

## Report of Portugal Instruct Activity December 2022

### Summary

- **Members:** 546
- **R&D research grants:** 7 awarded out of 51 successful applications
- **Proposal Submitted:** 119 out 1329 visits, 78 out of 916 proposals
- **Successful Proposals:** 92 out 1180 visits, 59 out of 789 proposals
- **Training Courses:** 8 of 73 approved courses
- **Internships:** 14 out of 62 approved applications
- **Research sites call:** 2 out of 3 approved applications

Instruct-ERIC (Instruct) provides researchers with access to state-of-the-art structural biology technologies and expertise. By driving innovation at the boundary between technologies, it stimulates and facilitates research that integrates an understanding of biological structure with cellular function and tackles challenging questions that are otherwise not easily addressed. Equipment at the cutting-edge of structural biology is increasingly expensive to build and maintain, and no European country possesses such equipment and expertise in all structural biology technologies. Instruct enables its members to access this equipment and expertise through a dynamic, sustainable, infrastructure distributed across Europe. In addition, Instruct supports European research with an active training programme in structural technologies and methods and competitive access and funding for research and development awards to kick-start innovative research.

### Governance

Instruct-ERIC was formally ratified by the European Commission and was celebrated at the Royal Society, London 18<sup>th</sup> July 2017.

In 2022 Prof Harald Schwalbe was appointed as new director by the Instruct Council <https://instruct-eric.org/news/harald-schwalbe-appointed-as-new-instruct-eric-director/> and Dr Claudia Alen Amaro and Dr Natalie Haley appointed as the new coordination team <https://instruct-eric.org/news/instruct-eric-new-coordination-team/>

The operations of Instruct are defined by the following agreements and bodies:

- Instruct-ERIC statutes; Implementing Decision dated 4<sup>th</sup> July 2017
- Instruct-ERIC Council: Strategic body for Instruct, Chair Eric Guittet (France); Vice Sarah Butcher (Finland)
- Instruct-ERIC Executive Committee: Operational body, Chair Dave Stuart until January 2022 after this date the chair changed to Harald Schwalbe
- Training Committee: Chair Lucia Banci
- Access Committee: Chair Darren Hart
- Data Management Committee: Chair Jose Maria Carazo
- Key Performance Indicators Committee: Chair Ludovic Renault

In addition, Working Groups are established by the Executive committee and the Council for specific issues. During 2020 we established a working group for Brexit management and currently we also have working groups to discuss changes to the scientific landscape in structural biology and Instruct involvement with the EOSC. The Instruct Council has also set up a working group to evaluate the international dimension of Instruct activities.

Instruct-ERIC premises are located at the Oxford Business Park, UK; during 2022 the Instruct Hub counted with 15 staff funded both by membership contribution and Horizon 2020 and Horizon Europe projects.

Representation on the governance bodies of Instruct can be found at:

<https://instruct-eric.eu/governance>

In that page there is also a link to our intranet where all relevant documents for the committees can be accessed.

## Infrastructure

In the past year Instruct continued the catalogue update under the guidance of the Access committee. New services have been added to the catalogue with new facilities integrated to both Instruct-UK and Instruct-BE. For France and Spanish facilities, you can find more information via this link <https://instruct-eric.org/news/new-instruct-eric-technology---flexibilityhub-from-i2pc/> any other news from 2022 can be obtained via this link <https://instruct-eric.org/news>. The EMBL centre is now available with services in 3 facilities in Hamburg, Heidelberg and Grenoble. Our catalogue (<https://instruct-eric.org/platform-catalogue>) provides clear information to the user of the services available as well as keeping with the rapid technological developments in structural biology. A description of 80 local services/technology are available through the Instruct website. Currently the catalogue can be filtered by centre and users are also able to navigate by technique. Each service has information regarding local contacts, user guides, publications, what is coming next for the technology and technical description of the equipment. Each centre is responsible for keeping this information correct, complete and up to date.

## Access

Access to the Instruct infrastructure is via an automatic online procedure that allows applicants, that have been validated as Instruct scientists, to upload their proposal, connect the proposal to their profile; the system also automatically contacts the secretary of moderators, the moderator, the reviewers and the user as required. To apply, go to:

<https://instruct-eric.org/submit-proposal>

## Users visits per country

Country	National Visits	Transnational Visits
Czech Republic	0	51
Portugal	0	92
Spain	60	153
United Kingdom	51	118
Italy	36	99
Germany	5	22
Belgium	4	54
France	112	66
Israel	43	27
Netherlands	26	25
Finland	19	27
Slovakia	0	3
Denmark	0	8
Slovenia	0	9

Latvia	0	3
International visits*	0	28
Totals	356	785

\*The international visits were funded through a special call for scientist belonging to institutions with whom Instruct have signed MOUs. The call was funded in collaboration with the project Microbes coordinated by Prof Margarida Archer from Instruct-Portugal with funding from CEITED and the Horizon 2020 project EULAC Res Infra.

### Members

Instruct has 546 registered members from the Portugal who are eligible for all our funding calls. Membership and visits to the website have grown steadily from the opening of the site. Our website is continuously updated with new content and information for different communities. We are open to new resources and content to the site inviting submissions to [comms@instruct-eric.org](mailto:comms@instruct-eric.org).

### Instruct research sites

**In 2022 a call was opened for applications for Instruct-ERIC Research Sites by organisations from Instruct [Member countries](#).**

Applications for a new Instruct Research Site submitted by an Instruct member from one institution or organisation in a member country (excluding an existing Instruct Centre location), or a consortium of national institutions or organisations that collectively can provide training, outreach or networking activities of interest to Instruct.

