



Career Accelerator for Research Infrastructure Scientists

Guide for Applicants

July 2023

embl.org/arise

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ARISE Contacts	5
List of Abbreviations	6
What is Arise?	7
What are research infrastructures and which skills do leaders and senior staff of RI need?	7
Figure 1 – ARISE in a nutshell	8
About EMBL	9
Figure 2 – EMBL sites	9
Figure 3 – EMBL’s mission (2021 statistics)	10
ARISE and MSCA	11
ARISE will provide	11
ARISE calls for FELLOWS - INDICATIVE timeline	11
Figure 4 – ARISE Programme indicative timeline	11
Technology Development and Training	12
Learning to Provide Service and Manage Service Providing Research Infrastructures	13
Figure 5 – Indicative timeline of an ARISE Fellowship	13
Table 1 - List of Professional skills training topics that will be covered during ARISE training	14
RI Management	14
Service Provision	15
Tech Transfer and Entrepreneurship	15
Science Policy	16
Project Management	16
Transferable Skills	18
Table 2 - List of transferable skills training and suggested training providers	18
RI Management	18
Communication Activities	19
Secondments	19
Table 3 – Secondments for ARISE Fellows	19
At Partner Organisations (one must be intersectoral)	19
At EMBL	20
Career Support	21
Selection of Fellows	23
Eligibility Of The Applicants	23
Formal Eligibility Criteria	23
Academic Eligibility Criteria	23
Evaluation Procedure for the Selection of Fellows	24

Description of the selection process	24
Evaluation criteria	27
Scoring system	27
Indicative Timeline for the Fourth Call for Fellows	28
Employment as an Arise Fellow	29
Table 4 – Salary of the ARISE Fellows	29
Partner Organisations	30
Equality, Diversity and Inclusion	32
ANNEX 1 – HOW TO APPLY	33
Resources available online (downloadable from ARISE website):	33
Tips & Tricks:	33
Annex 2 – Arise Call 4: List of GTLs	34
Bateman Alex	34
Clement Blanchet	34
Kristina Djinovic Carugo	35
Elizabeth Duke	35
Sarah Dyer	36
Jan Ellenberg	36
Robert Finn	37
Cornelius Gross	37
Peter Harrison	38
Matthew Hartley	38
Henning Hermjakob	39
Jan Korbel	39
Anna Kreshuk	40
José Márquez	40
Maria-Jesus Martin	41
Simone Mattei	42
Andrew McCarthy	42
Christoph Müller	43
Gergely Papp	43
Rainer Pepperkok	44
Thomas Quail	44
Santiago Rompani	45
Sinem K. Saka	45
Ugis Sarkans	46
Thomas R. Schneider	46
Yannick Schwab	47
Oliver Stegle	47
Alejandro Torres-Sanchez	48

Juan Antonio Vizcaino	48
Matthias Wilmanns	49
Andrew Yates	50
Michael Zimmermann	50
Timo Zimmermann	51
Robert Prevedel	52
Sameer Velankar	52

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List of Abbreviations

AC: Advisory Committee

EB: Evaluation Board

EC: European Commission

EDI: Equality Diversity & Inclusion

EMBL: European Molecular Biology Laboratory

ExC: Executive Committee

GTLs: Group and Team Leaders

MGMT: Management

PCDP: Personal Career Development Plan

PD: Programme Director

PM: Programme Manager

RIs: Research Infrastructures

STEM: Science, Technology, Engineering, Mathematics

StratComm: Strategy & Communication

What is Arise?

ARISE is the fellowships programme that will train and develop Europe's next generation of senior scientists and leaders for research infrastructures in the life sciences.

The overarching research theme of ARISE is technology development in life sciences, with emphasis on provision of the technology as a service to other researchers.

What are research infrastructures and which skills do leaders and senior staff of RI need?

Research infrastructures are core facilities, large instrumentation, data resources and other related services that are used by the broad scientific community to conduct research. They are the places that provide access to the latest techniques and expertise to use these techniques.

Classic examples of research infrastructures are core facilities located at research institutes (e.g. EMBL core facilities), which host advanced instruments and provide access to both internal and external researchers; major scientific facilities (e.g. synchrotrons) that exist in only small numbers around the world; data infrastructures promoting data sharing and use (e.g. collections, archives of scientific data, computing systems, and communication networks), and large pan-European research infrastructures that bring together services provided by smaller research infrastructures distributed across Europe (e.g. ESFRI research infrastructures like Euro-BioImaging, ELIXIR, Instruct, or EMBRC).

Maintaining and improving these infrastructures requires interdisciplinary skills – spanning science, engineering, service provision and management – that are not usually provided by traditional training programmes in academia or industry.



“During the last years we noticed an increasing need to train more engineers, physicists and other technology experts to become research infrastructure scientists,” says Rainer Pepperkok, Director of Scientific Core Facilities and Scientific Services. “Yet worldwide, to our best knowledge, there was no training programme to address it, with few specialists being trained at the interface of academia and industry.”

To address this problem, EMBL and Marie Skłodowska-Curie Programme established a unique new training programme for future research infrastructure scientists – ARISE – Career Accelerator for Research Infrastructure Scientists.

We are offering **62 Fellowships** to STEM professionals who wish to join EMBL for three years to

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

Following ARISE, our Fellows will be competent to take leading positions in service providing infrastructures across industry, healthcare, academia, and other sectors.

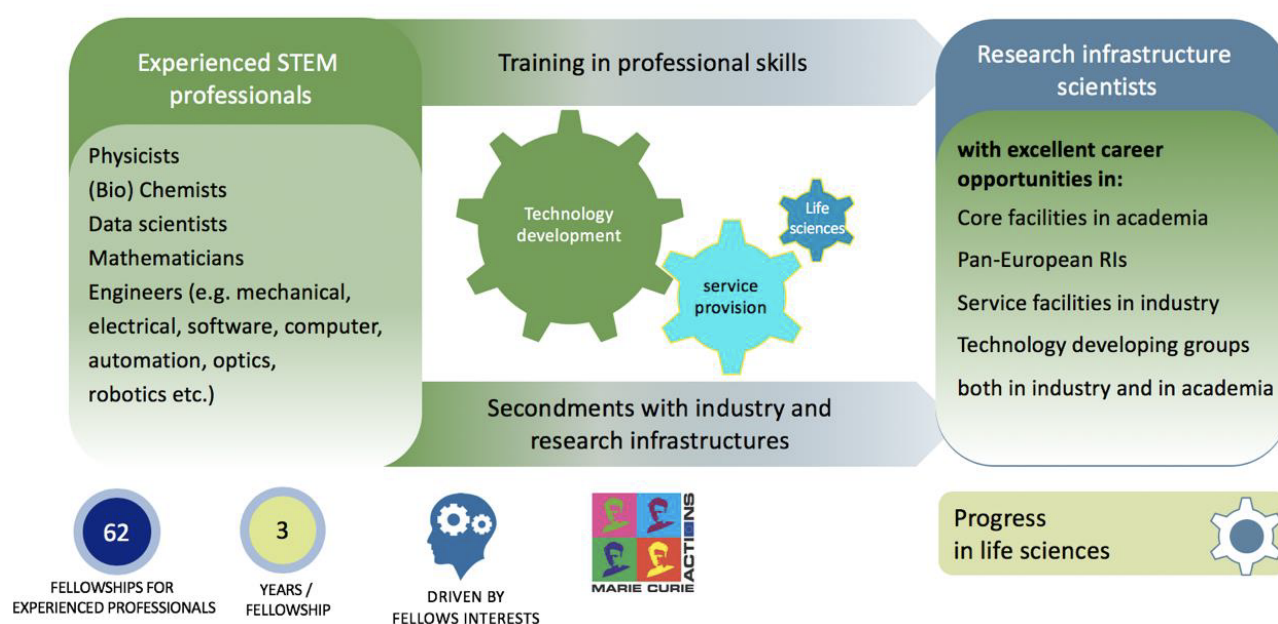


Figure 1 – ARISE in a nutshell

About EMBL

The European Molecular Biology Laboratory (EMBL) is an intergovernmental research organisation and centre of excellence for life sciences in Europe. EMBL's 1800+ staff members originate from over 80 countries; 43% are active researchers. EMBL's 6 sites located in 5 countries focus on molecular, cellular, computational, developmental and structural biology (Heidelberg), structural biology (Grenoble, Hamburg), epigenetics and neurobiology (Rome), tissue biology and disease modelling (Barcelona), and bioinformatics (Cambridge). Research at EMBL is supported by excellent core facilities, bioinformatics and structural biology services, training for scientists at all career stages and the EMBL course and conference programme.



