instruct ERIC

The European Research Infrastructure Consortium for structural biology research

- Research visits
- Training
- Internships
- R&D funding

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What is Structural Biology?

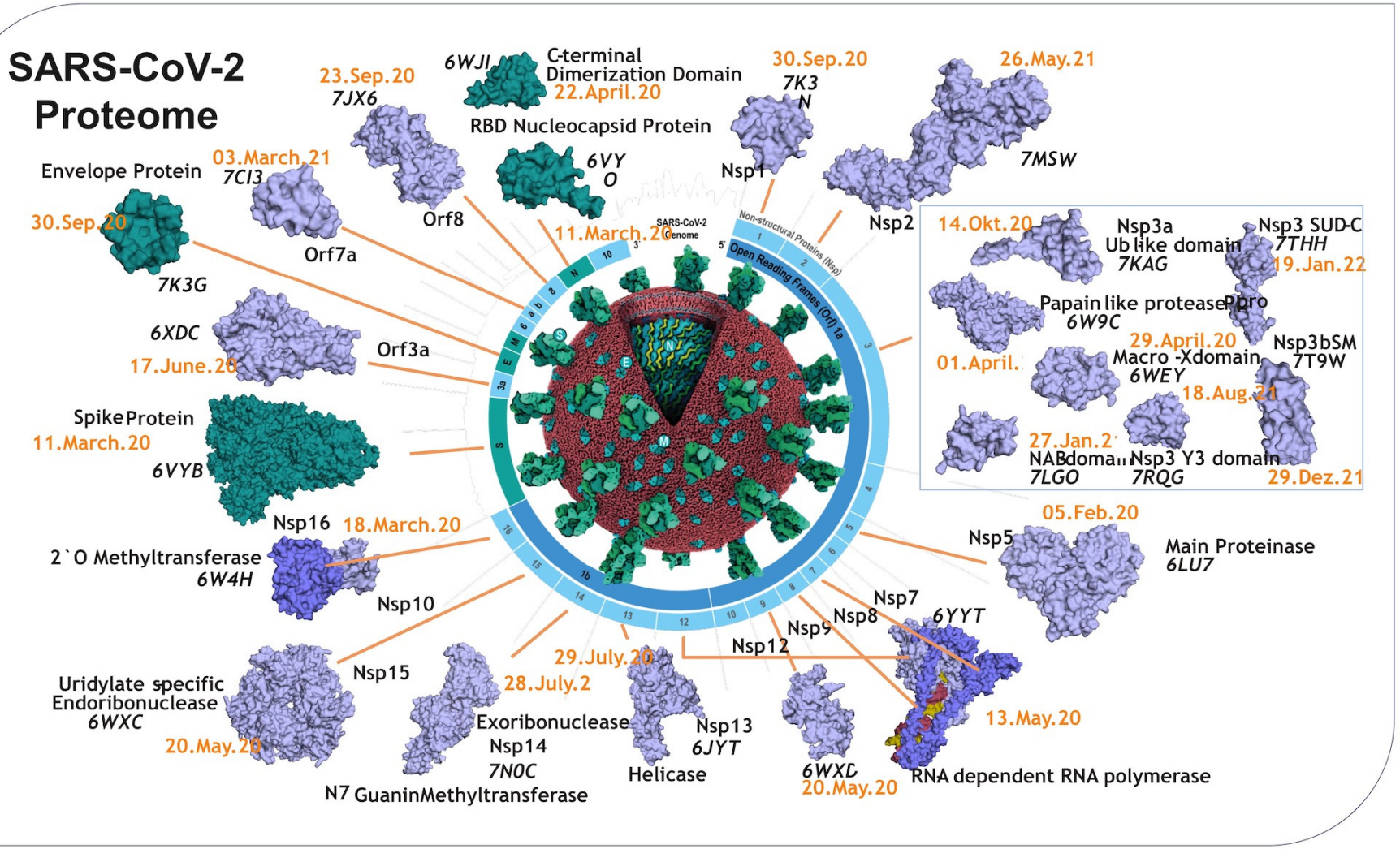
The study of the building blocks of life: cells, proteins and nucleic acids and their context to each other

Structural Biology aims to understand more about the normal processes in our body, our health and wellbeing, and what happens during disease or illness.

It is central to the development of essential pharmaceuticals and vaccines – invaluable in the fight against COVID-19.

Advances in protein production, imaging, and microscopy have led to significant developments in the ever-changing field of structural biology.

Specialist equipment, technology and laboratories are required for cutting-edge research.