This call received four applications which were then reviewed by the Instruct Executive Committee. Out of the four applications, two were from Portugal. The executive approved both applications from Portugal to coordinate into one research site that can provide the following activities:

#### Research Sites activities includes:

Hosting or participating in training courses

Hosting or participating in workshop or meetings

Participating in certain tasks (e.g. on a subcommittee or working group) by invitations of the Chair of the Executive Committee

According to the new status as a research site, Portugal was chosen in 2022 to host the 6<sup>th</sup> edition of the Instruct Biennial Structural Biology conference to take place in May 2024

### Training

Since 2012, 73 training courses have been approved for Instruct funding or co-funding. Courses content include cross-technology structural data integration methods, computational modelling and protein design, macromolecular complex production, electron tomography and correlative imaging techniques, biomolecular interactions, hybrid approaches in structural biology.

#### Instruct Supported Training Courses:

- CERM/CIRMMP Jan 2-31 2013: Advanced methods for the integration of other structural data with NMR data (CIRMMP Florence, Italy)

- Weizmann Sept 2-6 2012: The use of computational tools for modeling of multi-molecular assemblies and protein design (Weizmann, Israel)
- IBMC Porto Nov 5-9 2012: Biomolecular interactions analysis. Organised within the Instruct Centre Training (Portugal)
- CERBM/IGBMC Nov 26-30 2012: Production, purification and characterisation of macromolecular complexes (IGBMC, France (Marie Christine))
- PSB-Grenoble IBS, UVHCI, EMBL, ESRF June 4-9 2012: EMBO practical course on the structural characterisation of macromolecular complexes (PSB, France) – event completed, report available at <http://www.structuralbiology.eu/content/documents>
- EMBL Hamburg June 11-16 2012: Hybrid structural biology approaches (EMBL Hamburg)
- Diamond Oxford Dec 5-6 2012: Cryo Soft X-ray imaging of Biological cells (Diamond Light Source)
- IGBMC, Illkirch, April - Sept 2013: Getting the best from your structural data: beyond black boxes. (IGBMC, Strasbourg, France)
- Instruct Centre for Protein Production, Helmholtz Centre for Infection Research, Dec 2-6 2013: Practical Course “Mammalian protein production in transient and stable cell culture based expression systems” (Helmholtz, Germany)
- CIRMMP-CERM, In cell NMR in collaboration with other centres in Italy Sept - Jan 2013: In-cell NMR analysis of biomolecular structure and function (Italy)
- ITQB – Oeiras Instruct Affiliate Centre: PCISBIO – Portuguese Centre for Integrated Structural Biology 5-8 Nov 2013: 1st International Masterclass on Multidisciplinary Approaches to the Study Structure and Function of Membrane Proteins. Organised by Carlos Cordeiro, Margarida Archer, Jose Brito and Ricardo Gomes (Portugal)
- Madrid, Biocomputing Unit of the National Center of Biotechnology (BCU-CSIC) Instruct Image Processing Center (I2PC) Dec-13: 3D Electron and X-ray Microscopies: Image Processing Workflows (Spain)
- "University of Grenoble" Univ. Regensburg, MPI Frankfurt, EPFL, VMS, Gif-sur-Yvette, iRTSV/PCV, and UVHCI 7th July to 1st August 2014: Multi area including biology, physics, structural and cell biology/Les Houches Summer School 2014 (Instruct France 2)
- Academic and University Center Nove Hradý, Zamek 136, CZ-37333 Nove Hradý, Laboratorio de Estudios Cristalografico , Granada, Spain June 20 – June 27, 2014 first advertising beginning of 2014: Protein expression and crystallisation/Advanced Methods in Macromolecular Crystallization VI – the 1st joint FEBS-INSTRUCT crystallization course in middle EU (Czech Republic)

- "FCT-Universidade Nova de Lisboa" Associate Laboratory REQUIMTE and FMV-Universidade de Lisboa 6-13 October 2014: X-ray Crystallography, NMR, Carbohydrate Microarrays and Calorimetry/Integrative Structural Biology tools for the study of protein-ligand interactions. Organised by Ana Luisa Carvalho and Eurico Cabrita (Portugal)
- Grenoble Partnership for Structural Biology IGBMC-Strasbourg; LCRB-Paris & University of York 26-30 January 2015: "Labeling, NMR/Practical Workshop: Advanced Isotopic Labelling Methods for Biological NMR" (France)
- National Technical University of Athens (NTUA), Apr-14: Strategic pipeline planning: from sample preparation to 3D structure determination with bio SAXS and other biophysical techniques (Greece)
- PSB, Instruct France 2. Apr-May 2015: Molecular interactions: the complementarity between biophysical methods (France)
- Center for Neurosciences and Cell Biology – University of Coimbra. March-May 2015: From protein structure to biological function through interactomics – an integrated view. Organised by Bruno Manadas (Portugal)
- IGBMC, Instruct France 1. November 2014: Course in structural and functional proteomics (France)
- Instruct CCISB. November 2014: Computational tools for combining atomic and volume data (UK)
- Instruct France 26th Jan 2015 to 30th Jan 2015 Advanced Isotopic Labelling Methods for Biological NMR Grenoble, France - J. Boisbouvier
- Diamond Light Source, UK 20<sup>th</sup> – 22<sup>nd</sup> April 2015 Computational tools for combining atomic and volume data
- Instruct France April – May 2015 Molecular interactions: the complementarity between biophysical methods, Grenoble France - Christine Ebel
- 30 May – 5<sup>th</sup> June 2015 A Practical Course in Three-Dimensional Electron Microscopy, Czech Republic - Tanvir (Tapu) Shaikh
- 7th June 2015 Technical and Analytical Approaches to the Translation of Deep Sequencing Data into Three-Dimensions - Joel L Sussman and Gideon Schreiber
- 29 Jun - 3 July 2015 I2PC "hands on" course on image processing applied to the structural characterization of biological macromolecules - Carlos-Oscar Sanchez-Sorzano
- 13-19 July 2015 Integrative Structural Biology tools for the study of protein-ligand interactions: X-ray Crystallography, NMR, Carbohydrate Microarrays, Isothermal Titration Calorimetry and Molecular Modeling. FCT-University of Nova de Lisboa - Ana Luísa Carvalho and Eurico Cabrita Portugal