Figure 2 – EMBL sites

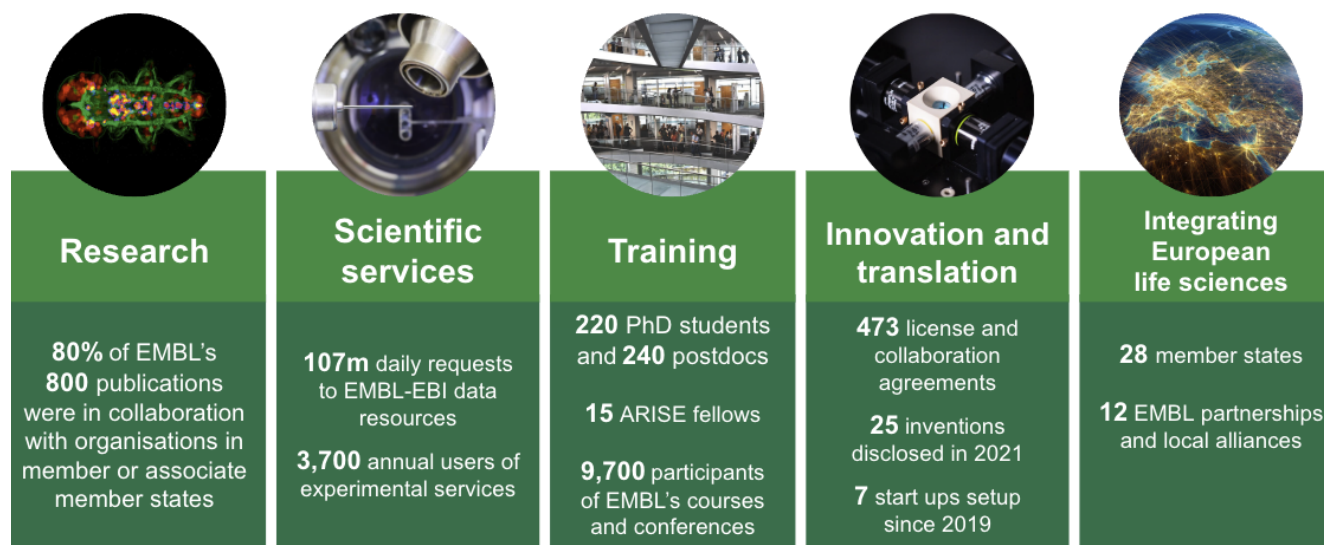


Figure 3 – EMBL's mission (2021 statistics)

Technology development, particularly with the purpose to enrich service provision, is currently the main strategic focus of EMBL, where research groups are developing technologies in imaging, chemical biology, computational modelling, microfluidics, robotics, X-ray optics, high precision mechanics, data acquisition, automation, omics technologies, bioinformatics and software development and integrated structural biology.

Around every third EMBL scientist is an inventor - EMBL researchers make ca. 50 invention disclosures per year. In the last 20 years, EMBL researchers made 1060 invention disclosures, created 20-start-ups and generated 100 mil EUR income.

ARISE and MSCA

The ARISE Fellowship Programme is a Marie Skłodowska-Curie COFUND action (MSCA) led by EMBL. Candidates awarded an ARISE fellowship will be part of the prestigious group of MSCA fellows.

The MSCA, and through it the ARISE Programme, aims to provide the successful candidates with the necessary skills and international experience for a successful career, either in the public or the private sector.

ARISE will provide

An excellent research environment for development of cutting-edge technologies needed to speed up developments in life sciences.

Unique professional training opportunities to learn skills specifically required by the leaders of the service providing facilities in research infrastructures

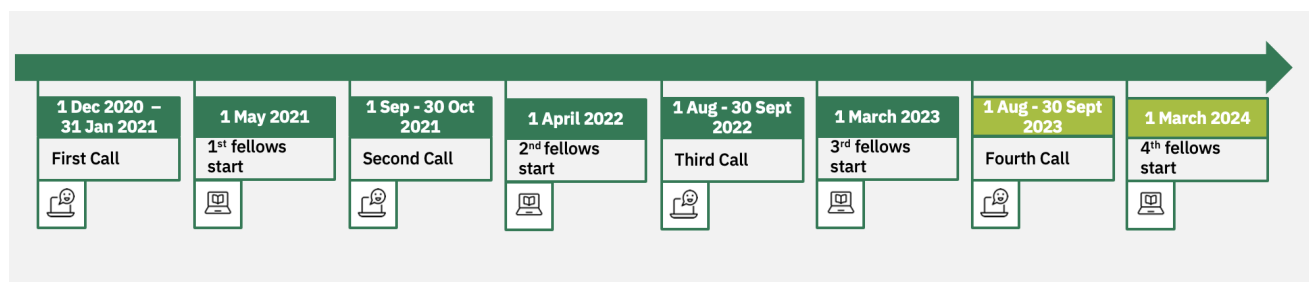
Placements in the technology developing industry or academic organisations that provide service to other researchers through modern research infrastructures.

Excellent training in transferable skills, networking opportunities and close supervision and mentoring.

ARISE calls for FELLOWS - INDICATIVE timeline

Each fellowship will be funded for a period of 36 months.

The figure below shows the indicative timeline of ARISE calls for fellows (deviations to the timeline might occur).



Icons made by Freepik from www.flaticon.com

Figure 4 – ARISE Programme indicative timeline

Technology Development and Training

It is expected from the Fellow to dedicate 100% of their time to the Fellowship. Their work related to the Fellowship time should include following elements¹:

Technology development work on the technology development project of their own choice (most of their time (ca. 60-70%) should be dedicated to this activity).

Service provision (ca. 20-30% of their time):

Fellows are expected to provide their novel technology as a service to other scientists. Providing service to their own technology will serve two functions:

- Allowing Fellow to improve their technology based on the feedback and experience of the other scientists using the technology
- Getting training in service provision

Organisation of service provision should be in any case adjusted to the specificities of the technology that the Fellow is developing.

For example, it is probable that the Fellows will start providing service to their novel technology first to EMBL colleagues, to learn how the technology can be improved. Once the technology gets more mature, they will probably start offering it to external scientists as well.

Fellows can occasionally take part in additional service provision in the group, in order to get further training in providing services.

Communication and interaction with life scientists at EMBL – considering that most of the fellows will come from other disciplines (not life sciences), close interactions and integration in the life science community will represent an important training aspect that will allow Fellows to learn about current needs, model systems and interests of life scientists and consider them while developing novel technology.

Participation in all mandatory and elective **training activities**.

Interaction with other ARISE fellows.

Participation in ARISE communication activities.

1. % for distribution of activities is indicative, and based on the recommendations and experiences in other COFUNDs.

Learning to Provide Service and Manage Service Providing Research Infrastructures

Future RI Scientists need to learn how to operate and manage RIs, how to incorporate and stimulate technical innovation and entrepreneurship and how to operate in different sectors, disciplines or set-ups.

Fellows will learn these professional skills during **different types of courses** (physical courses (mostly provided during the ARISE school, some distributed throughout the fellowship time), expert webinars (online courses), **use case webinars** (interactive discussions with experts) and **secondments**: during **mini secondments** at partner organisations and **intra-disciplinary secondments within EMBL**, Fellows will shadow experienced RI managers and learn different ways to organise operations in RIs and provide access to technology to a wide variety of users.

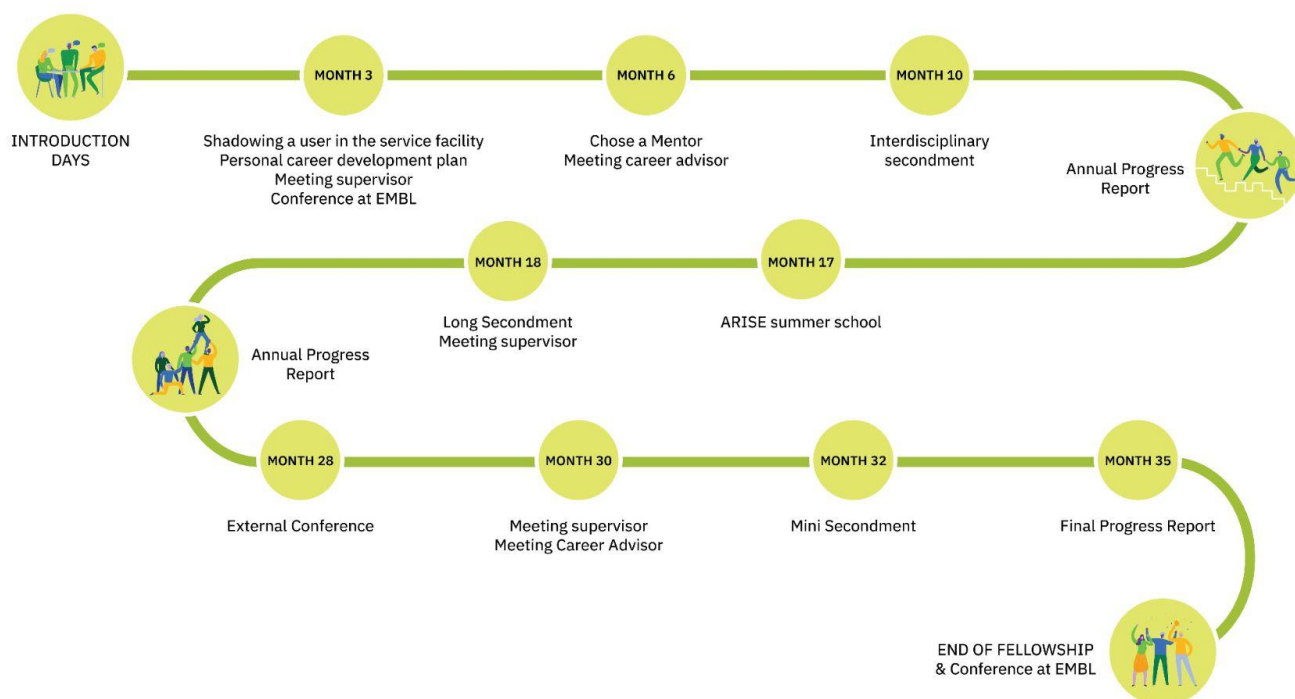


Figure 5 – Indicative timeline of an ARISE Fellowship

Table 1 - List of Professional skills training topics that will be covered during ARISE training

