower European partners



In 2024, EMBL received funding from the European Commission's Horizon Europe programme for two Twinning projects, enabling it to deepen links with institutes in Slovakia and Portugal, respectively. The Twinning projects pair a research institution in a 'widening' country – one that would benefit from growth in expertise and resources – with leading research institutions in Europe able to share expertise and build capacity.

BIOMICS, the first of the new Twinning projects, aims to build biomedical research expertise by advancing biomedical data science capacities at one of Portugal's leading institutes – Instituto de Medicina Molecular João Lobo Antunes (iMM). In addition to EMBL, BIOMICS also capitalises on the expertise of researchers at the Swiss Federal Institute of Technology and the Centre for Genomic Regulation in Spain. Together, the partner institutions plan to implement joint research projects with iMM, leveraging the latter's cutting-edge research in cell and molecular biology, immunology, parasitology, microbiology, and oncology.

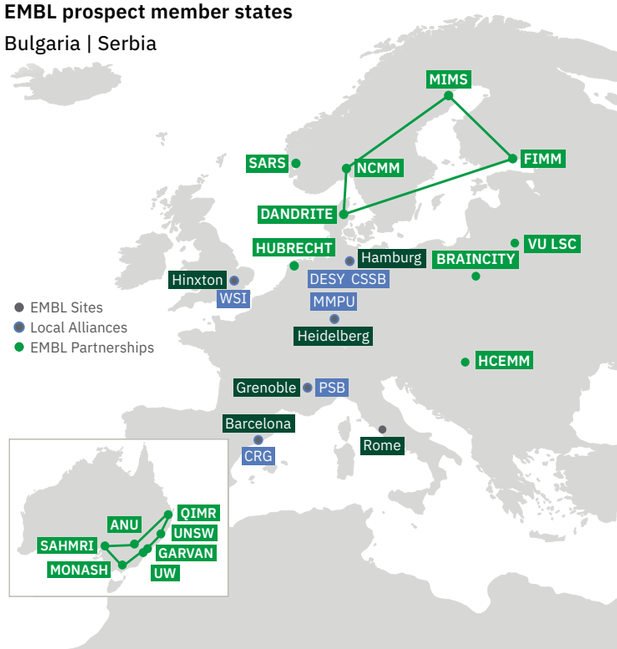
The second Twinning project, FORGENOM II, aims to build expertise in advanced genomic techniques at Comenius University, Bratislava, ultimately helping Slovakia enter pan-European genomic projects and increasing its visibility in the European and global life science landscape. GeneCore, EMBL's genomics core facility at the forefront of the genome sequencing revolution since being established almost a quarter-century ago, is a key partner in this initiative, along with Italy's Università degli Studi di Milano Bicocca.

"EMBL's facilities for long-read sequencing are quite useful to the biomedical questions we're working on, and we hope to expand the use of this technique at Comenius University as well in the future," said Terézia Ďuranova, part of a research team there. *"We've been developing screening tools in oncology through liquid biopsy samples and by identifying genomic biomarkers relevant for other pathologies, including neurological diseases such as Alzheimer's and epilepsy, so it's been particularly helpful to get guidance from the staff at GeneCore, who are clearly experts in their field."*

MEMBER STATES AND PARTNERSHIPS

EMBL member states and associate member states
Austria | Belgium | Croatia | Czech Republic | Denmark
Estonia | Finland | France | Germany | Greece | Hungary
Iceland | Ireland | Israel | Italy | Latvia | Lithuania
Luxembourg | Malta | Montenegro | Netherlands
Norway | Poland | Portugal | Slovakia | Spain | Sweden
Switzerland | United Kingdom | Australia

EMBL prospect member states
Bulgaria | Serbia



People, Processes, Places

For many people, 2024 will be best remembered as EMBL's 50th anniversary, with a scientific symposium that brought together its vibrant community, showcased its many scientific contributions, and drove discussions on the future of Europe's leading life sciences laboratory.

