

# 15. Public Engagement, Communications, and Outreach

## Introduction

Molecular biology, and the life sciences in general, are being transformed by new technologies such as genome sequencing, cross-scale imaging, and big data analyses. These technological advances offer dramatic step-changes in the ability to understand the very processes of life. EMBL's ambitious Molecules to Ecosystems Programme will accelerate these developments and utilise such technologies to conduct cutting-edge, interdisciplinary, and societally relevant research.

With applications of molecular biology now entering mainstream use, such as prenatal DNA testing, genomic medicine, pathogen surveillance, crop production and protection, biofuels or gut-friendly foods, EMBL believes it is more important than ever that policymakers, politicians, the wider research community, and the public are **provided with accurate information to ensure fully informed debate and decision making**. While incredibly exciting and potentially hugely beneficial, these advances also raise significant **ethical issues**. This coincides with a time when public trust in science is being threatened by an explosion of often deliberately misleading information sources. The recent pace and scale of discovery and innovation has also, at times, led to a justified disconnect between science and society: a gap that EMBL seeks to close through its engagement activities. Ensuring that Europe is a scientifically and technologically literate society is a priority for EMBL which is reflected by EMBL's efforts to translate complex and vast scientific research into accessible and enriching information.

EMBL is at the forefront of developments in the life sciences - from world-leading research and scientific services, technology development and translation, to renowned training and European integration of life sciences. For EMBL staff, this work is more than institutional missions, it is a passion driven by infinite curiosity. The desire to understand life, human beings, the planet, and its origins has driven human progress and scientific discovery for generations.

EMBL harnesses this spirit of curiosity to develop knowledge and ensure research is translated into improvements in planetary and human health, as well as societal and economic impact. This information flow must be two-way: EMBL research must be informed by the societies in which it operates. The free exchange of knowledge is an integral component of EMBL's overall missions to promote the life sciences across Europe for the benefit of its people. Society benefits from the knowledge and expertise at EMBL, and EMBL is informed and improved through engagement with society.

The goal of **public engagement, communications, and outreach** activity by EMBL is to **ensure wider awareness and application of EMBL's knowledge** by general scientific audiences, policymakers, teachers, and the public, as well as **more informed research choices by EMBL staff and the wider research community**. Within EMBL, public engagement, communications, and outreach activity includes: strategic communications; media relations; internal communications; digital communications, including social media; public visits to EMBL facilities; exhibitions and outreach including external public events, teacher and student programmes, engagement with individual and institutional supporters, partners, and alumni; and, facilitating dialogue with and between policymakers and scientists on ethical and other issues. The EMBL teams which will collaborate to achieve this goal include Communications, Science & Society, European Learning Laboratory for the Life Sciences (ELLS), Training, Alumni Relations, and Office of Resource Development.

## Aims and Objectives

EMBL's public engagement, communications, and outreach activities seek to be dynamic, influential, and daring in line with the Molecules to Ecosystems Programme. The focus will be on activities which have the greatest positive impact for member states and society, including:

- Raising the visibility of EMBL's science and technology to inspire, inform, and educate;
- Increasing local public engagement at EMBL sites;
- Embarking on outreach initiatives such as TREC: reaching out to the member states;
- Supporting European teachers and young learners;
- Engaging with policymakers to improve evidence-based decision making;
- Improving public engagement and communication skills at EMBL and building capacity in member states.

During the next EMBL Programme, EMBL will utilise its leadership role in the life sciences to expand its efforts and those of partners to ensure public debate on these topics is informed by the latest and most accurate science – including from the new research areas such as planetary biology, infection biology and cellular and multicellular dynamics. EMBL aims to remain a trusted source of scientific advice on societally contentious issues in relevant research fields ranging from infectious diseases, genetic modification, genetics and race, and the impact of artificial intelligence, to the effects of climate change, pollution, plastics, and antimicrobial resistance (AMR).

To achieve its goals, support its scientists, and reach new audiences, EMBL will improve the strategic planning and coordination of its public engagement, communications, and outreach activity. EMBL aims to deliver a stronger and more coherent communications plan covering all six sites and EMBL's global network of alumni, improve effectiveness and efficiency of existing programmes, and enable the introduction of targeted new activities described below.

