



Instruct-ERIC

Integrated Structural Biology Infrastructure



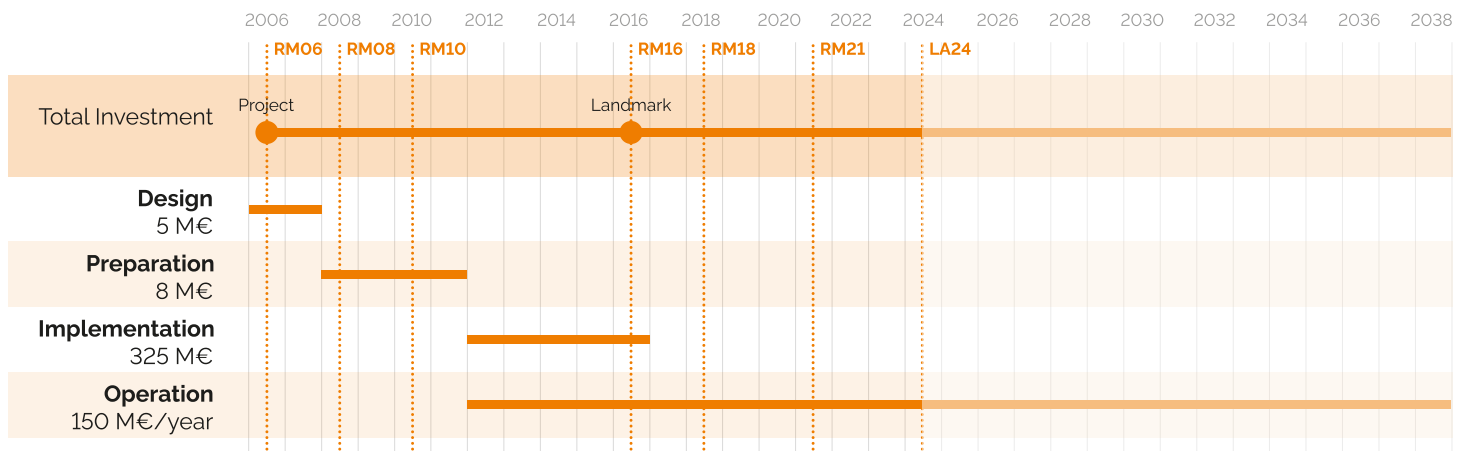
Website	Headquarters	Legal Status	Type	Access
https://instruct-eric.org/	Instruct-ERIC Oxford House, Oxford, OX4 2JY, United Kingdom	Established (ERIC, AISBL, GmbH, Others)	distributed	remote, physical

DESCRIPTION

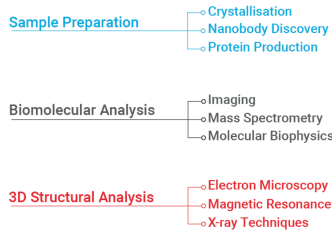
Instruct-ERIC is a pan-European distributed research infrastructure making high-end technologies and methods in integrated structural biology available to user with the aim to promote innovation in biomedical science. Instruct has three main technologies (X-ray crystallography, electron microscopy, nuclear magnetic resonance spectroscopy) for high resolution studies of biomolecules, required to assess their properties and function or develop new drugs and therapies. Over the last decades, structural biology has studied the atomic structure of all constituent molecules of life, in isolation and in their cellular environment, with unprecedented impact for our understanding of health- and disease-states of life. Instruct provides access to the wide range of molecular and cellular systems to a continuously growing range of scientific communities. To deepen our understanding, integrated approaches and multiple techniques at the cutting edge of science are required and Instruct is in a unique position to support European research in this endeavour, not only by determining the structures of the molecules of life, but also by supporting scientists in sample preparation and characterisation, as well as training and technique development. Instruct's aim is to democratise access based on scientific excellence (assessed by peer

review). This is why Instruct funds user access to make it free at the point of use for its Members. The access services provided and associated training and communications activities are mainly focused on Instruct's main user community, structural biologists from academia and industry. However, due to the broad applications of structural biology methods, the user base is growing with researchers from other speciality fields such as molecular biology, cancer, infectious disease, food and environmental research. These new non-expert users are provided with the additional support and expert guidance that they require to obtain results. Instruct-ERIC's Members (members states and an international organisation) host national Centres that provide access to cutting-edge services, their auxiliary technologies as well as training and networking opportunities. Most Centres are themselves further distributed, linking more than 20 individual facilities. The broad coverage of facilities across Europe facilitates extensive collaboration with users visiting other countries or remotely accessing services dispersing knowledge and expertise. Additionally, it allows for increased capacity and flexibility of services in high demand, as well as space for unique, specialised services.