RI Management			
Topic and Title	Suggested Trainer or EMBL Department	Mandatory/ Elective	Suggested Format
Operations Mgmt, Designing, Controlling and Redesigning Services	Arise GTLs	Mandatory	Use Cases
Budgeting	Finance Department	Mandatory	Course/ Expert Webinar
Reporting	Stratcom	Mandatory	Expert Webinar
Health And Safety	Health And Safety	Mandatory	Expert Webinar
Instrument Procurement	Evelyn Cudraz, EMBL Head Of Purchase	Mandatory	Expert Webinar
Costing Up Staff And Compute Requirements	Embl-Ebi, Sarah Butcher	Mandatory	ARISE Summer School
Costing Up (New) Services	Arise GTLs	Mandatory	ARISE Summer School
Tracking Multiple Projects	Embl-Ebi, David Hulcoop	Mandatory	ARISE Summer School
Quality Control	Arise GTLs/Rltrain	Mandatory	Expert Webinar

Service Provision

Topic and Title	Suggested Trainer or EMBL Department	Mandatory / Elective	Suggested Format
The service design process - uncovering hidden complexity	Arise GTLs	Mandatory	ARISE Summer School
Define technologies needed for service provision	Arise GTLs/ Euro-BioImaging	Mandatory	ARISE Summer School
Position facility in organisation strategically	Arise GTLs	Elective	Use Cases
Long term planning and sustainability	Arise GTLs/ Core for Life	Mandatory	Use Cases
Marketing and visibility, social media	Stratcomm	Mandatory	ARISE Summer School
Impact assessment	Cath Brooksbank	Mandatory	ARISE Summer School
Establishing and managing a team of volunteers	Bio-IT	Elective	Expert Webinar
Keeping the facility cutting edge	Arise GTLs	Mandatory	Use Cases

Tech Transfer and Entrepreneurship

Topic and Title	Suggested Trainer or EMBL Department	Mandatory / Elective	Suggested Format
IP and innovation cycle	EMBLEM	Mandatory	ARISE Summer School
Collaboration with industry	EMBLEM	Mandatory	ARISE Summer School
Technology transfer	EMBLEM	Mandatory	Course/ Expert Webinar
Entrepreneurship	EMBLEM	Mandatory	Course/ Expert Webinar
From academic facility to commercial service provision	IC or external	Elective	Course/ Expert Webinar
Establishing a business plan	EMBLEM	Elective	Course/ Expert Webinar

Science Policy

Topic and Title	Suggested Trainer or EMBL Department	Mandatory / Elective	Suggested Format
Data management	Josan Marquez	Mandatory	Course/ Expert Webinar
FAIR data	EMBL-EBI	Mandatory	Course/ Expert Webinar
Open access and Open Science	ELIXIR	Mandatory	Course/ Expert Webinar
European Open Science Cloud Initiatives	JK Heriche; EOSCLife	Mandatory	Expert Webinar
Ethical, legal and social implications	EMBL legal team, EDI, Ethics Committee and Sarah Morgan EBI	Mandatory	ARISE Summer School

Project Management

Topic and Title	Suggested Trainer or EMBL Department	Mandatory / Elective	Suggested Format
General principles of project management	EMBL HR training	Mandatory	Course/ Expert Webinar
Management of user projects (basic principles)	ARISE GTLs	Mandatory	Expert Webinar
Management of user projects	ARISE GTLs	Elective	Use cases
Negotiation	EMBL HR training	Elective	Course/ Expert Webinar
Conflict mgmt.	EMBL HR training	Mandatory	Course/ Expert Webinar
Recruiting, managing, collaborating and more	Cath Brooksbank	Mandatory	ARISE Summer School
Supervision and mentoring	EMBL HR training	Mandatory	Course/ Expert Webinar

The **ARISE Summer School** will be a compulsory 5 days school for all Fellows and will take place in year 2 of the Fellowship.

Preliminary agenda of the ARISE school	
Day 1	Introduction, opportunities and challenges (starts at lunchtime to allow Fellows from all sites to arrive)
	Arrival, interactive introduction, identifying challenges
Day 2	Designing and creating your service
	The service design process - uncovering hidden complexity
	Marketing and visibility, social media
	Who are your users
	Communication and dealing with external users/
Day 3	Operating your service
	Define technologies needed for service provision
	Impact assessment,
	Recruiting, managing, collaborating and more
Day 4	Financial and business management aspects of operating a service
	Costing up staff, compute requirements and (new) services
	Tracking multiple projects
Day 5	Introduction to innovation, IPR and entrepreneurship
	IP and innovation cycle
	Collaboration with industry
	Departure

Transferable Skills

All fellows will attend courses on transferable skills. Some of them are mandatory for all Fellows, while others are elective and should be taken when the fellow needs to master certain skills.

Table 2 - List of transferable skills training and suggested training providers

RI Management			
Topic And Title	Suggested Trainer or EMBL Department	Mandatory/ Elective	Suggested Format
Diversity and inclusion issues	EDI	Mandatory	Expert Webinar
How to communicate with media	Stratcom	Mandatory	Expert Webinar
Build a productive team culture	EMBL HR training	Mandatory	Course
Communication, writing and presentation skills	EMBL HR training	Mandatory	Course
Personal effectiveness - time management	EMBL HR training	Elective	Course
Balance your different roles	EMBL HR training	Elective	Course
Delegate tasks more effectively	EMBL HR training	Elective	Course
Deal with different personalities in the team	EMBL HR training	Elective	Course
Stress management	EMBL HR training	Elective	Course
Local language courses	EMBL HR training	Elective	Course
Ally training	EDI	Mandatory	Expert Webinar
Diversity and inclusion issues	EDI	Mandatory	Expert Webinar

Communication Activities

All Fellows will gain practical outreach experience through following activities:

- Each Fellow will support **EMBL Strategy and Communications office** and the EMBL Science Education and Public Engagement office (**SEPE**) in their outreach activities for at least **two full days**
- Fellows will rotate in running the **Research Infrastructure Podcast** (two Fellows each month), explaining developments in RI, technologies and sciences, recent technology development highlights, interesting applications of the technology, challenges in the career development of RI Scientists and from the users' perspective.
- The PM will motivate Fellows to nominate themselves for the MSCA Fellow of the week.

² <http://emblog.embl.de/ells/>

Secondments

Each Fellow will do at least 4 secondments: 2 at **partner organisations**, and 2 at EMBL (one interdisciplinary and one shadowing of a user of similar technology). During the secondments, Fellows will stay employed by EMBL. Secondments will support development of research, professional and transferable skills.

The programme will provide financial support from the training budget for the secondments.

Table 3 – Secondments for ARISE Fellows

At Partner Organisations (one must be intersectoral)			
Type of secondment	Benefit	Duration	Financial support
Long secondment at partner organisation	Collaboration on Fellow's project, working experience in different sector, discipline or set-up;	2-6 months, preferentially in year 2	Up to 4300 euro
Mini secondment at partner organisation	Shadowing other tech developers & service providers	up to 2 weeks, any time during fellowship	Up to 800 euro

At EMBL

Type of secondment	Benefit	Duration	Financial support
Interdisciplinary secondments within EMBL at other ARISE Group or Team (1 or more)	Understanding how different service providers operate and learning about different life science fields (e.g. bioinformatics Fellow shadowing genetics core facility)	Min 2 weeks in total, or more, based on the Fellows needs, any time during fellowship	Up to 500 euro
Shadowing a user of some of EMBL service providing teams	Understanding user needs, levels of knowledge, problems they are encountering, how a typical user thinks (e.g. join the basic course for the users of computational technology or follow the user who is using a service at e.g. core facility)	7 days during first 6 months of the Fellowship	n.a.

Career Support

All Fellows will be assigned **one supervisor at EMBL**, in which group they will perform research. Fellows will choose their supervisors during the selection process among ARISE GTLs. Supervisors will provide scientific, professional and career guidance to the Fellows and will be approachable on a daily basis. The supervisor will also introduce the Fellow to the scientific network in the area of research in which the Fellow is working, and ensure that the Fellow integrates well into the existing group and benefits from the expertise, knowledge and tools present in the lab and at EMBL.

During the long secondment, Fellows will be assigned a second supervisor at the Partner organisation.

