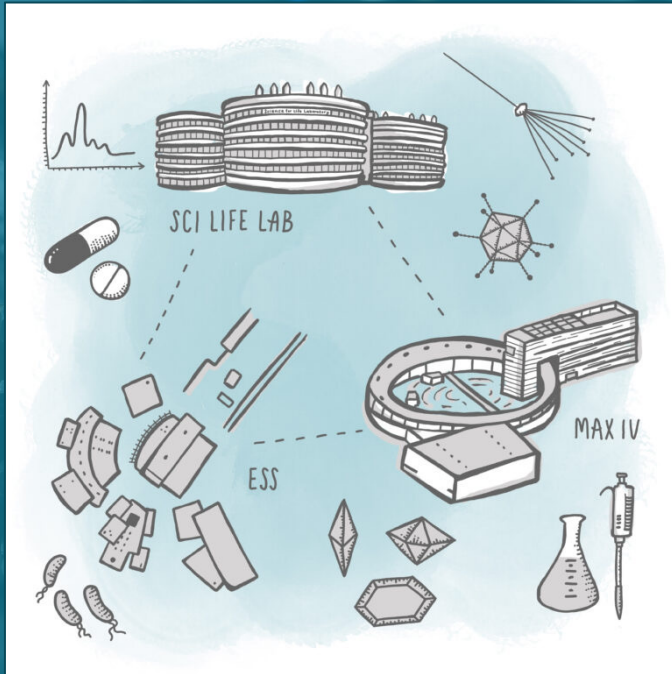


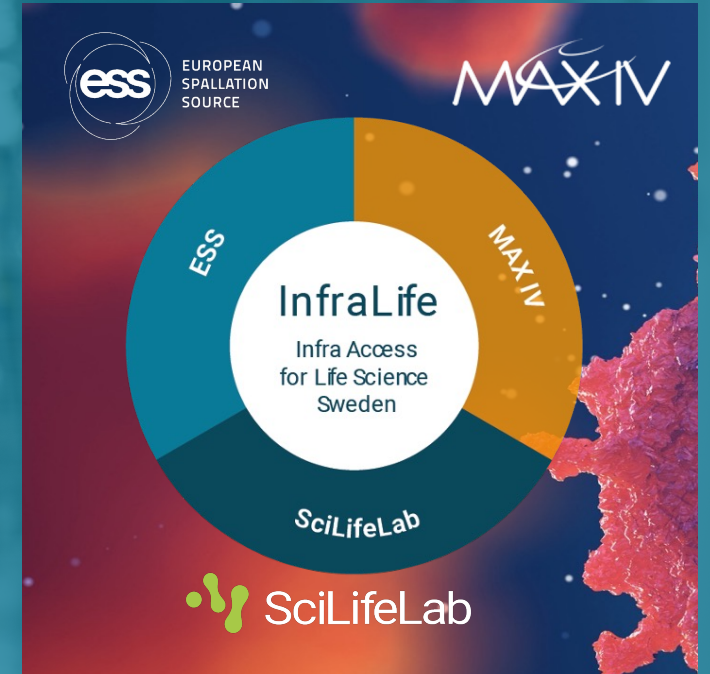
InfraLife

Infra Access for Life Science Sweden



2023.08.24

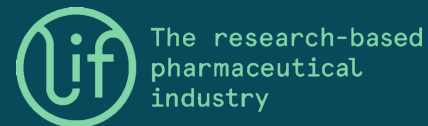
Integrated Structural Biology workshop
Claire Lyons & Josefin Lundgren Gawell



Organizers



Partners



Funding



Outline of presentation

- What is InfraLife: vision, mission, goals, aims and people
- SciLifeLab, MAX IV & ESS:
 - overview, services, life science capabilities & access
- Structural biology recap at SciLifeLab, MAX IV & ESS
- InfraLife activities: course, events, webinars, stories
- SciLifeLab Site Days
- Relevant courses and events for Structural Biology

InfraLife

Infra Access for Life Science Sweden

What is InfraLife?