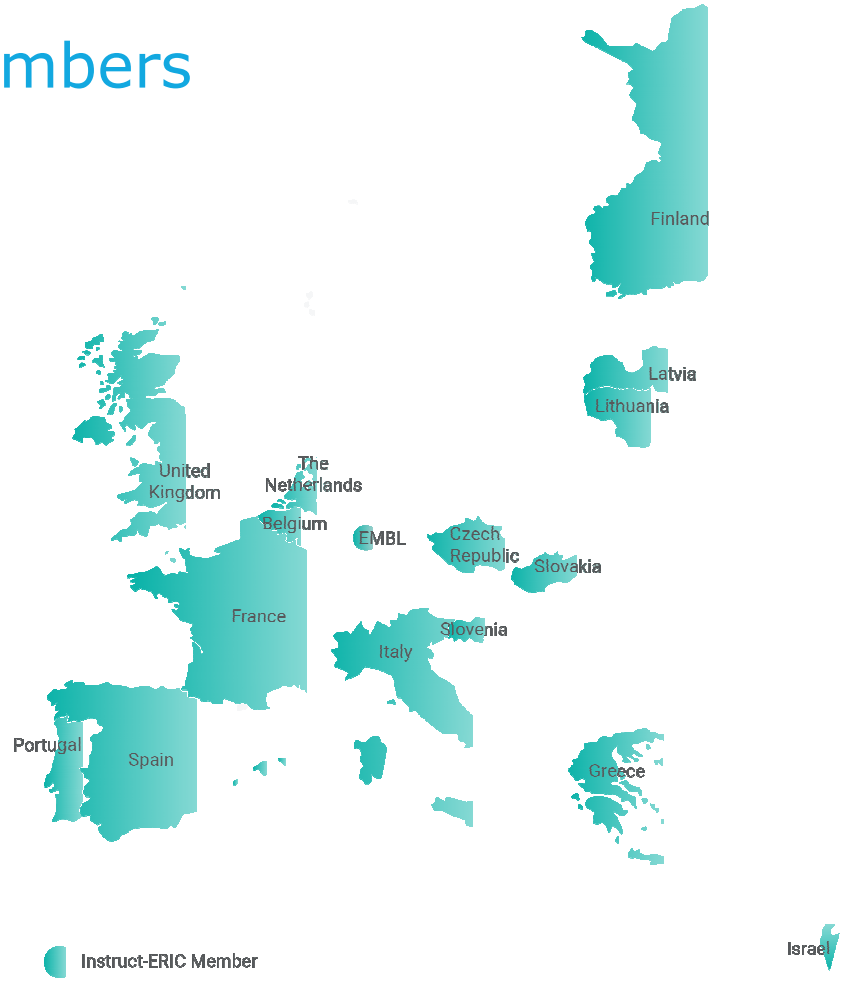

SARS-CoV-2 Proteome
6WJI
C-terminal Dimerization Domain
22.April.20
23.Sep.20
7JX6
RBD Nucleocapsid Protein
6VY O
30.Sep.20
7K3 N
Nsp1
26.May.21
7MSW
Nsp2
03.March.21
7CI3
Envelope Protein
30.Sep.20
7K3G
Orf7a
Orf8
11.March.20
SARS-CoV-2 Genome
Non-structural Proteins (Nsp)
Open Reading Frames (Orf) 1a
14.Okt.20
Nsp3a
Ub like domain
7KAG
Nsp3 SUD-C
7THH
19.Jan.22
Papain like protease PLpro
6W9C
29.April.20
Macro -Xdomain
6WEY
Nsp3bSM
7T9W
01.April.
18.Aug.21
27.Jan.2
NAB domain
7LGO
Nsp3 Y3 domain
7RQG
29.Dez.21
6XDC
17.June.20
Orf3a
Spike Protein
11.March.20
6VYB
05.Feb.20
Nsp5
Main Proteinase
6LU7
Nsp16
18.March.20
2`O Methyltransferase
6W4H
Nsp10
Nsp7
Nsp8
6YYT
Nsp9
Nsp12
29.July.20
Nsp15
Uridylate specific Endoribonuclease
6WXC
20.May.20
28.July.2
Exoribonuclease
Nsp14
7N0C
N7 GuaninMethyltransferase
Nsp13
6JYT
Helicase
6WXD
20.May.20
13.May.20
RNA dependent RNA polymerase

What is Instruct-ERIC? Members

Instruct-ERIC is the single point of access to technology and expertise for structural biology research.

Instruct has 16 Members that each pay an annual subscription to allow their scientists to access the range of services that are available through Instruct.