- 11-15 April 2016. Advanced methods for the integration of diverse structural data with NMR data. SURF Offices Hoog Overborch, Moreelsepark 48, 3511 EP Utrecht, The Netherlands, Ivana Kutá Smatanová
- 17-20 May 2016. From 2D images to 3D structures: A practical course on Electron Microscopy Single Particle Analysis. National Center for Biotechnology – CNB, Jose Maria Carazo (Spain)
- 21-27 May 2016. EMBO Practical Course on the Structural Characterization of Macromolecular Complexes. European Photon and Neutron (EPN) Science Campus, Grenoble, Dr Carlo Petosa (France)
- 6-8 June 2016. Protein Production 2016 Workshop. Old Road Campus Research Building and Target Discovery Institute, Dr. Nicola Burgess-Brown, Prof. Liz Carpenter (UK)
- 13-17 June 2016. Workshop on frontiers of recombinant multi-protein complex expression in insect and mammalian cells. Research Complex at Harwell, Rutherford Appleton Laboratory, Prof Ray Owens (UK)
- 13- 15 September 2016. Advanced Workshop “Computational protein design for Biotech applications” Faculty of Sciences and Technology Universidade NOVA de Lisboa Campus Caparica Portugal- Ricardo J. F. Branco. Portugal
- 5-8 October 2016. Methods and Techniques in structural biology: beyond black boxes. Strasbourg, France, Jean Cavarelli, Bruno Klaholz, Alexandre Ourjountsev (France)
- 17-20 October 2016. First I2PC-FEI “hands on” course on image processing applied to the structural characterization of biological macromolecules. Parador Nacional Alcala de Henare, Spain, Ms. Blanca Benitez, Carlos-Oscar Sanchez-Sorzano (Spain)
- 6-17 March 2017. Advanced Isotopic Labelling Methods for Integrated Structural Biology, Jerome Boisbouvier. (France)
- 13-25 March 2017. Les Houches – Winter school - Biology at different scales: interplay between physics and integrative biology, Eva Pebay-Peyroula. (France)
- 30 April -5 May 2017. Structural Mass Spectrometry Workshop, Michael Sharon. (Israel)
- 20-23 November 2017. Biophysical Characterisation of Macromolecules and Quantification of Biomolecular Interactions, Anastassis Perrakis. (Netherlands)
- January –February 2018. Advanced methods for the integration of diverse structural data–3rd Edition, Antonio Rosato. (Italy)
- January-March 2018. Image Processing for Electron Microscopy in the cloud, Carlos Oscar Sanchez Sorzano. (Spain)

- January-March 2018. From protein structure to biological function through interactomics – an integrated view (2nd edition). Centre for Neurosciences and Cell Biology – University of Coimbra – Bruno Manadas. [Portugal](#)
- September 2018. Workshop for the hydrodynamic and thermodynamic analysis of biological macromolecules and their interactions: multi-method approaches and global data analyses, Ondrej Vanek. Czech Republic
- 14-18 May 2018. Open SESAME & Instruct workshop on Remote MX Data Collection using the Diamond Light Source (DLS, Oxford) & the European Synchrotron Radiation Facility (ESRF, Grenoble) to be held at the Weizmann Institute of Science (Israel)
- 5-6 April 2018. Instruct/CIISB course on fragment screening using crystallography laboratory equipment (Czech Republic)
- 27-29 June 2018. Instruct - I2PC- FEI: Facility-based Image Processing for Electron Microscopy (Spain)
- 1-4 May 2018. Instruct course on Model Building and Refinement for High Resolution EM Maps (4th Icknield workshop) (UK)
- 9-1- September 2018. Nanobodies4Instruct for Structural Biology and beyond. Organised by VIB-VUB center for Structural Biology (CSB) at the Vrije Universiteit Brussel (Belgium)
- 1 – 2 April 2019. Joint INSTRUMENT-CAPRI Workshop on Integrated Modelling of Protein-Protein Interactions (Netherlands)
- 22 May 2019. Instruct-ERIC Centre Managers' Workshop 2019 (UK)
- 8 – 11 July 2019. Instruct course on Image Processing for Electron Microscopy and hybrid modelling (Spain)
- 30 Sept – 4 Oct 2019. Joint Instruct and Open SESAME MX Thematic School (UK)
- 7 – 10 October 2019. Instruct Workshop on Integration of Computational approaches in Structural biology (Czech Republic)
- 14 – 19 October 2019. Instruct –ULTRA and ARBRE MOBIEU Workshop. The Quality Control Training School: From Sample Preparation and Optimization Toward Biophysical Characterization and Integrative Structural Studies (France)
- 3<sup>rd</sup> Instruct Workshop for best practice in CryoEM (France)
- 26 – 31 January 2020. FEBS INSTRUMENT MOBIEU Practical course Hythabio Hydrodynamic and thermodynamic analysis of biological macromolecules and their interactions - Grenoble, France