In addition to their supervisor, each Fellow will choose a mentor among other ARISE GTLs (if possible, of different gender), who can provide an additional set of skills and knowledge. The ARISE Programme Manager and the Career advisor will support the Fellow in this selection: Programme Manager will assemble a list of competencies and skills of all ARISE GTLs and the Career advisor will help Fellow identifying the ideal profile of their mentor. The mentor will participate in annual progress reports of the Fellow and provide professional and career guidance.

Fellows who, after their inter-sectoral secondment, express an interest in pursuing a career outside of academia, will be asked to identify additional **non-academic mentors** who will also join the annual progress report meeting.

Together with their Supervisor and Mentor, and career advisor, Fellow will develop their **Personal Career Development Plan (PCDP) listing Fellow's learning needs and suitable learning opportunities**. Individual PCDPs will be based on the competency frameworks for future Research infrastructure scientists (to be developed by ARISE): a list of competencies needed for different positions that the Fellows can take after their training is completed. Using the competencies framework, each fellow will identify their professional development needs, and based on this, identify matching learning opportunities.

On every progress meeting with the supervisor and mentor, Fellows will analyse the progress of their PCDP.

Career advising: ARISE programme will engage the career advisor who will individually meet with Fellows at the beginning of the fellowship and towards the end of the Fellowship, for individual consultation sessions.

Supervision & Mentoring
Personal career development plan
Competencies framework
Annual progress report
Half yearly progress meeting with the supervisor

CAREER SUPPORT

Monitoring progress of the Fellows: Every 12 months, the Fellow will have an official annual progress meeting with the supervisor and the mentor, to discuss the achievements of the current year and the plans for the next, enter it in the Personal Career and Development Plan and submit the written report to the Programme Manager (PM). At least once in between the official progress meeting, the Fellow will have additional progress meetings with the supervisor.

Before the annual progress report, each Fellow will meet with the PM to track progress of tasks related to training, career planning, research and outreach. In case of delay in the implementation of the PCDP, the PM will ask the supervisor and mentor(s) to identify reasons and work out a plan on how to adapt the PCDP to catch up the delay. Should the Fellow require additional support, the PM will ask the supervisor, mentor and ExC to identify solutions. Every 6 months, the PM will report to the ExC on the progress of Fellows.

Selection of Fellows

Each fellowship will be funded for a period of 36 months. In this time, the fellow will conduct a research project and a mandatory secondment to an ARISE partner organisation of their choice (academic or industry organisations).

Eligibility Of The Applicants

ARISE is an incoming programme, based on individual driven mobility of Fellows. Applicants can freely choose the research topics on which they wish to work, the hosting group (supervisor) and mentor, fitting their interests.

Formal Eligibility Criteria

Mobility rule	The applicant must comply with the MSCA Mobility rule: Researchers from all countries are eligible for the MSCA ARISE Programme; however, applicants may not have carried out their main activity (work, studies, etc.) at any of the EMBL sites for more than 12 months in the 3 years immediately preceding the call deadline. Applicants cannot already be permanently employed by EMBL.
Education and experience	At the call deadline, the applicant should have at least 4 years of full-time equivalent research experience (in technology development), a high level of skill (postdoctoral standard) or expertise in a specialisation in which doctoral degrees are not usually awarded. Applicants do not have to hold a PhD but must have required experience. Their degree and scientific experience should be in the STEM fields, in academia or non-academic sectors, relevant to the research fields of EMBL RIs and services.
Complete application	The applicant must submit a complete application with required documents and indicate GTLs and partner organisations (for secondments) in which they are interested.
Language	Applicants must be fluent in English.
No age limit	There is no age limit for applying to the MSCA COFUND Fellowship Programme although the candidates' achievements should be in line with their "academic age".

Academic Eligibility Criteria

Applicant- driven research proposal	Applicants should independently prepare and submit their original proposal to develop new or improve existing methods or technologies, which can be applied to different scientific questions of other researchers as a service and integrated into RIs. The proposed project should not be of local interest only, but should have sufficient potential for international transfer. The proposal should be up to 4 pages long and relevant for the field of work of the group(s) in which applicants are interested in joining. The proposal must follow EC Ethical guidance. Applicants are
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	required to contact the groups of their choice before preparing the proposal to get an overview of their field of work and current activities of the groups, and discuss ideas for new technology development. A template for the project proposal writing is available here.
Experience	Applicants should describe their experience in technology development related to service provision
Scientific potential	Applicants should prove their scientific potential using at least one of the following evidences: <ul style="list-style-type: none"> • Scientific publications • Scientific Software, unique or problematic data sets, technical documentation, etc. • Contribution to patents • Management of technology development projects • Detailed description of any other innovative research they have performed and their achievements • Other ways to demonstrate experience relevant to technology development and scientific services

ARISE Fellows will be selected through a selection process based on openness, transparency, merit, impartiality and equality for the researchers who are applying.

30+ fellowships are available in the 4th call in July 2023.

Evaluation Procedure for the Selection of Fellows

Description of the selection process		
1	Publication of the call	Advertisement and opening of the call by the Programme manager (PM) and Programme Director (PD). Follow-up of the application submission process.
	Application phase and open consultation period	Applicants approach GTLs of their choice to get an overview of their field of work and of current activities. When needed, the project manager can be contacted for further support and instructions on how to prepare and submit the application.
2	Eligibility check	To be performed by the PM, based on the eligibility criteria. Eligible applications move to feasibility and ethics checks. Non-eligible applicants will be informed by the PM, with a justification for rejection.
	Feasibility check	ARISE GTLs chosen by the applicants report on the feasibility of the project and the capacity, expertise and infrastructure of their teams to

		support the proposal, independent of their own research activities and interests. They will also check the ethics self-assessment to verify if the proposed project arises any ethical issues.
3	Evaluation and ranking of written applications	Each application will be evaluated independently and remotely by three external international experts, members of the Evaluation Board (EB). Applications are evaluated and ranked for their excellence using the evaluation criteria described in the table below. Unsuccessful candidates will be duly notified. Top candidates from the list will be invited to the interviews.
	Personal interviews of the top ranked applicants	Panel interviews will take place face-to-face (or online if physical meeting is not possible) in Heidelberg, Germany. Each panel will consist of 1 external international expert and 2 ARISE GTLs. Interviews will be done for ~45 mins, in English, and will consist of presentation of the research proposal and the career achievements of the applicant (10 min each), and panel discussion and questioning (25 mins). Candidates will be evaluated based on the Evaluation criteria. Unsuccessful candidates will be duly notified. In addition to panel interviews, applicants will be interviewed individually alone by ARISE GTLs of their choice; it will be up to the candidate to seek out the interview with the group. GTLs and their groups will be available throughout the interview days(s). If possible candidates are welcome to arrange to visit the groups and teams of their interests at other EMBL sites before the interview days. At the same time candidates will also have a meeting with EMBL HR experts and ARISE management.
4	Final funding decision	Final funding decisions will be made by the ARISE Executive Committee (ExC) and the EB Chair and vice Chair based on the comprehensive evaluation of the candidate. Candidates must accept the offer within 14 days and choose which group they wish to join (if they received confirmation of supervision by more than one GTL).
	Feedback procedure	At the end of each selection round, PM will inform all applicants about numbers of eligible and evaluated applications and number of selected fellows. Upon request by the candidate, the PM will communicate the report of the EB and Interview Panel about candidate's strengths and weaknesses, based on the evaluation criteria mentioned below, and ranking for each criterion.
	Appeal procedure	Applicants can appeal after the three cut-off points: eligibility check, ranking by the EB and personal interviews. The ARISE Advisory Committee (AC) will investigate the concreteness and significance of the allegations; if significant irregularities in the procedures are noticed, the AC will devise a corrective measure for the current application (e.g., re-evaluation) and future selection rounds. However, in general, decisions of the EB, the Interview Panel and interviews by the ARISE groups will not be overruled. The Advisory committee is bound to strict confidentiality. A dedicated email address arise-appeal@embl.org for official complaints or

	formal appeals is accessible by the AC, which is bound to strict confidentiality.
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Evaluation criteria

Candidate's written application and their performance on personal interviews will be evaluated based on following criteria:

Evaluation Criteria		Points	Weighting
The professional excellence of the applicant	The excellence of the candidate's previous achievements	1–5	40%
	Impact of their contribution to the research field	1–5	
The excellence of the proposed project	Quality and novelty of the proposed project and the proposal	1–5	40%
	Fit with the team/institution of the host, secondment host and partners	1–5	
Potential and impact of the proposed project on the RIs	What is the potential of the proposed project to be included in the service catalogue of RIs	1–5	20%
	What would be the expected impact of that service (should the proposed technology be once included in the catalogue of the service providing RIs).	1–5	

Scoring system

For each criterion, the applicants can get up to 5 points (10 per category). Each category of criteria has an assigned weighting. Successful candidate must score at least 50% of the weighted points for each individual category of criteria and at least 70% of the total weighted points.