Belgium
Czech Republic
EMBL
Finland
France
Greece
Israel
Italy
Latvia
Lithuania
Netherlands
Portugal
Slovakia
Slovenia
Spain
UK



Research Visits

More than

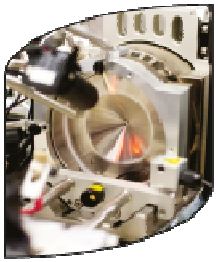
75

Instruct services

Instruct's extensive service catalogue encourages a **multidisciplinary approach** to structural biology research.

Sample Preparation

- Crystallisation
- Nanobody Discovery
- Protein Production



Biomolecular Analysis

- Imaging
- Mass Spectrometry
- Molecular Biophysics

3D Structural Analysis

- Electron Microscopy
- Magnetic Resonance
- X-ray Techniques

International Collaboration Projects

Instruct has been part of several European projects, designed to improve international collaborations cross regions.

Several international symposia, communications tools and pilot projects were organized by the **RI-VIS** project, increasing visibility for research infrastructures.

EU-LAC ResInfra aimed to connect Europe and Latin America. Access calls, staff exchanges, and landscape analysis reports were organized by Instruct as part of the project.

The **eRImote** project explores remote access provision worldwide, working with international partners.

Upcoming projects RI-Hubs, EU-LAC ResInfra Plus, and ERIC Forum 2 all have specific goals to enhance international collaboration further.

INFRA-TECH-01 project on Fragment-based drug discovery through structural biology, medicinal chemistry, and artificial intelligence.

RI-VIS

Fragment Screen

ResInfra EU-LAC

eRImote

ERIC FORUM

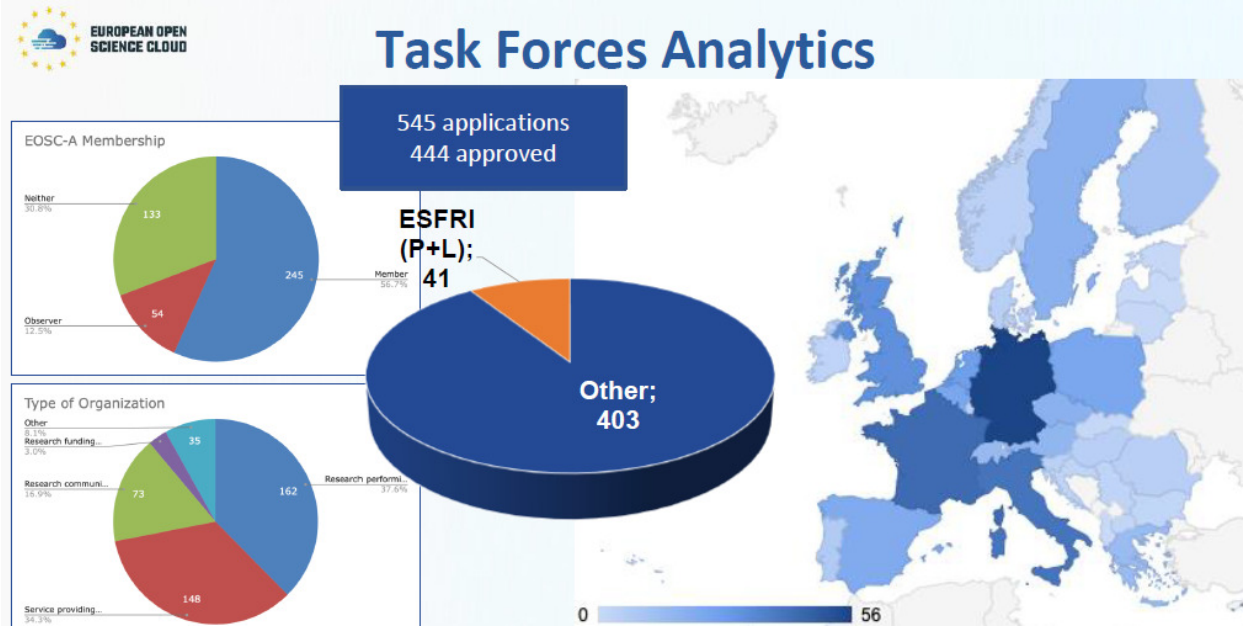
EOSC: Instruct and EOSC Membership

- Instruct applied to become EOSC Member at the first opening in December 2020, after discussion and decission at Council

- Instruct is accepted as Member since 2022.