- 11 – 14 February 2020. Instruct-ERIC and ARBRE-MOBIEU Workshop: Analysis and Optimization of Sample Quality for Cryo-electron Microscopy and Other Structural Techniques - Masaryk University, Brno, Czech Republic
- 24 - 25<sup>th</sup> February 2020. Instruct-ERIC Managers meeting and ARIA-training for Facility Manager / Local Operators” Workshop – (Netherlands Cancer Institute (NKI), Amsterdam)
- 12 – 13 October 2020. Best Practices in CryoEM meeting 2020 - (Virtual - hosted in Leeds, UK)
- 26 – 30 October 2020. Instruct Course on the development of image processing workflows in streaming and structural data analysis components for Electron Microscopy. (Online edition) - (Virtual -hosted in Madrid)
- 23 – 27 November 2020. INSTRUCT theoretical and practical course: Integrative Structural Biology in Latin America - (Institute for Molecular and Cellular Biology of Rosario (virtually))
- 14-18 December 2020. Instruct virtual course on Single Particle Analysis by CryoEM - (i2PC-Madrid (virtually))
- 24 – 27 May 2021. Instruct-ERIC course in biophysical, structural mass spectrometry, and X-ray techniques - Online -Instruct-CZ in Vestec
- 21 June – 2 July 2021. Instruct-ERIC workshop on hydrogen/deuterium exchange studied by mass spectrometry and nuclear magnetic resonance spectroscopy - hosted by Astbury Biostructure Laboratory, University of Leeds, UK, delivered remotely via Zoom.
- 29 June – 6 July 2021. Instruct-ERIC course on macromolecular X-ray, electron and neutron crystallography - hosted remotely by BIOCENTER, Oulu, Finland
- 13 – 16 December 2021. Instruct virtual course on Electron Tomography by CryoEM - hosted virtual by I2PC – CNB – CSIC
- 25 – 30 September 2022. Joint Instruct-iNEXT Course: Integrating X-ray Crystallography, Nuclear Magnetic Resonance, Magnetic Resonance Mass Spectrometry and Electron Microscopy – ITQB Nova Oeiras and FCUL Margarida Archer, Portugal
- 23 – 25 May 2022. Instruct spring workshop on sample preparation for single particle cryo-electron microscopy – Instruct FR2 Guy Schoehn, France



- 18 – 21 July 2022. Instructing structural biologists towards integration – Instruct IT Enrico Ravera online course. Italy
- 16 – 23 Sept 2022. Instruct Practical School on Advanced Isotopic Labelling Methods for Integrated Structural Biology – Instruct Centre F2 /F1 Lionel Imbert. France
- 13 - 16 Dec 2022. Instruct hybrid course on Electron Tomography by CryoEM – Instruct Centre ES Carlos Sanchez Sorzano. Spain
- 8 – 17 Jan 2023. Nanobodies for Structural Biology and beyond – Instruct BE Jan Steyaert, Belgium

### **Instruct Response to COVID19**

The core activities of Instruct are built around the transnational access to the Instruct Centres. Therefore, the current pandemic and travel restrictions have a considerable impact on Instruct activities. The Instruct Hub in collaboration with our centres has taken a series of actions to minimise the effect of the restrictions. Structural Biology has demonstrated in this difficult period an important role to improve our understanding of the disease and accelerate the development of therapeutics and vaccines. From the 16<sup>th</sup> of March 2020 the Hub set up to operate remotely. Presently, the Hub works in a combination of remote and in person modalities. Communication between the Hub, centres, users, and collaborators has been maintained using videoconferencing and other networking tools.

Instruct has continued to offer [access](#) to structural biology services for research directly related to COVID-19 through a [priority access](#) pathway.

The Hub contacted all applicants with open proposals to offer information and support during this period.

Instruct has published a list detailing resources and initiatives by the structural biology community, including our own funded, rapid-access to research infrastructure. The [resource](#) also includes open-access databases and literature, and volunteering opportunities.

### **Support to activities by Instruct Centres**

Throughout the COVID-19 pandemic, all Instruct Centres have made their best efforts to support SARS Cov2 research where possible. Most Centres have been able to retain some access activity, many prioritising or only able to provide access for COVID-19 projects. Remote access has increased as a consequence and this will have a very positive effect for the future by enabling more access without the need for significant travel. New methods for managing remote access have made this mode of access much more efficient and reducing the carbon footprint of Instruct activities. As a result, we have received requests from our community for training resources that demonstrate the benefits and methods in use for remote access across the technologies – many are not aware that this functionality is available.

On 4 May 2020, a team at the [Instruct Image Processing Centre](#) together with [INB/ELIXIR-ES](#) launched [3DBionotes-Covid19](#), a specialised, web-based application for the visualisation and annotation of protein structures relating to SARS-CoV-2. 3DBionotes-Covid19 has been developed

from the 3DBionotes platform, an ELIXIR Recommended Interoperability Resource (RIR) that integrates protein structure, sequence, and annotations through an interactive graphical interface. Instruct supported the communication of this effort.

Launched on 12<sup>th</sup> May 2020, the COVID-19 Protein [Portal](#), built using Instruct digital infrastructure, allows scientists to access protein reagents for critical research relating to SARS-CoV-2. Protein reagents are provided free of charge by a consortium of leading protein production laboratories, in an Open Science initiative led by the Wellcome Trust and UKRI. Initially this resource is available only within the UK as it is UK funded, but it is expected to serve as a foundation for similar activities that may be made available across Europe if there is an initiative to do so. We welcome comments and suggestions on this from the Executive Committee and would encourage something to be proposed, since the portal configuration now exists to manage this through ARIA.

The plethora of actions from Instruct members has done much to raise awareness of Instruct-ERIC and other ESFRIs, particularly in the Life-science (health and food) domain. Further, the EC has committed significant extra funding to support activities related to COVID-19 and the members of the Executive Committee are encouraged to be open to opportunities that may be relevant to Instruct and bring these to the Committee for consideration.

### **Instruct Training Courses for 2022**

The training programme was also affected by the COVID-19 situation. Instruct has taken measures to adapt and continue offering the training our community needs. All organisers of Instruct courses have been contacted to keep the community informed of the new dates of the planned activities.

The 14<sup>th</sup> call for Instruct Training Courses attracted a strong field of very high quality proposals. The 15<sup>th</sup> Call is now closed and the training committee are dealing with the applications for training courses due in 2023.