Possible points and their meaning	
1 (failure)	Relevant criteria are not sufficiently met
2 (poor)	Relevant criteria are met, but weaknesses are clearly visible
3 (satisfactory)	Relevant criteria are met, but with shortcomings
4 (good)	Relevant criteria are fully met
5 (excellent)	Relevant criteria are fully met and exceeded

Indicative Timeline for the Fourth Call for Fellows

(Please note these dates are indicative and subject to change)

Indicative Timeline for the 4th Call for Fellows	
Open call 1	1 July – 30 Sept
Eligibility check	3 Oct – 13 Oct
Feasibility assessment by GTLs	10 Oct – 14 Oct
Evaluation by the Evaluation Board	18 Oct – 10 Nov
Individual interviews with the groups and with EMBL HR	20 Nov – 24 Nov
Panel interviews	27 Nov – 1 Dec
Decision to offer fellowships	One week after the interviews
Deadline for accepting Fellowships	14 days after the offer
Eventual offer from reserve list	t.b.d.
Start of the Fellows	4 weeks after the offer if no visa is required, latest by 1 May 2024

Employment as an Arise Fellow

ARISE Fellows will be employed as EMBL Research Fellows and all employment conditions that are applicable to the EMBL PostDoctoral Fellows apply to them as well. EMBL Research Fellows are entitled to the same fellowship rates as Postdoctoral fellows, plus allowances (family and child), incl. social insurances.

Fellowships are increasing every 12 months with the progression of the fellowship (see table below). In addition, fellowships are normally adjusted annually due to inflation.

Fellows in union and with dependent children are eligible to receive family and child allowance.

Table 4 – Salary of the ARISE Fellows

EMBL Fellowship rates with effect from 1 January 2022					
	Germany	France	Italy	UK	Spain
Monthly stipend (first year)	3.604,24 €	3.277,45 €	2.923,43 €	£2.952,45	2.891,55 €
Monthly stipend (second year)	3.964,66 €	3.605,19 €	3.215,78 €	£3.247,69	3.180,70 €
Monthly stipend (third year)	4.024,13 €	3.659,27 €	3.264,01 €	£3.296,40	3.228,41 €

E.g. A Fellow starting in May 2022 will receive ca. 3604 Euro/month until 30 April 2023, when the fellowship will increase to ca. 3964 Euro/month. In June each year we normally experience adjustment of our salaries according to the changes of the costs of living, so the whole table above gets updated once a year. In May 2023 the fellowship will increase again, based on the new table that was adopted in June 2022.

These fellowship rates in the table above are after paying employer's contribution to social benefits, but before employee's contribution to social insurances (11.97%).

3 Gross Fellowships (stipend plus social security contributions including employer's and employee's part) averaged for the period 1 May 2021 – 30 April 2024 and with estimated 1,5% inflation adjustment - Heidelberg/Hamburg: 4,669 €; Grenoble: 4,273 €; Italy: 4,129 €; Hinxton: 4,390 € (£ 3,920); Barcelona: 3,870 €.

Partner Organisations

Fifty partner organisations (19 non-academic and 31 academic), submitted letters of intent to participate in the programme, describing their organisation, type and number of secondments they can provide and training opportunities at their premises. They offer Fellows a wide choice of 113 long secondment places a year (37 places in non-academic PO and 76 places at academic organisations). Thirty-six organisations offer to host mini secondments.

ARISE partner organisations will:

- Host long and mini secondments of the Fellows
- Be invited to be mentors of ARISE Fellows as needed
- Assign additional supervisor for the Fellow during long secondments
- Delegate representatives to join ARISE Advisory committee
- Be involved in promotion of ARISE

Partner organisations **will not employ the Fellows**, but will provide supervision and training capacity during the secondments. **We are open to additional partner organisations**, should the Fellows benefit from them – please contact ARISE Programme Manager to discuss how a new organisation will join ARISE as a Partner Organisation.

To become ARISE partner organisations, organisations need to:

- Commit to providing training opportunities to ARISE fellows through secondments
- Have regulations on equality and diversity, supervision and evaluation of employees and health and safety in place, that are in line with the recommendation of the EC Charter and Code for Researchers⁴
- Sign the MoU with EMBL before the Fellow visits them for secondment, regulating IPR and responsibilities of all parties.
- Comply with open science and data management policy (as far as in line with the IPR regulations in the MoU with EMBL)

The full list of current ARISE partner organisations is available at ARISE website⁵.

⁴ https://euraxess.ec.europa.eu/sites/default/files/am509774cee_en_e4.pdf

⁵ <https://www.embl.org/about/info/arise/partner-organisations/>

LONG SECONDMENTS
COLLABORATION ON
THE FELLOW'S PROJECT

SHORT SECONDMENTS
EXPERIENCE OF DIFFERENT
ENVIRONMENTS



Equality, Diversity and Inclusion

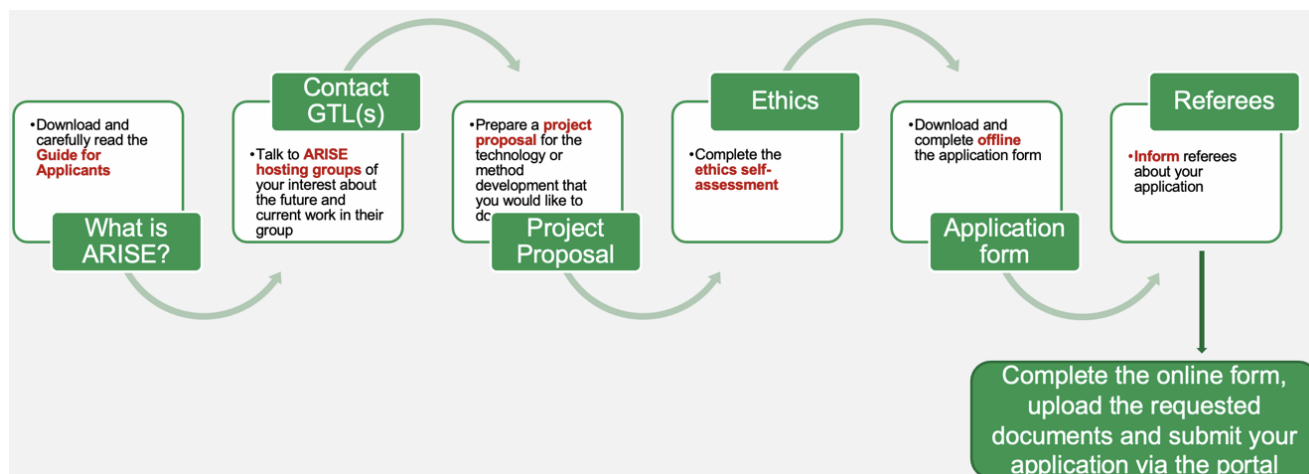
EMBL has been conferred with an HR Excellence in Research logo by the EC, in recognition of its progress in implementing the European Charter for Researchers and the Code of Conduct for Recruitment of Researchers. Everyone at EMBL has a responsibility to ensure that the standards of the policy are adhered to. Particular responsibility lies in the hands of supervisors, who must ensure that policy is implemented during all their decision-making processes (recruitment, promotion, pay reviews etc.), and ensure the working environment within their control is free from unjustifiable discrimination, harassment and bullying. Moreover, all Fellows will attend Ally training to develop hard skills to practise allyship with minority groups.

Equal opportunities during selection process: The programme will be open to researchers from all over the world, respecting the MSCA mobility rule. The programme will specifically support application by researchers at risk, who have been displaced by conflict, or whose situation makes it difficult for them to pursue their careers. The support will be provided on a case-by-case basis by the Programme Manager.

For each selection round, the Programme Manager will assemble the Evaluation Board and assign the evaluators to applications, aiming for gender and seniority diversity, diversity of experience and expertise, making sure that there is no pre-existing link to the applicant and that max 20% of all EB members come from the same country. Evaluators will not evaluate applications from their own country or with other possible conflicts of interest. The Programme Manager will also form one or more Interview panels balancing gender, seniority and expertise of their members.

To ensure the gender balance, we will promote technology development as a career for women, who are often a minority in technology development fields; e.g. in advertisements we will explicitly encourage women to apply and we will ask our alumni, ARISE partner organisations and collaborators of ARISE GTLs to directly encourage female researchers to apply. We will aim for gender, seniority and geographical balance when assembling ARISE committees, which might further encourage female researchers to apply.

ANNEX 1 – HOW TO APPLY



Resources available online (downloadable from ARISE website):

- Guide for applicants
- Project proposal template (mandatory)
- Ethics self-assessment template (mandatory)
- Application form (mandatory)

Tips & Tricks:

- Project proposal: must be novel and in line with the expertise and work of the group(s) you wish to join; useful for the broad scientific community and have the potential to be provided as a service when fully developed
- Use only the templates provided by the ARISE team and do not modify them
- Automatic invitation to upload the reference letter is sent to the referees once the candidate submits the application
- Upload your documents all in PDF file format
- Remember to upload all the requested documents (e.g. project proposal including the ethics self-assessment, application form, relevant certificates)
- Remember to complete the information requested in the online portal
- Do not wait until last minute to submit your application
- In case of questions/problems, please contact us arise@embl.org

Annex 2 – Arise Call 4: List of GTLs

The following EMBL group and team leaders are open to hire ARISE fellows in 2023 (alphabetically sorted).