Equality, Diversity, and Inclusion

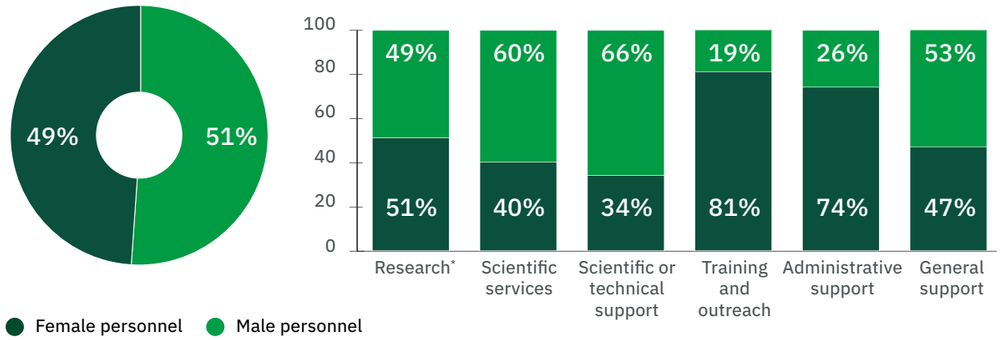
Developed in 2012, the San Francisco Declaration on Research Assessment (DORA) aimed to establish solid, trustworthy strategies that fairly and equitably assess research around the globe and across all academic disciplines. At the heart of rethinking how we assess research is an acknowledgement that diversity is a strength. The traditional system for research assessment has inherently disadvantaged researchers from underrepresented groups.

In 2018, EMBL became an official signatory of DORA and a working group was then convened to ensure the principles are embedded into EMBL practice and culture. In 2023, EMBL signed the Agreement on Reforming Research Assessment by CoARA, a coalition of organisations committed to developing a shared direction for research assessment practices. In 2024, a group of internal 'champions' of Responsible Research Assessment (RRA) have been helping to move towards an increasingly inclusive approach to assessing research achievements.

Andrew Hogan is a joint postdoctoral researcher between Typas group and van Gestel Group at EMBL Heidelberg and one of the 20 current RRA champions. Credit: Stuart Ingham/EMBL

GENDER DISTRIBUTION AT EMBL

EMBL aims to be transparent about its gender distribution. While gender distribution is balanced across the organisation as a whole, the EDI strategy aims to balance the inequalities seen in some staff categories.

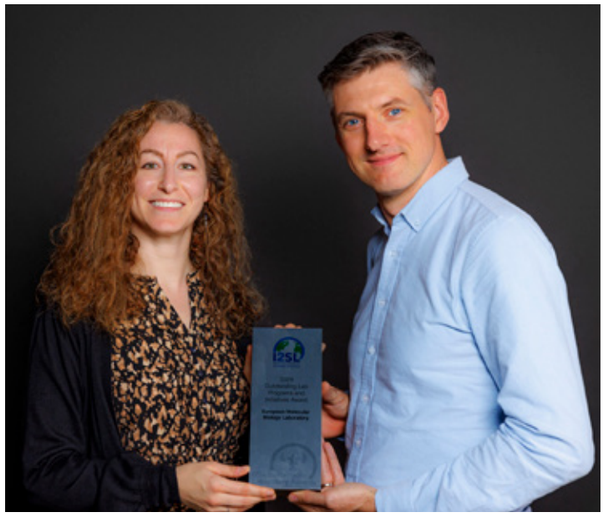


*One personnel member identified as non-binary.

Sustainability

With more than 100 independent research and service groups at six different locations across Europe, EMBL has been taking a comprehensive approach to achieving lab sustainability. And it shows. In 2024, the International Institute for Sustainable Laboratories (I2SL) recognised EMBL with its Outstanding Lab Programs and Initiatives Award for that year – a notable acknowledgement of its progress in this area.