### **January -Due to some registration issues and clash of another training course this had to be postponed to Jan 2023**

Nanobodies for Structural Biology and beyond. Organised by Instruct BE

### **May**

Instruct spring workshop on sample preparation for single particle cryo-electron microscopy. Organised by Instruct FR2

### **July**

Instruct-ing structural biologists towards integration. Organised by Instruct IT

### **September**

Instruct Practical School on Advanced Isotopic Labelling Methods for Integrated Structural Biology. Organised by Instruct FR1/FR2

Joint Instruct-iNEXT Course: Integrating X-ray Crystallography, Nuclear Magnetic Resonance, Magnetic Resonance Mass Spectrometry and Electron Microscopy. Organised by Instruct PT

### **December**

Instruct hybrid course on Electron Tomography by CryoEM. Organised by Instruct-ES

These events, all consortium events and other relevant event to the structural biology community can be found listed and in calendar view at:

<https://instruct-eric.eu/events>

**In 2021 we launched the new Instruct Remote Internships:** These pilot internships were dedicated to early career researchers (PhD students or Postdocs in their first 5 years after graduation) for providing the opportunity to discuss their own structural biology project(s) with one of the Instruct Centres' leaders. This gives the intern the opportunity to train through tutoring.

Instruct allocated funds to support two remote internships. Differently from standard Instruct Internship, awarded applicants are supervised remotely by a Scientific Tutor from one of the Instruct Centres, with whom they discuss and improve their projects. Projects proposed basic or applied research preliminary in nature, with an expectation of receiving hints and collecting data in support of a project plan wider in scope, potentially object of an application for more substantial funding through conventional routes. Projects that include technology and/or software development were encouraged. All proposals included the use of technologies available at Instruct Centres or develop technologies that will benefit the aims of Instruct. Access to the technologies available in the Instruct-ERIC catalogue are exploited by submitting a regular request for access.

### Instruct Internships

The Instruct Internship Programme funds research visits of 3-6 months duration to Instruct Centres in Europe. The aim is to facilitate valuable collaborations with Instruct research groups applying techniques that are not available in the applicant's laboratory. Applications should specifically focus on the benefit to the applicant's research. Internships may be hosted at any institution that hosts an Instruct Centre, providing the applicant is a resident of a different full Instruct member country at the time of making the application.

- Internships cover travel plus subsistence of the intern only and not of dependents.
- Applicants should be pre-doctoral scientists (PhD students) and early-stage postdoctoral fellows
- Internships are awarded for exchanges between laboratories in different countries.
- Proposals must have the approval of the hosting Institution or Department.
- Internships should be taken within one year of the award.
- The home laboratory (applicant's usual workplace) must be within an Instruct Member country.
- On completion of the internship applicants must return to their home laboratory.

Internship calls are published on the Instruct website.

Results from the internship calls is available from:

<https://instruct-eric.eu/internships>

<b>First Call approved 2013</b>			
<b>Name</b>	<b>Organisation Origin</b>	<b>Country of origin</b>	<b>Host Organisation</b>
Thomas Drury	University of Cambridge	UK	European Molecular Biology Laboratory, Grenoble
Alan Kadek	Laboratory of Molecular Structure Characterisation	Czech Republic	Physical and Theoretical Chemistry Laboratory, Dept of Chemistry, UofOx

Ana Sofia Tremaceiro Lourenco	University of Coimbra	Portugal	Partnership for Structural Biology (PSB)
Daniela Moutinho/Pedro Sousa	ITQB-UNL	Portugal	EMBL-Hamburg
Rajesh Ponnusamy	ITQB-UNL	Portugal	Dept of Chemistry, Physical & Theoretical Chemistry Laboratory and Department of Structural Biology. UofOx
Luca Zinzula	University of Cagliari	Italy	Max Planck Institute of Biochemistry
<b>Second Call approved 2014</b>			
<b>Name</b>	<b>Organisation Origin</b>	<b>Country of origin</b>	<b>Host Organisation</b>
Isaac Santos	University of Basque	Spain	Instruct Centre for Virus Production (ICVIR)
Sara Silva	Instituto de Tecnologia Quimica e biologica	Portugal	Centre for Image Processing - Spain
Mattia Bertinelli		Italy	STRUBI - United Kingdom
Susanne Hank	Goethe University	Germany	Nanobodies4Instruct - Belgium
Sandra Anjo	University of Coimbra	Portugal	Oxford Mass Spectrometry Centre - United Kingdom
Oskar Aurelius	Department of Biochemistry and Structural Biology	Sweden	Instruct Centre - France 2 - France
Gilles GUICHARD		France	Instruct Centre Italy
<b>Third Call approved 2015</b>			
<b>Name</b>	<b>Organisation Origin</b>	<b>Country of origin</b>	<b>Host Organisation</b>
Jan Blaha	Charles University in Prague	Czech Rep	Strubi/ UK
Marcia Alves	ITQB	Portugal	Diamond/UK
Elena Sanchez	CSIC	Spain	OPPF/UK
Joana Cristovão	Faculty of Sciences, University of Lisbon	Portugal	Nanobodies4Instruct
<b>Fourth Call approved 2016</b>			
Ganna Krasnoselska	Goethe University	Germany	Instruct Centre-UK

Encarna Pucheta-Martinez		UK	Instruct Centre - CERM/CIRMMMP Italy
Miguel Arbesu	University of Barcelona	Spain	Solid State NMR Centre
Amal Hassan	<u>University of Milano</u>	Italy	Instruct Centre - Israel
Joana Cristovão	Faculty of Sciences, University of Lisbon	Portugal	Instruct Centre - France 1
<b>Fifth Call approved 2017</b>			
<b>Name</b>	<b>Organisation Origin</b>	<b>Country of Origin</b>	<b>Host Organisation</b>
Pascal Albanese	Politecnico di Torino	Italy	Instruct Centre NL-Utrecht University
Phuong PHAM Ngoc	Institute of Biotechnology	Czech Republic	Instruct-ERIC France 2
Ane Martinez	Universidad Complutense de Madrid	Spain	Instruct Centre UK -Diamond
Ritu Raj Kumar	Tel Aviv University	Israel	Instruct Centre -Strubi, UK
Diogo Athayde		Portugal	Instruct Centre -Spain
<b>Sixth Call approved 2018</b>			
<b>Name</b>	<b>Organisation Origin</b>	<b>Country of Origin</b>	<b>Host Organisation</b>
Gala Ramon	<u>University of Hertfordshire</u>	UK	Instruct-ERIC Centre – France 1
Irren-Laareb Mohammad Jabeen	<u>University of Barcelona</u>	Spain	Instruct-ERIC Centre – Czech Republic
Ferdinand Ngale Njume	<u>Université Libre de Bruxelles</u>	Belgium	Instruct-ERIC Centre – France 1
Jesus Baltanas Copado	<u>University of Murcia</u>	Spain	Instruct-ERIC Centre – France 2
Costanza Angeline	<u>University of Torino</u>	Italy	Instruct-ERIC Centre – France 2
Tanja Kuhm	<u>Delft University of Technology</u>	Netherlands	Instruct-ERIC Centre -Belgium
<b>Seventh call approved 2019</b>			
<b>Name</b>	<b>Organisation Origin</b>	<b>Country of Origin</b>	<b>Host Organisation</b>
Ivan Polsinelli	Free University of Bolzano	Italy	Instruct Centre - CZ
Yixin Lium	University of Helsinki	Finland	Instruct Centre - UK
Andreia Fernandes	ITQB	Portugal	Instruct Centre - FR2
Albert Galear Prat	Oulu	Finland	Instruct Centre - CZ