Bateman Alex

Team Leader, Protein sequence resources

EMBL-EBI Hinxton

My group provides a wide range of world leading resources for protein and non-coding RNA sequence and families (InterPro, Pfam, RNACentral & Rfam). We are particularly interested in applying modern ML/AI approaches to enhance our resources.

Technology Fields: AI and machine learning, bioinformatics, data management

Life science fields: bioinformatics research, computational biology, structural biology



Clement Blanchet

Team Leader, Blanchet Team

EMBL Hamburg

Our team specialises in providing comprehensive support for small angle X-ray scattering (SAXS) experiments, including experimental design, setup, data collection, analysis, and interpretation. With a strong focus on advancing new scattering methods, such as time-resolved and high-throughput SAXS, we actively develop the SAXS beamline, including its sample environments, and refine data reduction and analysis methods. As a fellow, you'll have the opportunity to participate in diverse activities aligned with your interests, encompassing experimental development, computational analysis, and contributing to our dynamic research environment.

Technology Fields: AI and machine learning, computational modelling, data science and big data

Life science fields: bioinformatics research, biophysics, structural biology



Kristina Djinovic Carugo

Head of EMBL Grenoble, Group Leader, Djinovic Group

EMBL Grenoble

We intend to employ the principles of Design of Experiment (DoE), which allow us to determine how input parameters influence each other to produce output for streamlining and expediting cryo-EM grid preparation, by selectively testing parameters and more efficiently optimising the conditions to generate data-collection quality grids. The developed approach will be made available as an important part of the EasyGrid instrument's external service for the automated preparation of cryo-EM/ET grids, as well as to internal users.

Technology Fields: automation, software development, cryo-EM/ET

Life science fields: biophysics, structural biology



Elizabeth Duke

Team Leader, Duke Team

EMBL Hamburg

HiTT is an X-ray imaging pipeline that has been established on the EMBL beamline P14 using the infrastructure designed for macromolecular crystallography. We are now taking the next steps of offering HiTT as a user facility at the beamline. In parallel with establishing a user program in biological X-ray imaging here in Hamburg we are also extending the scope of HiTT to allow imaging data to be collected from a wider variety of samples.

Technology Fields: image analysis, imaging, microscopy, software development

Life science fields: tissue imaging, histology, medical imaging



Sarah Dyer

Team Leader, Non-Vertebrate Genomics

EMBL-EBI, Hinxton

The Non-vertebrate Genomics team is part of the Ensembl project providing access to integrated genomic data sets for Plants and invertebrate Metazoa. We also have joint projects with VeuPathDB, WormBase and the Alliance of Genomic Resources. Our focus is on delivering data and tools to support our user communities, with a focus on agriculture and supporting host, vector and parasite research.

Technology Fields: bioinformatics, software development

Life science fields: computational biology, genome biology, agriculture



Jan Ellenberg

**Head of Cell Biology and Biophysics, Group Leader,
Ellenberg Group**

EMBL Heidelberg

The Ellenberg group develops and applies advanced quantitative imaging methods across scales from single molecules to developing embryos to gain new insights into nuclear architecture and its changes during the cell cycle. We have previously developed and applied methods such as fluorescence correlation spectroscopy (FCS)- calibrated imaging, super-resolution microscopy, correlative light and electron microscopy and light sheet microscopy, and provide training and support in these methods through internal and external scientific, service and industry collaborations. Current interests include the development of the next generation of gentle, yet very high resolution light sheet microscopes suitable for investigating the structure and dynamics of nuclear architecture at the single molecule level in developing mammalian embryos.

Technology Fields: image analysis, imaging, microscopy , software development

Life science fields: cell biology, developmental biology, genome biology



Robert Finn

Team Leader, Microbiome Informatics, Group Leader, Finn Group

EMBL-EBI, Hinxton

My group focuses on the analysis of the microbes found within the environment or associated with a host organism, such as humans or plants. DNA sequencing technologies have revolutionised modern molecular biology, facilitating large-scale sequencing of microbial genomes. However, concomitant with the data deluge, there is an urgent need to develop robust computational frameworks that enable these genomes to be rapidly and continually collated, compared, and functionally annotated. Capturing this biodiversity and presenting quality reference datasets enables biologists to gain a greater understanding of evolutionary biology and the adaptations microbes have made to enable them to survive in diverse environments.

Technology Fields: data science and big data, software development, bioinformatics

Life science fields: computational biology, genome biology, Planetary biology



Cornelius Gross

Interim Head, EMBL Rome, Group Leader, Gross Group

EMBL Rome

We have worked closely with the Prevedel group to apply innovative deep brain imaging technologies for use in behavioural circuit neuroscience applications. Via the ARISE programme we are looking to recruit outstanding postdoctoral fellows who are committed to focusing on technology that can be taken up and used successfully by the wider behavioural neuroscience community. Following the model we have used in the past collaborating with the Prevedel Group to adapt novel three photon microscopy and adaptive optics approaches to in vivo deep brain imaging in mice, we expect the ARISE fellow to push the boundaries of novel deep brain imaging technologies, adapt and establish them for use in living animals, and develop them for distribution to the wider behavioural neuroscience field.

Technology Fields: image analysis, imaging, microscopy , optical instruments development

Life science fields: neurobiology



Peter Harrison

Team Leader, Genome Analysis

EMBL-EBI, Hinxton

The genome analysis team develops state-of-the-art cloud-based data analysis and portal infrastructure to coordinate, analyse, enrich, and present the wealth of genomic data arising from global agricultural and biodiversity projects. This includes projects such as the Earth Biogenome Project (<https://www.earthbiogenome.org/>), a moonshot for biology, that aims to sequence all of Earth's eukaryotic life within ten years. We are seeking projects that utilise cutting edge cloud data engineering to design and develop analysis, visualisation and data management infrastructure at significant data scale. This could include development in the areas of pangenomics, single cell atlases, cloud-based interactive analysis platforms and 'omic data visualisation. Data analysis platforms and portals are crucial services to enable and accelerate global agricultural and biodiversity research, tackling key societal issues of food security, climate change and biodiversity loss. The fellow would join a vibrant and highly professional group of software engineers and bioinformaticians, contributing both new and to existing services fostering a detailed understanding of cloud DevOps, user-led design, open science, and FAIR data management.

Technology Fields: data management, data science and big data, software development

Life science fields: bioinformatics research, computational biology, genome biology



Matthew Hartley

Team Leader, BioImage Archive

EMBL-EBI, Hinxton

I have worked at the interface between computational Bioimaging technology development and service provision for the last decade. Over that time, I have developed novel image analysis algorithms tools and pipelines as well as image data management software. I now lead the BioImage Archive (BIA), which provides services to the global Bioimaging community. We work on image archival, visualisation, file formats, data models and data compression as well as AI and machine learning application to large

image datasets. We provide services to life sciences researchers wishing to archive their image data across the world. Scientists using the BIA ecosystem number in the hundreds.

Technology Fields: data standards, software development, imaging, microscopy

Life science fields: bioinformatics research, computational biology, cell biology



Henning Hermjakob

Head of Molecular Systems Services

EMBL-EBI, Hinxton

The Molecular Networks team provides curated databases for network biology (IntAct, Reactome, BioModels), as well as the pan-EBI data discovery infrastructure indexing more than five billion data objects. We are aiming to optimise our resources through advanced visualisation and integration of AI technologies for curation support and data discovery.

Technology Fields: AI and machine learning, data science and big data

Life science fields: bioinformatics research, disease modelling, network biology



Jan Korbel

Head of Data Science, Group Leader, Korbel Group

EMBL Heidelberg

Dr. Korbel has contributed key experimental and computational methods for structural variation characterization to the field some of which have become the standard methodologies used in genetics and disease biology, such as the development of paired-end mapping, which Science Magazine considered as one of the scientific breakthroughs of the year 2007. Recently, we developed the scTRIP method (for single cell tri-channel processing) which – for the first time - enables the scalable and direct detection of SVs including de novo SV formation processes in single cells, and as such can be used to obtain insights into important pathomechanisms acting in human tissues. Currently, we are sharing this technology with collaborators within international research studies, but the amount of collaborative sharing we can pursue in a pure research setting has become a limitation – which in our view will necessitate to provide the technique as a service.

We currently see exponential growth of the use of Strand-seq, with 10 laboratories having used the technique this year in collaboration with us (until ~18 months ago all the Strand-seq publications came from only a single lab) and a strong upwards trend with many new expressions of interest, as a number of applications from comprehensive single cell sequencing of genetic variation to single cell multi-omics and haplotype-resolved genomic assemblies (see above) have been described by us and some of our collaborators. In July 2020, Jan Korbel took on the role of Head of Data Science at EMBL Heidelberg, and this position will have both a research and a service remit.

Technology Fields: automation, chemistry and chemical biology

Life science fields: computational biology, genome biology, translational research



Anna Kreshuk

Group Leader, Kreshuk Group

EMBL Heideberg

Kreshuk Lab develops novel machine learning-based methods for microscopy image analysis, in collaboration with both internal and external scientists. To make such methods accessible to scientists without computational expertise, we also develop and maintain the ilastik software, used by thousands of biologists all over the world.