## EMBL's Approach

### Raising the Visibility of EMBL's Science and Technology to Inspire, Inform, and Educate

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EMBL is committed to maximising the societal benefit of its knowledge and skills by helping to inspire the next generation of researchers, engineers, technicians, and other professionals, inform national and European policymaking, and provide educational opportunities for society.

This will require EMBL to dramatically raise its visibility – globally, regionally, and within its member states. EMBL hopes to be recognised not only as the European leader in life sciences research, training, and societal application of its research, but as a truly global leader in these fields.

EMBL directly engages with thousands of people every year through activity at EMBL sites, tens of thousands more through outreach activity with partners, and millions through media coverage and social media. Over the next five years, EMBL has ambitious plans to expand the breadth and depth of this indirect engagement with audiences across the continent and globally.

EMBL will raise its visibility at major generalist science and technology gatherings, such as the biennial **European Open Science Forum**, to do more to promote the excellence and benefits of the work at EMBL, by

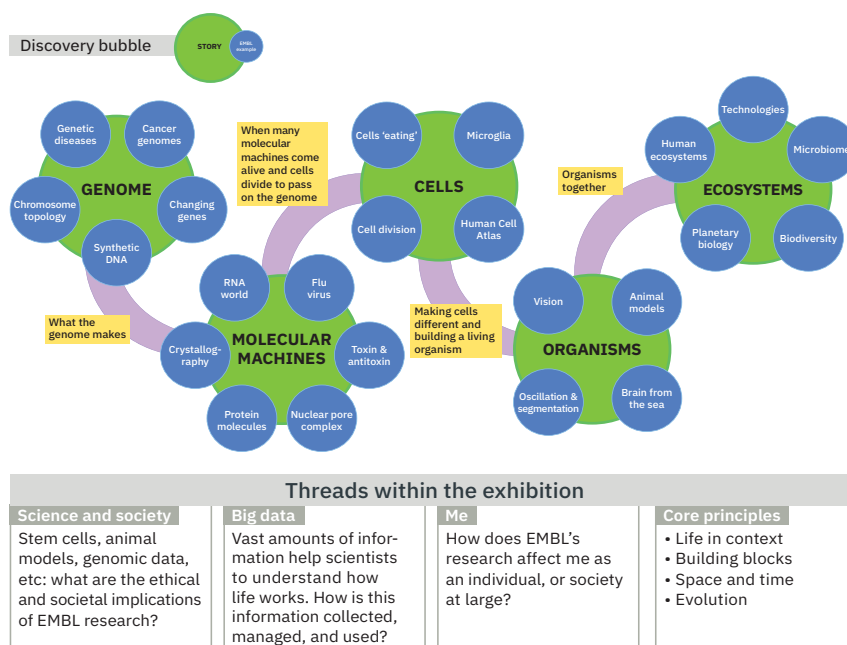
partners and in the member states, and to make the initial connections necessary to support EMBL's efforts to develop new partnerships and collaborations across its engagement activities.

EMBL believes that its engagement activities are also essential to the ongoing relevance of the life sciences in Europe and across the world. To achieve the ambitious targets detailed in this Programme, EMBL will need to attract and collaborate with more researchers, engineers, and technicians from across multiple disciplines (recruitment in Chapter 14: People, Processes, and Places). A key component of raising visibility will be engagement with young people to help **inspire and engage young people with the wonder of science**, with the long-term goal of also raising awareness of EMBL as a career choice among new audiences.

## Increasing Local Public Engagement at EMBL Sites

EMBL engages with the public through a variety of formats at each of its sites. For example, EMBL Heidelberg and EMBL-EBI organised and participated in the 2018 and 2019 European Researchers' Night in Germany and the UK. EMBL Grenoble also participates in events such as the Fête de la Science and EMBL Barcelona in the Biomedical Research Park (PRBB) Open Day. All of these events aim to promote science awareness and engagement among the general public.

During the next EMBL Programme, EMBL will do more direct local engagement with researchers, teachers, pupils, policymakers, students, and the public at each of its six sites. The Heidelberg site currently runs a public visitor programme with about 750 visitors a year which will be subsumed by the new **Visitor Experience** at EMBL Heidelberg, within the EMBL Imaging Centre (Chapter 10: Scientific Services), scheduled to open in early 2022. This state-of-the-art visitor exhibition will offer an immersive learning experience for visitors including school groups and the public and could accommodate more than 3,000 visitors a year - a notable increase from the 750 public visitors EMBL Heidelberg welcomed on site in 2019 (Figure PEC01).