EOSC: Initial Task Forces

- EOSC Task Forces as key “Operatives” working as Advisory Groups



From EOSC Secretary General January 2022 presentation

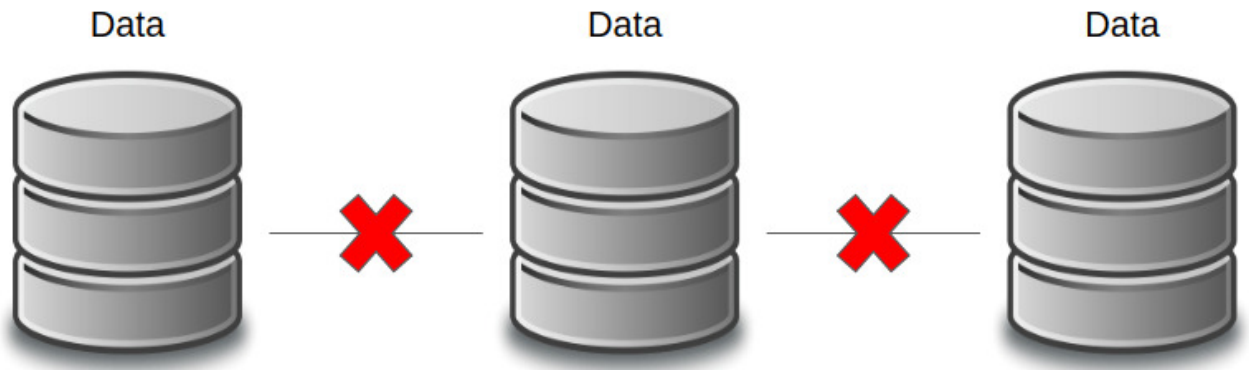
EOSC: Instruct and Task Forces

- Instruct participation in EOSC Task Forces was coordinated from DMCC. The “Instruct EOSC Forum” was then created, including participants in Task Forces. A total of 9 Instruct or Instruct-related personnel are in EOSC Task Forces

EOSC association Task Forces	Instruct participation	Instruct participation
Advisory Group - Implementation of EOSC		
TF PID Policy and Implementation		
TF Researcher Engagement and Adoption	Claudia Alen Amaro	Alexandre Bonvin
TF Rules of Participation Compliance Monitoring		
Advisory Group - Technical Challenges on EOSC		
TF AAI Architecture	Marcus Povey	
TF Infrastructure for Quality Research Software	Laura Del Cano	
TF Technical Interoperability of Data and Services	Irene Sanchez	
Advisory Group - Metadata and Data Quality		
TF FAIR Metrics and Data Quality		
TF Semantic Interoperability		
Advisory Group - Research Careers and Curricula		
TF Data Stewardship Curricula and Career Paths		
TF Research Careers, Recognition, and Credit	Pauline Audergon	
TF Upskilling Countries to Engage in EOSC		
Advisory Group - Sustaining EOSC		
TF Defining Funding Models for EOSC	Natalie Haley	
TF Long-Term Data Preservation	Jiri Novacek	