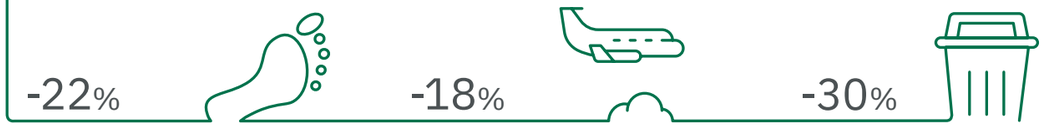
As a world-class life sciences research institute, EMBL is committed to environmentally responsible and relevant research while promoting sustainable science in the process. The I2SL award is a good reminder of the impressive, EMBL-wide level of commitment to sustainability.



EMBL Head of Sustainability Brendan Rouse and Sustainability Officer Marta Rodríguez-Martínez holding the I2SL Award in the category 'Lab Programs and Initiatives'. Credit: Massimo Del Prete/EMBL

A MORE SUSTAINABLE EMBL

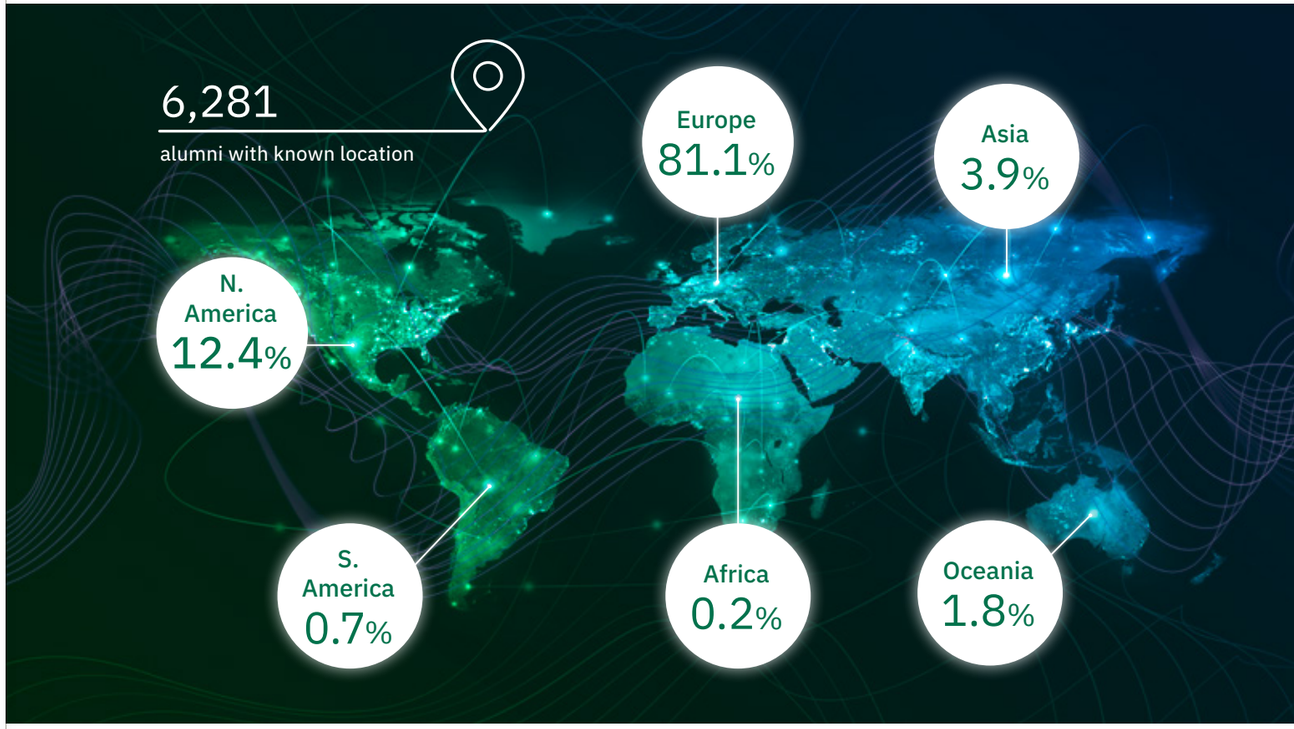
EMBL-wide energy-saving measures significantly reduced total energy usage compared to 2019 – the baseline year for EMBL's sustainability strategy. The results reflect EMBL's commitment to reduce its environmental impact and embrace sustainability practices. Additionally, 100% of its wet labs have adopted energy-saving measures as 'LEAF' labs.