**Figure PEC01 | Visitor Experience concept.**

The exhibition will have three sections spanning 800 square metres of the EMBL Imaging Centre. The exhibition's centerpiece, 'Life is Amazing' (pictured), takes visitors on a journey of scale, from the genome to ecosystems. 'Seeing is Understanding' offers a peek at the microscopes and underlines the power of imaging technologies. 'Spirit of EMBL' introduces EMBL's missions, history, and its staff. Each thematic 'Discovery Bubble' provides essential knowledge and explores examples of relevant EMBL research. The 'threads' are cross-cutting topic areas which relate to different examples in the discovery bubbles and show how the examples are linked and interrelated. This figure is representative of an evolving plan and ideas for the exhibition.

## Multiply Communications Activity through Collaborations and Partnerships

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EMBL will foster existing collaborations and create new networks of research institutes, public engagement groups, dedicated European initiatives, and science centres to act as key partners and multipliers. One existing partnership which demonstrates such benefits is the public engagement training and hands-on practical experience offered to the EMBL Interdisciplinary Postdocs (EIPD4) cohort through a partnership with the Natural History Museum (NHM) in London (Chapter 11: Training). EMBL will seek to expand on the example of this collaboration with the NHM by instituting a **new programme of communications partnerships** with leading science and discovery centres in each member state. The network will help maximise the reach of EMBL's outreach activities, and will improve the offerings for visitors to partner centres through the provision of the latest scientific knowledge, and access to EMBL engagement training courses and workshops for centre staff.

At EMBL's sites in Barcelona, Grenoble, Hamburg, Hinxton, and Rome, an expanded engagement plan will be delivered in partnership with local institutes, universities, and science and discovery centres. EMBL's expanded network of communications officers will help deliver a new programme of public visits to each site, a public lecture series in local languages, and Career Days for local educational authorities to improve student and teacher awareness of the range of career opportunities available in the life sciences and at EMBL.

EMBL will also enhance public engagement activities by **better leveraging its highly successful Course and Conference Programme** (Chapter 11: Training). The programme, which attracts some of the world's best researchers, also offers new opportunities for public engagement with local communities. EMBL will seek to increase the number of public lectures delivered by guests and keynote speakers in partnership with local venues. Public engagement activities and content will also support other components of EMBL training, including the EIPD4 Inspire mentoring scheme, summer schools, and offerings for master's students as well as EMBL's wider recruitment and capacity building efforts.

All of EMBL's public engagement, communications, and outreach activities and future plans rely upon collaborations with individuals, institutes, alumni, public spaces, and venues, including specialist science centres, media organisations, educational and teacher authorities, and governments at all levels. Establishing deep and mutually beneficial relationships will be a high priority for EMBL, as will growing the number and scale of collaborations and partnerships. To help achieve this, EMBL will establish a **formal network of communications professionals from across its partners**, and support regular interaction to share best practices, develop common activities, and share resources.

## Embarking on the TREC Outreach Initiative: Going to the Member States

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During the next EMBL Programme, EMBL will increase its efforts to provide scientific services and training by going to the member states to reach scientists with novel, mobile services to enable collaboration, discovery, and capacity building. The main mechanism for this activity will be as part of **TREC**, the coastline exploration project (Chapter 7: Planetary Biology) which will bring EMBL science and expertise from the laboratory to the field. The TREC roadmap includes sampling stops at numerous coastal sites by the Tara Ocean Foundation research vessel (*Tara*) and new EMBL mobile laboratories hosted in trucks. These will enable collaborations across our member states and organise outreach activities.