Gala Ramon	University of Hertfordshire	UK	Instruct Centre - FR1
<b>Eight call approved 2020/2021</b>			
Name	Organisation Origin	Country of Origin	Host Organisation
Matteo Ardini	<a href="#">University of L'Aquila</a>	Italy	instruct-F2
Elda Bauda	IBS	France	CEITEC
Ramita Sulu	<a href="#">University of Oulu</a>	Finland	CEITEC
Subhadra Dalwani	OULU-FI	Finland	ISPC (WIS) Israel
Luca Mauro Invernizzi	University di Milano	Italy	BIOCEV
Rhian Jones	<a href="#">Aix Marseille Université</a>	France	I2PC- Spain
Miguel Cantero Reviejo	Alcalá de Henares University	Spain	Instruct- FI (Helsinki)
Jana Nedvedova	<a href="#">Czech Academy of Sciences</a>	Czech Republic	Instruct-F2
Simone Fjordside	<a href="#">Novo Nordisk</a>	Denmark	Instruct -IT
Giuditta Dal Cortivo	<a href="#">University of Verona</a>	Italy	Instruct -IT
Priscillia Lagoutte	CNRS	France	Instruct-UK (OPIC)
<b>REMOTE Internship 2021 (1<sup>st</sup> call)</b>			
Name	Organisation Origin	Country of Origin	Host Organisation
Katharina Weinhäupl	<b>IBMC</b>	Portugal	EMBL Heidelberg
Carles Torner	<a href="#">IRB Barcelona</a>	Spain	EMBL Grenoble
<b>Nine, ten &amp; eleven call approved 2022</b>			
Name	Organision origin	Country of Origin	Host Organisation
Priscillia Lagoutte	CNRS	France	Instruct-UK (OPIC)
Anna Catarina Paiva	Instituto de Biologia Experimental e Tecnologica	Portugal	Instruct-FI
Izabella Tambones	CNRS	France	Instruct-CZ (BIOCEV)
Adria Alcaide Jimenez	Universitat Autònoma de Barcelona	Spain	EMBL Heidelberg
Pieter-Jan Vermeire	University of Leuven	Beligum	Instruct-CZ (BIOCEV)

Ines Trindade	Instituto de Tecnologia Química e Biológica António Xavier	Portugal	Instruct-IT
Diogo Athayde	Instituto de Tecnologia Química e Biológica	Portugal	Instruct-ES
Ginsts Kalnins	Latvian Biomedical Research and Study Centre	Latvia	Instruct-CZ (CEITEC)
Giedre Ratkeviciute	University of Birmingham	UK	Instruct-ES
Alba Morán Vaquero	CSIC-USAL	Spain	Instruct-CZ (BIOCEV)
Juan Luis Pacheco Garcia	Universidad de Granada	Spain	Instruct-CZ (BIOCEV)
Lavinia Carlini	University Bolzano-Bozen	Italy	Instruct-UK (Harwell)
Janis Rumnieks	Latvian Biomedical Research and Study Centre	Latvia	Instruct-CZ (CEITEC)
Eros Antonio Lampitella	Università degli Studi della Campania Luigi Vanvitelli	Italy	Instruct-IL (WIS)

### Conference

The inaugural Instruct Structural Biology Meeting at Heidelberg in 2013 successfully showcased integrative structural biology and its impact on biological research and biomedicine.

The second Biennial took place in Florence in 2015 continuing the integrative line with an increased focus on innovation.

<https://www.structuralbiology.eu/biennial2015>

The 3rd Instruct Biennial took place in Brno, Czech Republic in 2017. <https://www.structuralbiology.eu/biennial2017>. This new edition included sessions that represent recent structural biology highlights, emerging methods and technologies and results of biomedical importance.

The 4<sup>th</sup> Instruct-ERIC Biennial Conference took place in Madrid, Spain from 22-24 May 2019. Organisation of the conference has started, and registration is now open <https://instruct-eric.eu/biennial2019>.

The 5th Instruct Biennial Structural Biology Conference which was scheduled for May 2021 has been postponed to May 2022 due to COVID-19, the new dates were 18-20 May 2022 in the Netherlands. <https://instruct-eric.org/ibsb2022>

The 6<sup>th</sup> Instruct-ERIC Biennial Conference is scheduled for **22-24 May 2024 in Cascais, Portugal**. Organisation of the conference has started and we are hoping to open registration by Spring 2023.

### Mailing list

We have the capability of contacting all Instruct users or subgroups of them (chosen per country, per role within Instruct) to inform them of issues of their interest. We are keeping this communication to no more than one message every two weeks and only to distribute information relevant to the

community. The feedback so far has been very positive with most users visiting the site to read the relevant information.