(Compared to 2019)

EMBL Alumni Relations

EMBL's alumni are a network of highly trained scientists and other professionals, 82% of whom live in EMBL member states or associate member states. These alumni bring the EMBL model of research to member state institutions and help to connect local scientific communities with EMBL's research, services, and training.



Credits: Creative Team/EMBL, adobestock.com

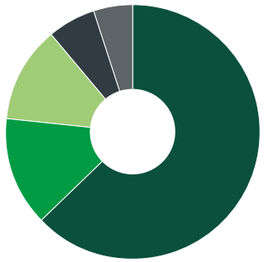
Bioethics

As EMBL celebrated its 50th anniversary in 2024, its Bioethics Internal Advisory Committee (BIAC) celebrated its 10th. While EMBL has always provided for some measure of ethical oversight, the BIAC was created specifically to review and assess projects that propose using human material or any data arising thereof. The BIAC has ensured that EMBL considers relevant biosafety and bioethical issues when appropriate, also serving as an advisor to the Director General on these issues.

Personnel statistics

PERSONNEL

PERSONNEL CATEGORIES

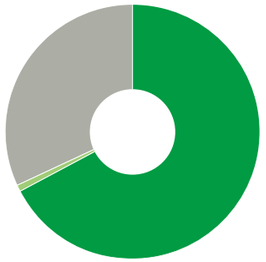


- 1,240 Staff members
- 273 Postdocs
- 240 PhD students
- 118 Supernumeraries and ancillaries
- 97 Diploma students and trainees

STAFF CLASSIFICATION

- 767 Research
- 520 Scientific services
- 263 Scientific or technical support
- 115 Training and outreach
- 161 Administrative support
- 142 General support

STAFF NATIONALITIES



- 1,326 EMBL member or associate member states
- 18 EMBL prospect member states
- 624 Non-member states

Total 1,968

in full-time equivalent (FTE)

Financial report

Member states provide the majority of EMBL funding, with additional external support from a wide range of grant-endowing bodies and philanthropic contributions.

EMBL TOTAL INCOME

€358 million

- 41% Member state contributions
- 8% Member state special contributions[1]
- 20% External grant funding
- 4% Other external grant funding[2]
- 27% Other receipts[3]

EXTERNAL GRANT FUNDING

€72.1 million

- 21% EC
- 9% ERC
- 21% NIH
- 17% Wellcome Trust
- 6% BBSRC
- 5% DFG
- 3% BMBF
- 1% HFSPO
- 16% Others

1. Includes recent contributions from the UK Government and Wellcome to support the construction of EMBL-EBI's Thornton Building and UKRI's continued capital support of EMBL-EBI's open data resources, via the Data Infrastructure Programme, technical transformation work.
2. Includes ELIXIR member state contributions.
3. Includes items such as philanthropic donations, contributions from EMBO, course and conference fees, internal tax, and income from the Heidelberg canteen, cafeteria, and guesthouses.

MEMBER STATE CONTRIBUTIONS

	× €1,000	%
Ordinary contributions		
Austria	3,222	2.2
Belgium	3,925	2.7
Croatia	410	0.3
Czech Republic	1,670	1.1
Denmark	2,680	1.8
Estonia	88	0.1
Finland	1,918	1.3
France	20,268	13.9
Germany	30,124	20.7
Greece	1,479	1.0
Hungary	1,054	0.7
Iceland	190	0.1
Ireland	1,904	1.3
Israel	3,119	2.1
Italy	15,026	10.3
Latvia	142	0.1
Lithuania	425	0.3
Luxembourg	351	0.2
Malta	103	0.1
Montenegro	44	<0.1
Netherlands	6,839	4.7
Norway	3,061	2.1
Poland	4,452	3.1
Portugal	1,626	1.1
Slovakia	776	0.5
Spain	10,617	7.3
Sweden	4,159	2.9
Switzerland	5,433	3.7
United Kingdom	20,479	14.1
	145,584	100

	× €1,000
Currency adjustment	
for sterling adjustments	N/A*
Entry fees	
Estonia	45
Latvia	106
	151
Associate member state contributions	
Australia	3,706
	3,706
Additional contributions	
United Kingdom	31,086
	31,086

* In 2024, no sterling adjustment was recorded due to the UK contribution being received concurrently with the issuance of the Member State contribution letters, eliminating FX variance.