Instruct role in EOSC

Taking the data out of their facility silos

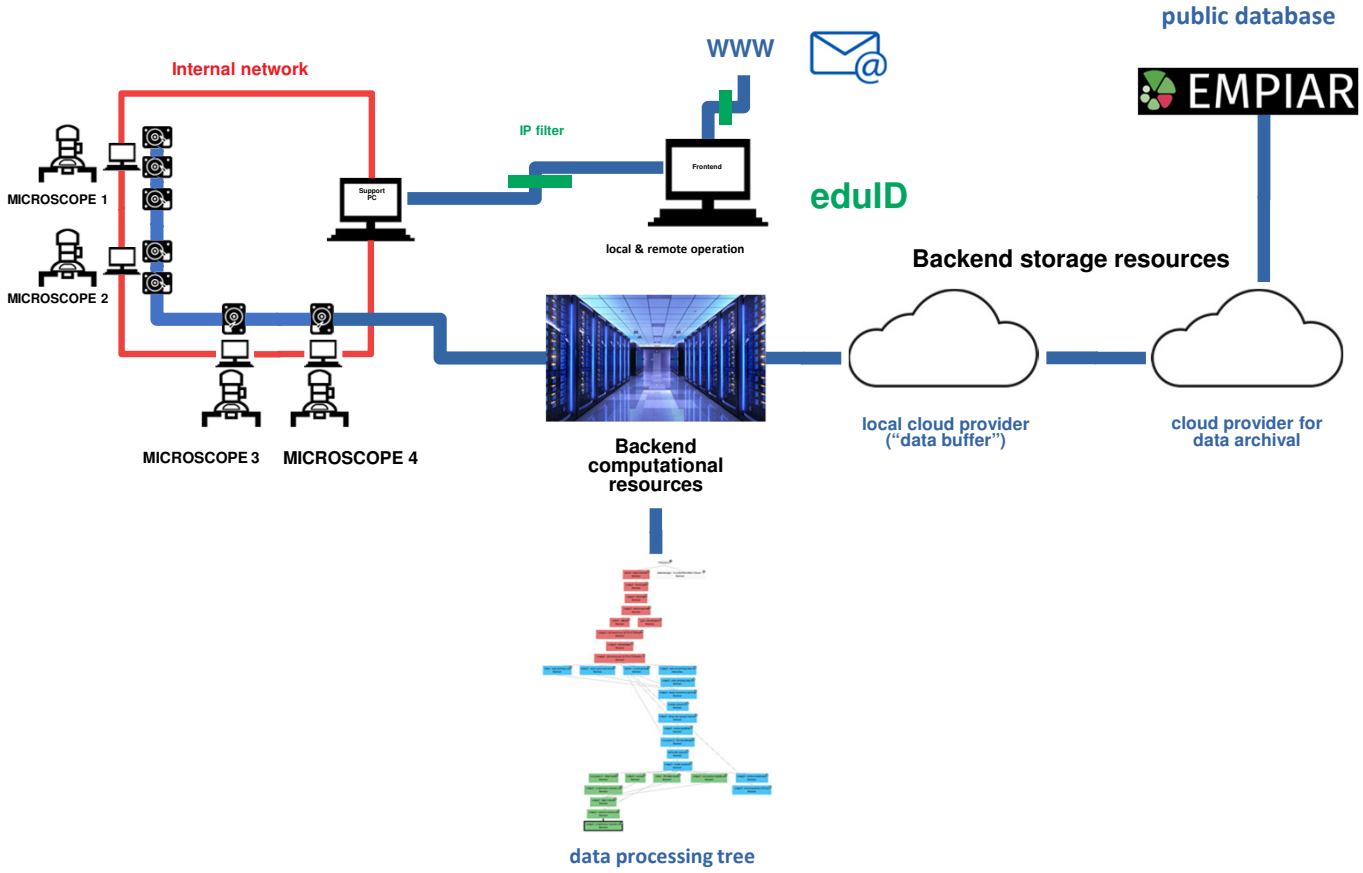


I^{2}PC EOSC Tasks

- **CryoEM data repositories -** Develop pipeline for automated annotation and archival of the raw CryoEM data

- **CryoEM workflow FAIRness** - Exporting the image processing workflow in Common Workflow Language, using a CryoEM ontology and depositing workflows in WorkflowHub

I²PC EOSC Tasks



I²PC EOSC Tasks

WorkflowHub

Get inspired by a Scipion template available at WorkflowHub (previously submitted by another user through the Scipion WorkflowHub plugin)

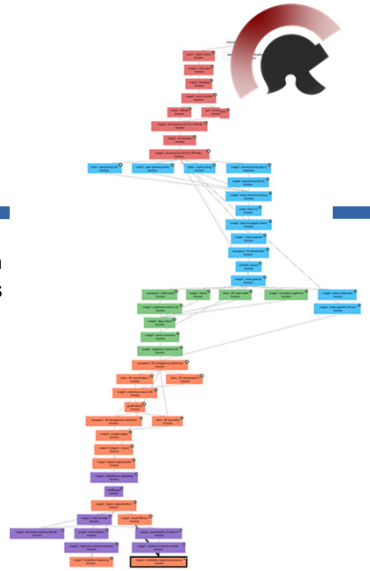
RUCIO

iRODS

ONEDATA

cloud provider for data archival

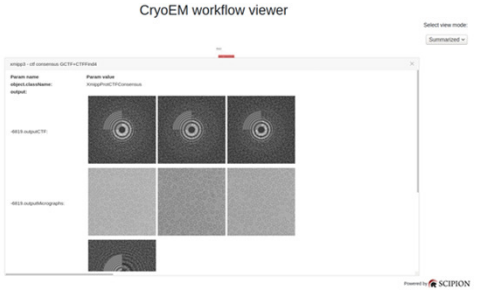
External user retrieves raw data through Scipion Onedata plugin and continues processing



Submits to EMPIAR through Scipion EMPIAR plugin providing the WorkflowHub entry link or DOI

EMPIAR

public database



Workflow data viewer enriched with thumbnails

Conclusions

- For a European RI generating strategic (and large) scientific data such as Instruct, to be part of EOSC is the most obvious way to be in full Horizon Europe context
- Instruct is undertaking specific EOSC tasks to make data and workflows FAIR and accesible for other RIs

For more information about funded research opportunities, visit the Instruct-ERIC website.

instruct-eric.org

To stay informed of the latest opportunities and open calls from Instruct, register for an ARIA account at:

instruct-eric.org/register