### **General Data Protection Regulation**

In preparation for the new regulation (EU)2016/679 changes were made to Instruct's ARIA web services and the Instruct-ERIC privacy policy was revised to be GDPR compliant. Legal bases for all aspects of Instruct-ERIC data processing were identified and the appropriate legitimate interest assessments completed.

ARIA changes included: the introduction of granular control of mailing preferences at registration, in the user profile and in email footers; the restriction of access to the web profiles of ARIA users from public, to only visible to those who are involved in peer-review of that user's proposals or delivery of access to that user; and replacing visible email addresses on public pages with contact forms.

Instruct-ERIC provides its ARIA platform for a number of other facilities and projects therefore, in compliance with the regulation, we established new data processing contracts with these partners. The organisations using ARIA are data Controllers for their data and Instruct-ERIC is the data Processor.

Instruct-ERIC provided training on data protection to all members of staff working in the hub. These training sessions were recorded and will be released to the Instruct centres as resources for their own staff training.

### **Research Funding**

In 2020, Instruct published a call for small scale pilot research projects in integrated structural biology. Instruct allocates resources to support a limited number of pilot studies proposed by researchers from Instruct members (currently BE, CZ, DK, EMBL, FI, FR, IL, IT, LV, LT, NL, PT, SK, ES, UK). Pilot projects may be funded up to a maximum of €15,000. The funds are expected to cover research expenses but not normally salaries. The intent of this support is to help researchers develop external funding for projects, i.e. the expectation is that a pilot study will lead to a grant submission to national or international funding bodies.

The study should be of limited scope and have well defined objectives. Ordinarily, a pilot study should be completed within one year. Proposed projects should be consistent with the Instruct objectives of using an integrated approach to structural cell biology and accordingly **must include the use of at least two technology platforms in the Instruct access catalogue** to undertake the research proposed.

A short proposal is required for the initiation of a pilot study. Proposals are peer reviewed and funding decisions are taken by the Instruct Executive Committee. Comments on the proposal are made available to the applicant. Proposals should have the approval of a Principal Researcher at the applicant's Institution or Department.

At the conclusion of a pilot study and within one year of the project start, a researcher must submit a progress report to the Instruct Executive Committee. On the basis of this report a researcher may exceptionally seek to extend the pilot study. As before, the approval decision will rest with the Executive Committee.

R&D calls are published on the Instruct website.

### **Successful proposals to First Call for R&D pilot projects in 2014**

Lucia Banci, Italy.

Monserrat Barcena, The Netherlands.

François Bontems, France.

Afonso Duarte; Manuela Pereira and Frank Bernhard, **Portugal** and Germany.

Jose A. Marquez and Florent Cipriani, EMBL.

Marc Ruff and Arnaud Poterszman, France.

Musa Sani, Nicole van der Wel and Peter Peters, The Netherlands.



Holger Stark and Ashwin Chari, Germany.  
Jan Steyaert, Biace: Belgium  
Lukáš Trantírek and Vladimír Sklenář, Czech Republic.

**R&D Pilot Projects were awarded in the second call approved 2015**

Jose Carazo, Spain  
Lucio Frydman, Israel  
Jason Schnell, UK  
Bruno Almeida, Portugal.  
Anne Houdusse, France.  
Ondrej Vanek, Czech Republic.  
Natalie Elia, Israel  
Arnaud Poterszman and Joop Vanden Heuvel, France and Germany.

**R&D Pilot Projects were awarded in the third call approved 2016**

Margarida Archer, Portugal  
Martin Blackledge, France  
Enrico Ravera, Italy  
Remy Sounier, France  
Maria Sanchez Barrena, Spain  
Tanvir Shaikh, Czech Republic  
Josep Rayo, Belgium

**R&D Pilot Projects were awarded in the fourth call approved 2017**

Matthew Kraushar, Germany  
Sonia Longhi, France  
Yoni Haitim, Israel  
Axel Abelein, Sweden  
Jan Blaha, Czech Republic  
Senena Corbalan, Spain  
Anna Maria D'Ursi, Italy  
Hugo Fraga, Portugal  
Joseph Gault, UK

**R&D Pilot Projects awards in the fifth call in 2018 /2019**

Carlos Oscar Sanchez Sorzano, Spain  
Margarida Archer, Portugal  
Julia Shifman, Israel  
Arjen J. Jakobi, Netherland  
Sophie Zinn-Justin, France  
Mario Milani, Italy  
Gaetan Bellot, France  
Richard Berry, UK

**R&D Pilot Projects awards in the sixth call in 2020 /2021**

Elias Adriaenssens, Belgium  
Leonardo Almeida-Souza, Finland  
Mark Tully, France  
Moreno Lelli, Italy

Hugo van Ingen, Netherlands  
Hugo Oliveira, Portugal  
Nicola G. A. Abrescia, Spain  
Javier Garcia Nafria, Spain  
Steve Prince, UK  
Theo Karamanos, UK

#### **R&D Pilot Projects awards in the seventh call in 2022**

Olivier Duss, EMBL, Germany  
Angelita Simonetti, France  
Michael Assfalg, Italy  
Bram Koster, Netherlands  
Carla Cruz, Portugal  
Peter Harrison, UK

#### **R&D Applications per country**

- Belgium: 7
- Czech Republic: 16
- France: 46
- Germany: 15
- Italy: 45
- Israel: 17
- Netherlands: 16
- Portugal: 51
- Spain: 24
- Sweden: 4
- UK: 27
- Finland: 7
- EMBL: 2
- Lithuania: 3

We provide information regarding how Instruct funds research at <https://instruct-eric.eu/rd-pilot-project-awards>

#### **Horizon 2020**

Work has continued in all projects of which Instruct is a partner or coordinator during the pandemic.

Instruct has successfully applied as a partner on 12 H2020 and HE projects of which 10 are active or in the process to start operations:

- **Transvac2:** Transvac2 European Vaccine Research and Development Infrastructure, addressing the call INFRAIA-2016-2017.
- **ERIC Forum:** The ERIC Forum initiative aims to identify common challenges experienced by ERICs and to respond to these challenges and to share best practice. The forum also works collectively to develop visibility, impact and sustainability of ERICs.