EMBL TOTAL EXPENDITURE

EMBL's expenditure prioritises research, scientific services, and training activities – all of which are geared towards collaborating with, scientifically supporting, or training member state scientists.

€358 million

EXPENDITURE

- 64% Staff costs
- 30% Operating costs
- 6% Equipment expenditure, including depreciation

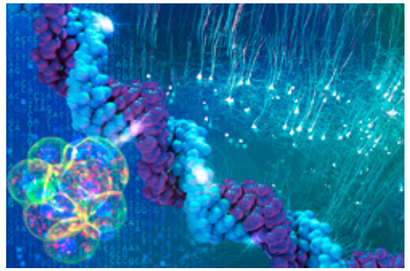
EXPENDITURE BY AREA OF ACTIVITY

- 33% Research
- 29% Scientific services
- 11% Scientific or technical support
- 7% Training and outreach
- 8% Administrative support
- 12% General support

EMBL Unit Reviews

Each year, international experts review different parts of EMBL's research, service, and training units. In 2024, the reviewed units included:

EMBL Rome: Established in Italy in 1999, EMBL Rome focuses on the interdisciplinary investigation of epigenetics and neurobiology, connecting experts who study the control of gene expression with those examining sensory processing and behavioural control. The common theme explored in numerous projects across the site is how changes in gene expression and brain plasticity enable organisms to adapt to their environment. Additionally, the institute operates a set of core facilities supporting internal and external researchers to establish and deliver cutting-edge tools and technologies.

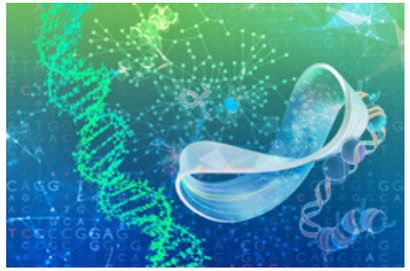


Credits: Isabel Romero Calvo/EMBL

EMBL IT Services and Support: Research in molecular life science is becoming data-intensive. As new technologies enable EMBL's scientists to acquire more – and more complex – data, the IT Services team deploys innovative approaches to help them store, analyse, and make sense of that wealth of information.This unit provides IT infrastructure, services, and support to EMBL's scientific community and administration at all sites. Its mission is to empower its users by providing a state-of-the-art, affordable, and easy-to-use IT environment.

Credits: Kinga Lubowiecka/EMBL

EMBL Genome Biology Unit: This unit studies how information across different molecular layers (DNA, RNA, Proteins, metabolites) is stored, regulated, and altered during cell state transitions and in different environmental contexts, and how the resulting changes lead to different phenotypes, including disease. Its scientists develop and combine innovative experimental and computational approaches to quantify and interpret biological processes and function at both a genome-wide and evolutionary scale, from single cells to interconnected biological ecosystems.



Credits: Creative Team/EMBL

Imprint

Publisher: EMBL, June 2025
Layout: Holly Joynes, Creative Team/EMBL
Key visual on cover and mission pages: Daniela Velasco/EMBL with elements from Isabel Romero Calvo, Karen Arnott, Spencer Phillips, Effie Mutasa-Gottgens, Matthew Benton, Peter Steenbergen, and Muzamil Khan/EMBL and Nirupa Rao.
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EMBL prospect member states

Bulgaria | Serbia

EMBL member states and associate member states

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Finland | France | Germany | Greece | Hungary | Iceland
Ireland | Israel | Italy | Latvia | Lithuania | Luxembourg | Malta
Montenegro | Netherlands | Norway | Poland | Portugal | Slovakia
Spain | Sweden | Switzerland | United Kingdom | Australia