TIMELINE & ESTIMATED COSTS



-ERIC Technology Catalogue



POLITICAL SUPPORT

Lead
UK

Member
BE, CZ, DE, ES, FI, FR, GR, IL, IT,
LT, LV, NL, PT, SI, SK, EMBL



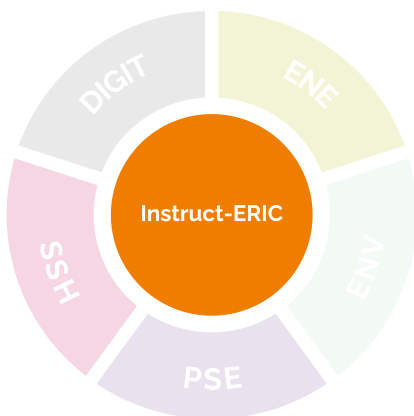
IMPACTS

Instruct-ERIC's key aim and largest area of impact is to generate societal knowledge benefits and to address societal challenges. Research performed furthers global understanding of societal health and well-being, most prominently in cancer and infectious disease fields, but also in many other research areas. Research projects from Instruct thus contribute to several UN Sustainable Development Goals, Good Health and Well-being, Zero Hunger, Affordable and Clean Energy, Climate Action, Responsible Consumption and Production, Clean Water and Sanitation, Life on Land and Sustainable Cities and Communities. As example, we report on two Instruct's scientific activities that have tremendous social and economic impact: During the COVID-19 pandemic, the timescale between initial structural biology studies and the eventual outcome was significantly reduced and Instruct scientists generated results that were pivotal to SARS-CoV-2 medication and vaccine, and subsequent saving of more than 14 million lives globally. Antibiotic resistance is an infectious disease and a global challenge of mankind. Instruct scientists recently discovered and characterised two potential new antibiotics drawn from soil-based bacteria which is well on track for further study. In addition to our key aim and impact, Instruct has impact on operational productivity and efficiency of other research organisations through the provision of the ARIA software. Furthermore, Instruct activities impact the biotechnology market through researcher training, spinoff companies and new products and the Instruct Hub and Centres impact the local and national economy and labour market.

SERVICES

Instruct-ERIC provides access to integrated structural biology technologies that scientists do not have at their own institution. This access includes training, expert advice and career support. More than 80 curated cutting-edge structural biology services are available, enabling access to the complete pipeline of structural biology projects. These services include sample preparation (protein production; crystallisation; nanobody discovery), biomolecular analysis (mass spectrometry; imaging techniques for structural biology; biophysics services), 3D structural analysis (X-ray diffraction; NMR techniques; electron microscopy) and computational services (data analysis, data handling, modelling, and support in AI). The technologies are accessible both in person as well as remotely depending on the users' needs and facilities availabilities. To achieve quality scientific research through access provision requires well-trained researchers to best use the services available. Instruct provides both informal and formal training to users. All users are supported by expert facility staff before and during the visit, trained on the use of machinery, and supported in data analysis post-visit. Instruct offers internships for early career researchers for hands-on training. Formal training is provided through training courses and workshops which promote integrated approaches of structural biology techniques or newly emerging cutting-edge techniques. Instruct also funds pilot research and development (R&D) projects provide seed funding for the development of new technologies that may ultimately be made available to its user community via new services.

INTERCONNECTIONS



COOPERATION WITH OTHER RIS

Cooperation with other RIs has been of vital importance for Instruct-ERIC's development as a distributed research infrastructure. Collaboration with organisations, especially with other Life Science research infrastructures, with similar aims and organisational structures has informed Instruct's development. These collaborations have been formed through various EU funded projects, as well as Instruct's participation in the Life Science RI Strategy Board. Furthermore, Instruct actively works with partner RIs in the Environmental Sciences, Physical Sciences & Engineering, and Social & Cultural Innovation domains. The ERIC Forum provides a platform to discuss issues of common interest to all ERICs and Instruct-ERIC has advanced on administrative, legal, financial and managerial aspects of ERIC operation with the support of colleagues in the ERIC Forum. Additionally, Instruct works with partner RIs on FAIR data management though collaborations in EOSC and beyond. Outside Europe, Instruct is collaborating with partners in Latin Americas, Australia and Africa to improve visibility and share expertise.