The TREC project will also have a major outreach arm aimed to raise awareness of planetary biology and the scientific tools and techniques that enable this study. Before the TREC team arrives at a research location, EMBL and its local partner institute will have worked with schools and local communities to raise awareness of the project, provide lesson plans and information to teachers, and schedule school visits to the mobile laboratory. This approach will follow the *Tara* model which dedicates one day of each stop at a port to

outreach and educational activities, including inviting schoolchildren to visit and learn about the research vessel (Figure PECO2). The mobile laboratory, designed to support TREC research goals, will also provide a dedicated space for teachers and students. Researchers engaged in the project will receive outreach training to facilitate public lectures and discussions at each site with backing from social media and media activity. School and public visits could also be planned to the local littoral sampling sites, with a focus on topics such as the human impact on biodiversity, microplastics in the environment, and the importance of protecting ecosystems and the spread of antibiotic resistance.



**Figure PECO2 | *Tara* and EMBL Mission Microplastics 2019 stop in Rome.**

During the three-day stopover in September 2019, scientists from EMBL Rome organised multiple public outreach activities, including group tours of the boat and a hands-on workshop to build a fluorescence microscope. Photo: Massimo Del Prete/EMBL.

## Outreach via EMBL Alumni and Networks

EMBL highly values its alumni and recognises that they are important contributors in strengthening life sciences research in Europe and beyond. Alumni contribute to furthering excellent fundamental research during their time at EMBL and multiply this impact when they move forward in their careers to organisations in EMBL member states and beyond. EMBL is continuously fortified by the many former EMBL staff who remain strongly committed through participation in EMBL alumni activity.

EMBL alumni play an important role in raising awareness of EMBL's work, and its benefits to society, and in ensuring EMBL remains firmly connected to the global life sciences community. Alumni facilitate events in member states, support public engagement activities, and provide key input to EMBL's research programmes via advisory boards and other mechanisms. The 5,000-strong **EMBL Alumni Association** continues to grow and is open to staff, fellows and visitors of EMBL, EMBO, EMBLEM and EMBL Ventures, as well as former EMBL Council delegates and Scientific Advisory Committee (SAC) members.

In the future, the number and frequency of EMBL alumni-organised activities in member states will be increased; some of these activities will be held in conjunction with TREC outreach activities. This approach worked well in the past when *Tara* outreach events were combined with *EMBL Alumni In* events. EMBL will also seek greater support from the alumni network for recruitment and career support activities, with a particular focus on improving efforts in relation to equality, diversity, and inclusion. **EMBL World Alumni Day**, launched in 2019, will continue to be a global, live annual event to engage EMBL advocates, ambassadors, and their extended networks, as a two-way exchange of ideas with a target of 1,000 participants annually.



## Supporting European Teachers and Young Learners

EMBL provides specific support for European teachers through the **European Learning Laboratory for the Life Sciences (ELLS)** designed to improve the quality of teaching of STEM (science, technology, engineering, and mathematics) subjects across Europe. ELLS shares the scientific explorations of EMBL through inspiring educational and outreach activities, delivered effectively to teachers and learners of many different backgrounds from member states and beyond. The current programme offers guided campus visits for schools, teacher training, educational resources for science teachers, student workshops and projects, EMBL Insight Lecture, and school ambassador visits to schools (Figure PECO3). Through participation in the Horizon 2020 SySTEM 2020 project, EMBL also contributes to the mapping of current informal learning structures across Europe and also to the design of a robust European framework for informal science education.

ELLS will continue to provide a unique opportunity to convey the importance and fascination of the latest advances in life science research to the public, with a special focus on young people and teachers. ELLS will respond to the training needs of the member states in the area of science education. Particular emphasis will be paid to making ELLS courses accessible to a wider community of teachers and to strengthen the collaboration with educators in EMBL member states. The ELLS programme currently reaches 28 countries, 200 teachers, 3,000 students, and members of the public. During the next EMBL Programme, EMBL's goal is to grow the ELLS workshops to benefit 1,000 teachers and at least double the number of students a year by the end of 2026. ELLS will continue to strengthen its presence and international alliances in science education.

In line with the research themes of the Molecules to Ecosystems Programme, ELLS will continue to develop new activities in response to evolving training needs within its member states in the area of science education, including:

- Expansion of EMBL's **continuing professional development (CPD) courses** for European science school teachers (ELLS LearningLABs) in the member states.
- Introduction of the **Junior Lab Programme** to provide students aged 10 to 18 years with an opportunity to access real science and real data while working directly with researchers, to complement national secondary programmes. An initial pilot is planned with the City of Heidelberg.
- Expanding **teaching resources** for life sciences education to include EMBL's new research themes.