Technology Fields: AI and machine learning, image analysis, software development

Life science fields: cell biology, developmental biology, structural biology



José Márquez

Head of Crystallisation Facility, Team Leader, Márquez Team

EMBL Grenoble

Our Team has pioneered the development of Online Crystallography; fully automated protein-to structure pipelines integrating crystallization, synchrotron data collection and crystallographic data analysis into continuous workflows operated via the web. These pipelines are currently used by hundreds of scientists worldwide and are based on the CrystalDirect technologies and CRIMS software, which we have contributed to develop. Recently, we have implemented a fully automated pipeline for ligand and fragment screening

to support structure guided drug design. EMBL Grenoble is co-located with the European Synchrotron Radiation Facility (ESRF) in Grenoble, which produces some of the world's most brilliant X-ray beams worldwide. EMBL and ESRF jointly operate six crystallography beamlines one of which is the fully automated MASSIF-1 whose operation is highly integrated with the operations at EMBL's HTX Lab.

Our interdisciplinary team offers opportunities for scientists, engineers and software developers to work in one of the leading infrastructures for structural biology within the areas of protein crystallography, drug desing, automation, and large-scale scientific data management and analysis. Currently, we are particularly interested in profiles in structural biology or computer science orientated towards one or several of the following areas: fragment screening, structure guided drug design, cloud computing, machine learning and artificial intelligence.

Technology Fields: AI and machine learning, chemistry and chemical biology, data management, data science and big data

Life science fields: drug design, structural biology, translational research



Maria-Jesus Martin

Team Leader, Protein Function - Development

EMBL-EBI, Hinxton

Our work focuses on developing technologies for the delivery of scalable and robust data infrastructures for protein data (programming languages, Graph Knowledgebases, Apache Lucene and Solr search engines, clustering algorithms) as well as developing novel data mining methods for protein function prediction and large-scale data analysis. The team uses Deep Learning algorithms for extracting knowledge from biological data and recommendation systems. We are interested in applying AI/ML and large language models to text summarization, search engines and software development.

Technology Fields: AI and machine learning, bioinformatics, data management

Life science fields: bioinformatics research, computational biology



Simone Mattei

Team Leader, Mattei Team, Imaging Centre

EMBL Heidelberg

Our team is part of the EMBL Imaging Centre, a new service unit with the mission to make the cutting-edge electron and light microscopy technologies available to the scientific international user community, including academically developed methods not yet commercially available. We develop methods and software supporting cryogenic correlative light and electron microscopy (cryo-CLEM) and high-throughput fully automated pipelines to tackle the current challenges in cryo-EM sample preparation and screening.

Technology Fields: automation, image analysis, imaging, microscopy

Life science fields: biophysics, cell biology, structural biology



Andrew McCarthy

Team Leader, McCarthy Team

EMBL Grenoble

The McCarthy team is composed of engineers and scientists who provide operational and user support on seven high brilliance X-ray based structural biology beamlines with proven expertise in developing automated data collection instruments and methods in collaboration with our colleagues at the European Synchrotron Radiation Facility (ESRF). We will continue to optimise data collection protocols and analyses methods as well as develop and expand the experimental instruments and techniques currently available in order to realise the scientific potential of the recently completed ESRF-Extremely Brilliant Source upgrade for the European structural biology community.

Technology Fields: automation, chemistry and chemical biology, data management, software development

Life science fields: biophysics, drug design, structural biology



Christoph Müller

**Head of the Structural and Computational Biology Unit,
Group Leader, Müller Group**

EMBL Heidelberg

Our group is pioneering the use of single-particle cryo-EM in the drug discovery process. Through the ARISE program we plan to develop a stable workflow for the high-throughput screening of ligand binding to drug targets by single-particle cryo-EM. Critical elements of the workflow comprise sample tracking throughout the workflow, automated EM grid dispensing, automated cryo-EM sample evaluation and HTP processing.

Technology Fields: automation, data management, imaging, microscopy

Life science fields: biophysics, drug design, structural biology



Gergely Papp

Team Leader, Papp Team

EMBL Grenoble

Over the two past decades, the instrumentation team has developed instruments for neutron and x-ray scattering experiments with constant objectives of supporting the most challenging structural biology experiments and making the instruments available to the scientific community worldwide through services provided by synchrotron beamlines and high throughput crystallisation facilities. As an example, our CrystalDirect automated harvesting technology is used at ALPX, an EMBL spinoff company (<https://www.embl.org/news/lab-matters/alpx/>), which provides MX services for drug design. Relying on patent applications, and technology transfers, most of the instruments used in Macromolecular Crystallography are commercialised worldwide (CrystalDirect™ automatic crystal harvester, HC-Lab crystal Humidity Controller, MD2S and MD3 X-ray Micro diffractometer families, BioSAXS sample changers). A similar strategy is being developed for our automated Cryo-EM sample grids preparation system.

Technology Fields: automation, image analysis, software development

Life science fields: drug design, structural biology



Rainer Pepperkok

Director of Scientific Core Facilities and Services, Team Leader, Pepperkok Team, Advanced Light Microscopy Facility ALMF

EMBL Heidelberg

The ALMF and Pepperkok Team at EMBL Heidelberg develop and provide a service in advanced light microscopy and image analysis methods to EMBL scientists and external users from and beyond EMBL member states. Currently we are working on projects developing technology to provide a service in spatial multi-omics/phenomics to integrate automated phenotype recognition in complex biological samples by advanced light microscopy and online image analysis to sort the phenotypes for subsequent (single cell) multi-omics analyses.

Technology Fields: automation, image analysis, imaging, microscopy, microfluidics

Life science fields: bioinformatics research, biophysics, cell biology



Thomas Quail

Group Leader, Quail Group

EMBL Heidelberg

The Quail group studies how collections of proteins organize the genome across different length scales, combining quantitative microscopy, biochemistry, cell biology, soft matter physics, and dynamical systems. Mechanistically dissecting these processes in the cell nucleus depends on our ability to image these proteins with high spatial and temporal resolution, which remains challenging. We are currently developing high-throughput, single-molecule imaging approaches to disentangle how individual proteins, enzymes, and genomic loci fluctuate and move in the cell nucleus. In parallel we are developing image analysis pipelines to robustly and accurately extract the physical rules driving these complex spatiotemporal dynamics. Disentangling these physical principles will provide insights into the collective behaviour of diverse processes in the cell nucleus, including transcription, DNA replication, and DNA damage repair.

Technology Fields: image analysis, imaging, microscopy, microfluidics

Life science fields: biophysics, cell biology, genome biology



Santiago Rompani

Group Leader, Rompani Group

EMBL Rome

Previously, the Gross group has done extensive work on quantifying animal behaviour, while the Rompani group is supporting the ML approaches to analyse such data. We seek to develop a new pipeline that allows various groups that quantify video-recorded animal behaviour using novel machine learning approaches to dramatically accelerate the extraction of behavioural motifs from data.

Technology Fields: AI and machine learning, data science and big data, software development

Life science fields: computational biology, epigenetics, neurobiology



Sinem K. Saka

Group Leader, Saka Group

EMBL Heidelberg

We are interested in spatial biology and bridging high-end imaging of phenotypes with omics depth profiling of the molecular make-up. Using DNA nanotechnology, we have previously developed super-resolution, multiplexed imaging and spatial omics methods to address the limitations in the field. We aim to expand our spatial omics approaches further into higher resolution and 3D implementations (including high-throughput light-sheet microscopy, expansion microscopy and tissue clearing), which will be unique and of high value to many groups at EMBL and beyond to investigate the heterogeneous ecosystem of disease models and tissues (thick tissue slices, whole embryos or organisms, organoids, organs, xenografts) spanning studies in cancer, neuroscience, developmental biology, microbiome and exposome. We also strive to increase the community access to these kinds of methods by implementing automated workflows for staining, imaging (fluidic/microfluidic labelling both on and off the microscope stage or adaptive feedback microscopy pipelines) and data analysis. Furthermore, we are interested in implementing hyperspectral multiplexing, compressed sensing, and DNA-barcoding approaches to create next-generation single-cell and spatial-omics technologies in collaboration with both medical/clinical partners and industrial partners like

Leica and GSK. We work closely with many EMBL core facilities and platforms including ALMF and GenTechDev Open Lab and share know-how and instrument access with other Heidelberg institutions within the MULTI-SPACE initiative. Through the ARISE program, we have multiple opportunities to join our interdisciplinary team and contribute to method development, automation, optical/fluidic instrument customization, experimental design, workflow optimization and data analysis.

Technology Fields: image analysis, imaging, microscopy, microfluidics, Omics technologies

Life science fields: developmental biology, genome biology, tissue biology



Ugis Sarkans

Team Leader, BioStudies Team

EMBL-EBI, Hinxton

Our team builds and maintains the BioStudies database - a resource that facilitates transparent, reproducible science by aggregating and publishing all outputs of a scientific study. BioStudies acquires data via a variety of routes, both pre- and post-publication. We are looking to extend our infrastructure and apply data harmonisation methods to support new, emerging fields with a particular interest in human health and environmental exposures.

