Call for a STEM professional to work on AI and structural biology.

The three-dimensional (3D) structure dictates its function and can facilitate mechanistic understanding of biological processes. The recent advances in Artificial Intelligence (AI)-based methods, such as AlphaFold and RoseTTaFold, provide high-quality structure models for biomacromolecules (proteins and nucleic acids) and their complexes small molecule ligands and have transformed basic and translational life science research. The predicted models offer deeper insights into the functional sites and interaction surfaces underpinning their biological roles.

Elofsson and Velankar teams are interested in exploring some of the computational challenges in employing AI-based methods for predicting large biomacromolecular complexes and generate a set of high-quality structure models. This will be achieved by refining the strategies for predicting larger biomacromolecular complexes (more than two subunits) and cataloguing the biomacromolecular interactions in the human proteome. To make the structural data accessible and valuable in driving life science research, we are interested in exploiting knowledge graphs (KG) techniques to enrich the data with structural and functional annotations. The KG will allow reasoning over the annotations and knowledge transfer across related proteins by providing a structured representation of known annotations through nodes and edges.

The method developed within this ARISE2 project will be tested with data and biological questions arising at the EMBL and SciLifeLab cryo-EM and integrative structural biology facilities and will be useful for a large community of researchers in structural biology.

ARISE2 (https://www.embl.org/training/arise2/)

ARISE2 targets technology and method development experts with STEM backgrounds interested in using their expertise to advance research in the life sciences.

To address urgent challenges to human and planetary health, new technologies and services are needed in the Life Sciences. ARISE2 is designed to meet this need by training fellows in the development of technologies and methods for the improvement of scientific services while also preparing them for careers in research infrastructures (RI) to make these advances available to the scientific community, accelerating progress.

ARISE2 is an MSCA-funded postdoctoral fellowship programme offering talented STEM (science, technology, engineering and mathematics) fellows from around the world the unique

opportunity to work on the development and/or improvement of technologies for Life Science Research while developing the expertise needed for a career in research infrastructures making them sought after experts both in academia and industry.

Location of this position

This position is primarily located at EMBL-EBI, Cambridge, UK, but extensive time will also be allocated to working with the researchers at the Science for Life Laboratory, Stockholm, Sweden. The fellow will visit the Science for Life Laboratory, Stockholm, Sweden. The position is for three years.

Application

Please send a two-page CV and a two-page project proposal within the area outlined above to Sameer Velankar <sameer@ebi.ac.uk> by Nov 5, 2024. The two-page proposal should cover the following areas -

- Background, proposed project
- Expected results & their impact
- Service to be offered
- Consideration of FAIR principals

This is a pre-proposal. In the second step, we will select one candidate by November 12 at the latest, and together with the candidate, we will submit a full proposal by the deadline for the ARISE2 call on November 25.

Contacts:

More information about the ARISE2 program can be found at https://www.embl.org/training/arise2/

- For this application
    - Marta Carroni <marta.carroni@scilifelab.se>
    - Sameer Velankar <sameer@ebi.ac.uk>
    - Arne Elofsson <arne@bioinfo.se>
- For questions about the ARISE2 program
    - arise2@embl.org

ARISE2

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EMBL

Start your career in scientific services and research infrastructures

CALL FOR TECHNOLOGY AND METHOD DEVELOPERS to join ARISE2 – our Career Accelerator for future research infrastructure scientists

Call closing 25 November 2024

We are looking for STEM professionals who wish to join EMBL for three years to

- work on development of novel methods and technologies that can be offered as a service to external researchers.
- learn how to run service-providing infrastructures (core facilities, data services, big infrastructures).

As an ARISE2 fellow you will:

- Learn from the best service provision experts.
- Attend a unique training programme.
- Open up new career possibilities for yourself.
- Enjoy research while exploring the world of scientific services.
- Work at EMBL, which offers excellent working conditions and hosts a creative and international research community.

Visit: **embl.org/arise** or contact: **arise2@embl.org**

Engineering | Robotics | Automation | Imaging & Image analysis | Microfluidics | AI and machine learning | Data management | Software development
Data Sciences | Genome biology | Cell and tissue biology | Structural biology | Developmental biology | Planetary biology | Translational research | Drug design

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