**Figure PECO3 | ELLS School Visits Programme.**

Thirty pupils aged 11 to 17 years took part in the visits to the Heidelberg campus in January 2020. The programme is run by ELLS: EMBL's science education department. *Photo: Massimo Del Prete/EMBL.*

Through EMBL's work with teachers and students, and across the various engagement and outreach activities, EMBL will embed important messages for younger people about the wide variety of careers in STEM to help encourage wider take up of science subjects at school and university.

## Engaging with Policymakers to Improve Evidence-based Decision Making

EMBL enjoys strong engagement with policymakers through close collaboration with the European Commission (EC), where EMBL provides policy advice and participates in consultations on key EC initiatives (Chapter 13: Integrating European Life Sciences). EMBL scientists actively contribute to media and public outreach efforts as well as to policy development and ethical dialogues.

EMBL will continue to prioritise its contributions to policymaking and will employ new strategies to optimise these activities. EMBL's new directions have the potential to generate scientific evidence in many areas where policy making is needed, as well as developing potential new solutions. The effective transfer of knowledge from scientists to policymakers is dependent on adept engagement, trust in science and between partners, and the appropriate translation of information. EMBL's strategic science communications aimed at policymakers will include identifying key audiences and relevant actors for a specific issue, before providing clear recommendations. Key to effective adoption is also adapting information to formats which are useful to policymakers including synthesising key findings, and partnering with other scientific institutes to amplify engagement and optimise the impact of science on policy. In line with these aims, EMBL will support the development of more effective approaches for commercialisation and innovation (Chapter 12: Innovation and Translation). Efforts at EMBL and elsewhere to build and strengthen connections between science and policymaking are needed more than ever with the response and recovery to the COVID-19 pandemic, as well as pressing environmental and societal challenges.

Citizens and members of the public are a key part of knowledge transfer and the application of scientific evidence. EMBL's engagement with policymakers is accompanied by the **Science & Society Programme**, EMBL's platform for dialogue and debate on the ethical, legal, and social implications of scientific research. The Science & Society Programme examines the societal context in which EMBL's research operates, interrogating the potential impact and repercussions of scientific research on society, while concurrently exploring societal responses to issues affecting the life sciences. This bridge between EMBL and society is built on a suite of well-established mechanisms such as seminars, conferences, symposia, and discussion meetings. For example, the 2018 EMBL Science and Society conference, Infectious Diseases: Past, Present, and Future, explored topics including antimicrobial resistance, biosecurity, diseases of poverty, and public perceptions and misconceptions regarding vaccines. The 2019 Science as Storytelling conference delved into pressing and intriguing elements of the communication of science, including through narratives, graphical elements, and virtual reality (Figure PECO4).

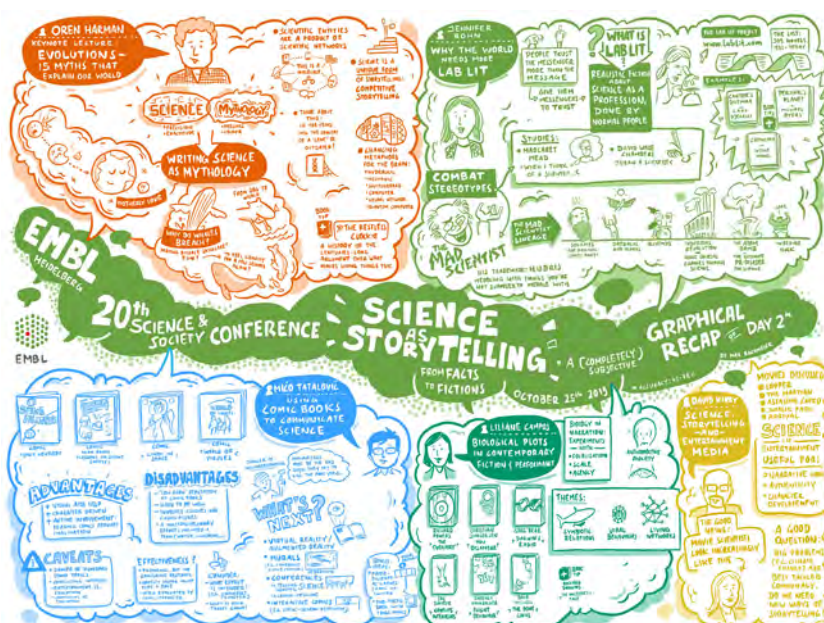


Figure PECO4 | The EMBL Science & Society Conference 'Science as Storytelling' represented graphically.