Following the success of early ERIC forum face-to-face meetings, the initiative has been supported by a new Horizon 2020 grant commencing in January 2019.

- **EOSC-Life:** Providing a collaborative space for digital biology in Europe. EOSC-Life brings together a consortium of 46 partners from the 13 ESFRI Biomedical Science Research Infrastructures. EOSC-Life will provide access and integration through the European Open Science Cloud for life-science data for analysis and reuse in research providing. Instruct is represented in this project by three partners, Instruct-ERIC, CSIC, and CIRMMMP and is involved in the co-leadership of three work packages 2, 3, and 5.

- **iNEXT-Discovery.** iNEXT discovery has been funded by the European Commission within the **INFRAIA** Horizon 2020 call. iNEXT discovery brings together a strong network of leading structural biology facilities including facilities in many Instruct Centres. The project will run for 4 years using the Instruct developed ARIA for their proposal system. One of the core aims of iNEXT discovery is to bring the benefits of structural biological technology and expertise to scientists from new scientific communities, building on the achievements of the CORBEL and iNEXT transnational access projects. This will be done through interactions with industry and other ESFRI RIs METROFOOD, EU-OPENSREEN, EATRIS and Euro-BiImaging who are also members of the iNEXT discovery consortium.

- **EU-LAC ResInfra:** will identify a number of CELAC RIs that may be considered eligible for the construction of a bi-regional collaboration. This will be carried out through the definition of minimal key requirements these RIs would need to develop in the coming years.

- **TRANSVAC-DS:** Through the TRANSVAC infrastructure, state-of-the-art scientific-technical services, technical training, and innovative research and development are currently providing very significant support to European vaccine researchers and developers.

TRANSVAC-DS builds on the outstanding success and lessons learned from TRANSVAC and during the two-year project duration will further explore and prepare the establishment of a stable and truly sustainable European vaccine infrastructure. The main objective and output of TRANSVAC-DS is the preparation of a conceptual design report that will describe in detail the maturity of the vaccine infrastructure concept and be the basis for the establishment of a permanent and sustainable vaccine infrastructure of direct relevance to and benefit for Europe and further afield. As part of the design report, a five-year business plan will be delivered together with an implementation plan that will guide the further establishment of a sustainable European vaccine infrastructure.

- **ISIDORE:** supports scientists and their research on epidemic- and pandemic-prone pathogens, the development of medical countermeasures, with the aim of increasing resilience in the face of epidemics in Europe and globally.

- **BY-COVID:** The BeYond-COVID project aims to make COVID-19 data accessible to scientists in laboratories but also to anyone who can use it, such as medical staff in hospitals or government officials. Going beyond SARS-CoV-2

data, the project will provide a framework for making data from other infectious diseases open and accessible to everyone.

- **eRImote:** The eRImote project is the first to consider solutions for digital and remote service provision across RI domains and to look for transferable practices and new developments that will improve accessibility and resilience of RI infrastructures. While existing processes will be collected, eRImote will also explore new solutions using defined use cases to develop and test their implementation in RI scenarios. This will take us beyond the state-of-the-art for concrete solutions. The eRImote consortium is relatively small with eight beneficiary participants representing four main ESFRI RI Roadmap domains. However, the consortium extends much more broadly through the existing contacts and networking partners of each of the project participants, increasing the reach out to hundreds of individuals, other European and global RIs, scientific networks, RI users, industry partners and policy makers. eRImote is intended for 30 months to enable timely interventions. The project is outlined relatively straightforward by four main activities. eRImote will create an online information platform with a publicly available data store on best practices and tools based on a landscape analysis, also with needs and impact. This will be translated into strategies on transition and use cases (Green Paper). All this is based on broad outreach and extensive dissemination beyond the consortium. The eRImote consortium will identify strategies and solutions to enable transition to remote and digital access to RI services that will help to enhance and make more accessible the service capacities of RIs while reducing the need for physical access to RI sites, bringing benefits to the green economy, reducing the footprint of RIs and increasing their inclusiveness as a result.

- **AI4Life:** Machine learning (ML) has enabled and accelerated frontier research in the life sciences, but democratised access to such methods is, unfortunately, not a given. Access to necessary hardware and software, knowledge and training, is limited, while methods are typically insufficiently documented and hard to find. Furthermore, even though modern AI-based methods typically generalize well to unseen data, no standard exists to enable sharing and fine-tuning of pretrained models between different analysis tools. Existing user-facing platforms operate entirely independently from each other, often failing to comply with FAIR data and Open Science standards. The field of AI and ML is developing at a staggering pace, making it impossible for the non-specialist to stay up to date. To enable the life science communities to benefit from AI/ML-powered image analysis methods, AI4LIFE will build bridges, providing urgently needed services on the common European research infrastructures. We will build an open, accessible, community-driven repository of FAIR pre-trained AI models and develop services to deliver these models to life scientists, including those without substantial computational expertise. Our direct support and ample training activities will prepare life scientists for responsible use of AI methods, while contributor services and open standards

will drive community contributions of new models and interoperability between analysis tools. Open calls and public challenges will provide state-of-the-art solutions to yet unsolved image analysis problems in the life sciences. Our consortium brings together AI/ML researchers, developers of popular open source image analysis tools, providers of European-scale storage and compute services and European life sciences Research Infrastructures -- all united behind the common goal to enable life scientists to fully benefit from the untapped but potentially tremendous power of AI-based analysis methods.

**Jobs**

Many partners have already used the facility to advertise their jobs opening through Instruct (<https://instruct-eric.eu/jobs>). In the future we are planning to include both the opportunity of advertise a job opening and also to upload your C.V.

**Engagement**

A subgroup of the Executive Committee has been established to work on the engagement with Industry.

We engage with the Structural Biology community in Europe through our website, with an extensive mailing list and Twitter @instructhub.