Technology Fields: data management, software development

Life science fields: computational biology, bioinformatics



Thomas R. Schneider

Joint Head of Research Infrastructures, Group Leader, Schneider Group, and Senior Scientist

EMBL Hamburg

EMBL Hamburg has been operating synchrotron beamlines for macromolecular crystallography for several decades. Currently, we are using radiation from PETRA III for which an upgrade to the next generation synchrotron technology is in the planning. For making synchrotron radiation usable for the scientific user community we are constantly developing software for controlling high-rate and high-volume data acquisition, automated

sample handling, data flows and data evaluation. A large part of this work takes place in international consortia.

Technology Fields: software development

Life science fields: biophysics, structural biology



Yannick Schwab

**Head of Electron Microscopy Core Facility, Team Leader,
Schwab Team**

EMBL Heidelberg

The Schwab team, in tight interactions with the Electron Microscopy Core Facility (EMCF), is developing techniques in the field of multimodal correlative imaging, with the main motivation to enable targeted ultrastructural analyses of rare events or cell types in complex biological systems.

The ARISE fellowship is a unique opportunity to bridge method development and service provision in that field, with a specific interested to recruit motivated scientists in 2 areas: first, we would like to develop a new software to automate volume correlative light / X-ray and EM; second, we would like to streamline workflows adapted to high throughput EM imaging of plankton cells collected in the field alongside the TREC which started in Spring 2023.

Technology Fields: automation, imaging, microscopy, software development

Life science fields: cell biology



Oliver Stegle

Associate Group Leader, Stegle Group

EMBL Heidelberg

Our laboratory develops innovative computational technologies for making genomic data resources accessible to pan-European analysis using federated data infrastructures coupled with privacy-preserving algorithms. This project seeks to advance genome data services and infrastructures to make them “AI ready”, permitting to train large-scale machine learning models on major European genome data initiatives from research and health care. We seek to deploy these advances to bring together data from

multiple European cohorts to tackle key questions in human ecosystems services and research.

Technology Fields: AI and machine learning, bioinformatics, data science and big data

Life science fields: bioinformatics research, computational biology, genome biology



Alejandro Torres-Sanchez

Group Leader, Torres-Sanchez Group

EMBL Barcelona

Our group develops mathematical models and computer codes to investigate the self-organisation of cells and tissues, e.g., ias, based on finite element approaches. Currently, we are focusing on making these tools available to people without computational expertise such as experimentalists working in cell and tissue-biology labs.

Technology Fields: computational modelling, software development, high performance computing

Life science fields: biophysics, developmental biology, tissue biology



Juan Antonio Vizcaino

Team Leader, Proteomics

EMBL-EBI, Hinxton

Improving PRIDE's functionality as the world-leading proteomics data repository, and the integration of proteomics data with other omics data types are two key aspects for the team in the near future. This offers the possibility for the fellow to work in different topics (e.g. data analysis, data visualisation, infrastructure, data management practices, etc), depending on their background. In the context of data integration, this would involve different data types such as gene and protein expression information (in collaboration with the Expression Atlas team), post-translational modifications (collaboration with UniProt), and (meta)proteomics data and (meta)genomics sequences (Ensembl, MGnify, proteogenomics approaches). Additionally, support in PRIDE for additional proteomics data types (e.g. top down proteomics, non-mass spectrometry methods) is also an important topic for our future work.

Technology Fields: bioinformatics, data science and big data, software development

Life science fields: bioinformatics research, computational biology, Proteomics



Matthias Wilmanns

Head of EMBL Hamburg, Group Leader, Wilmanns Group

EMBL Hamburg

Our group employs an integrated structural biology approach using X-ray based methods, single particle cryo-electron microscopy, biophysical methods and integrative modelling approaches for large protein complexes. Our structures provide rich opportunities to discover function from structure, where many of them aim to resolve mechanisms relevant for infection processes. In the coming years we aim to generate a multidisciplinary metabolomics/structure service platform for determination of turnover mechanisms of specific drugs or prodrugs by different microorganisms. The platform will include establishment of a pipeline for high resolution structures of selected protein-drug complexes in microorganisms, and in-vitro analysis of the enzymatic processing of specific drugs by microorganisms. The platform will thus integrate technologies in structural biology and metabolomics, complemented by microbial genetics and biochemistry, defining the required skill set of the developer we are looking for. All data generated will be stored in a common database, as a basis for further improving the integration of procedures. The platform will be useful to both future internal EMBL projects specifically from selected transversal themes (especially microbiome, infection, planetary biology) and for our external user community working on drug discovery in industry and academia. This work will build on our previous and ongoing work with Michael Zimmermann research group (EMBL Heidelberg). Previously we jointly discovered a mycobacterial drug target by a combined structure-based and metabolomics approach to be associated with an unexpected catalytic function, when Michael was working as graduate student at the ETH Zurich (Ehebauer, Zimmermann et al, 2015). In an ongoing pilot project with Michael's research group at EMBL, we have initiated a structure based functional drug transformation project of selected microbiome targets with evidence for specific drug turnover, but lacking any mechanistic insight into the underlying process. At the present stage, the project connects high-resolution structural biology with biochemical and metabolomic approaches, including in vitro enzymology, as well as ex vivo and in vivo functional assays. In a first step, we determine the high-resolution structures of these targets, coupled by the identification of specific substrates suitable for turnover, including established drugs that are processed by these targets. Part of this analysis is the quantitative measurement of binding affinities, as a prerequisite for structure-based binding studies. As binding in enzymatic reactions is

generally weak this may require, depending on the specific target, intervention with the active site topography to strengthen binding and to avoid rapid turnover, which would prevent structure-based ligand binding studies as well. Subsequent protein target ligand structures provide then the basis for mechanistic investigation of the turnover mechanism for specific drugs or prodrugs. In a future perspective this knowledge could be further exploited either by protein engineering e.g. using directed evolution approaches or by medicinal chemistry approaches for rational modification and improvement of established drugs. In addition, as this concept is not limited to the characterisation of drug transformation it could be similarly applicable to other metabolites susceptible to microbial enzyme catalysis such as nutrients or environmental toxins.

Technology Fields: automation, chemistry and chemical biology, data management

Life science fields: biophysics, drug design, structural biology



Andrew Yates

Team Leader, Genomics Technology Infrastructure

EMBL-EBI, Hinxton

My team provides services to genomic researchers around the world developing and deploying systems for the interpretation and interrogation of annotated genomes. I co-wrote the refget and variation representation standards within GA4GH and more recently have been working to redevelop the Ensembl infrastructure to further scale towards the challenges of working with biodiversity and pangenome data.

Technology Fields: bioinformatics, data management, software development

Life science fields: genome biology, computational biology



Michael Zimmermann

Group Leader, Zimmermann Group

EMBL Heidelberg

In combination with EMBL's Chemical Biology Core Facility (CBCF) our laboratory combines high-throughput screening and computational approaches to develop tools and pipelines to investigate the mutual interactions between environmental contaminants and biological systems. In this context we are currently establishing a platform

available to EMBL and Non-EMBL researchers that involves chemical libraries, screening pipelines together with computational tools, software, and data resources that will enable integrative analyses of the impact of environmental toxins on organisms at the molecular level.

Technology Fields: chemistry and chemical biology, data science and big data, software development

Life science fields: computational biology



Timo Zimmermann

Team Leader, Zimmermann Team, Imaging Centre

EMBL Heidelberg

In the new EMBL Imaging Centre the Zimmermann Team will provide a wide range of light microscopy instrumentation that is not yet commonly available to external researchers. We also aim to efficiently connect highest resolution LM approaches (including cryo-fluorescence) to the corresponding EM technology offer of the Imaging Centre.

Technology Fields: image analysis, imaging, microscopy

Life science fields: biophysics, cell biology

The following EMBL group and team leaders are not open to hire ARISE fellows but are open for collaborations and acting as an advisor to ARISE fellows where a good fit is found and a different group and team leader is the main supervisor. (alphabetically sorted).



Robert Prevedel

Group Leader, Prevedel Group

EMBL Heidelberg

We are developing advanced optical imaging methods that are based on multi-photon microscopy, active wave-front shaping, photo-acoustics as well as high-resolution spectroscopy. Our aim is to establish our new approaches as disruptive technologies in the life sciences and to further engineer and automate our prototypes for routine service provision.

Technology Fields: automation, imaging, microscopy, software development

Life science fields: biophysics, developmental biology, neurobiology



Sameer Velankar

Team Leader, Protein Data Bank in Europe

EMBL-EBI, Hinxton

We develop and deliver world leading data resources including Protein Data Bank, PDBe Knowledge Base and AlphaFold Database. Our work is focused on developing a scalable, state-of-the-art, integrated data management and delivery infrastructure for structural biology data (SQL databases, programming languages, Graph Knowledgebases, Apache Lucene and Solr search engines, clustering algorithms). We are keen on deploying machine learning and AI approaches for deriving knowledge from our integrated structural biology knowledge base. Our technology development work also involves better information retrieval and ranking systems and multiscale structural data

visualisation tools (<https://github.com/molstar>) to enable scientific research in both academic and industry settings.

Technology Fields: AI and machine learning, data science and big data, Information retrieval & relevance ranking

Life science fields: bioinformatics research, structural biology, translational research