Illustration: Max Bachmeier  
<http://maxbachmeier.de> CC BY 4.0.

EMBL wishes to further strengthen its engagement with society at all levels, as well as European policymakers and maximise the benefits of EMBL's expertise for member states. The Science & Society Programme will continue to deliver these core activities, but will also build on the Programme's legacy, by seeking to develop new mechanisms for multidisciplinary and multi-stakeholder dialogue – with the goal of ensuring the most effective two-way engagement possible. By providing a clear and transparent framework for debate, both internally and externally, the Science & Society Programme will ensure EMBL retains its leadership role in these areas and provides a model for other institutions, by encouraging and implementing an open and consultative approach to potentially contentious issues.

EMBL will support policymakers through the provision of accurate and timely information on dynamic and sometimes controversial scientific topics. EMBL will develop a series **Life Sciences Policy Updates** for policymakers and the wider research community on novel or contentious topics. This series will address ethical issues, technology developments, and societal impacts in small interactive workshops. These updates will provide policymakers in the member states and beyond with effective and time-efficient opportunities to engage with EMBL experts on a specific topic. The format is designed to not only result in more informed decision makers, but also an increased awareness among EMBL researchers about relevant societal issues and expectations.

## Improving Public Engagement and Communication Skills at EMBL and Building Capacity in Member States

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EMBL will offer new public engagement, communications, and outreach training to staff researchers, engineers, and technicians at all sites and then seek to transfer these practices to member states. EMBL staff are at the centre of all of EMBL's plans to improve evidence-based decision making, further embed the consideration of ethical issues in its work, and utilise the wonder of EMBL's science to inspire, inform, and educate. EMBL will introduce new **training and volunteering opportunities** for EMBL staff at all sites through a coordinated EMBL-wide communications plan that reinforces and builds on existing activity at each site.

All EMBL staff will be given the opportunity to undertake specialist training in public engagement, visual presentation of results and concepts, media and social media skills, and public speaking, offered through the communications teams. Courses could be offered biannually in Heidelberg and Hinxton, and annually at other sites. Regardless of profession or specialisation, these skills are important tools for professional advancement. The provision of this training also demonstrates EMBL's commitment to ensuring all staff have opportunities for career development. The training opportunities will be developed to include awareness of equality, diversity, and inclusion best practice, and will ensure trained staff are available to support the expanded public engagement activities. This will also include training staff to be ambassadors of EMBL and support presentations of public lectures and school activities in the ambassador's home country. The new training will build on the Complementary Scientific Skills programme, which already includes training in, for example, engagement with journalists and creating outstanding scientific posters (Chapter 11: Training) as well as being made available to fellows via the EMBL International PhD Programme.

### Capacity Building in Member States

EMBL will develop collaborations with national institutes to reach new audiences, particularly by seeking to provide engagement and outreach training in areas with low science capital. There will be a 'train-the-trainer' component of the new modules, with the objective of passing on these skills to the widest possible audience across EMBL's institutional partners and collaborators. The new modules may be made available to researchers and graduate students through partner institutes and universities in EMBL member states.



In the last decade, EMBL Alumni Relations Office has regularly been consulted by life sciences institutes wishing to establish an alumni programme. Based on these discussions, EMBL Alumni Relations joined forces with the Council for Advancement and Support of Education (CASE) in 2016, and will jointly run an Advancement Summit for Life Sciences at EMBL in 2020 to support life sciences institutes with their advancement models. In the future, this summit could be offered biannually at EMBL as a platform for life sciences institutes to learn about topics that advance an institute, such as communications, marketing, alumni relations, and fundraising. Additionally, the platform will provide representatives from EMBL and other life sciences institutes with the opportunity to share ideas, resources, events, and internships.

Through the activities outlined, EMBL aspires to become a leader in the life sciences in public engagement, communications, and outreach, and deliver added value to a wide range of people, within and beyond EMBL's member states.