A national initiative to maximize benefits of Sweden's large-scale research infrastructures; ESS, MAX IV and SciLifeLab through a 4-year project funded by VR.

Vision:

InfraLife will strengthen Sweden as a leading nation in Life Science.

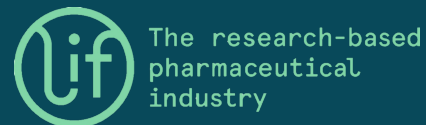
Mission:

Improving knowledge and availability of research infrastructure and making it accessible to life science researchers in academia, industry and healthcare.

Organizers



Partners



Funding



The aims of the InfraLife project

Aim

A. An expanded and broadened infrastructure user base within life science

B. The infrastructures are innate resources within life science

Specified aim

Current users are finding new techniques within an infrastructure or at another infrastructure

Current users are spreading knowledge to other potential users

New user groups are discovering us

More people know about the techniques and possibilities of the infrastructures

The brand of the infrastructures has been strengthened

The infrastructures have been developed to match the needs of future challenges within life science

Target user base within life science

Industry

Academia

Healthcare

InfraLife: The people & partners


Communication



Joanna Lewis

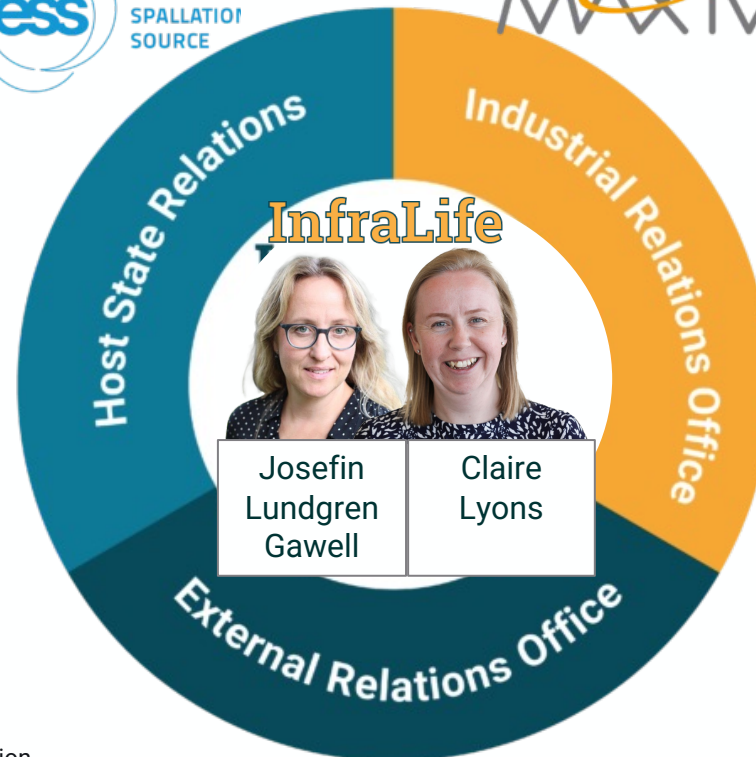
Officer for Scientific Outreach and Public Engagement

Project group



Esko Oksanen

Instrument Scientist-Macromolecular Crystallography



Josefin Lundgren Gawell

Claire Lyons

Project Group



Magnus Larsson



Marc Obiols Rabasa

Head of Industrial Relations

Industrial Relations Officer

Communication



Anna Sandahl

Head of Communications

Project Group



Lars Johansson




Sandra Falck

Infrastructure Coordinator

Vice Head of Operations & InfraLife Project Manager

Communication



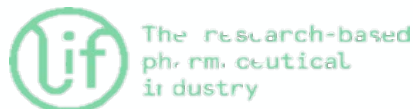
Anna Frejd

Communication Manager



The Swedish Life Science Industry Organization

SwedenBIO: Swedish Life Science Industry Organization is the national non-profit association for the life science industry in Sweden



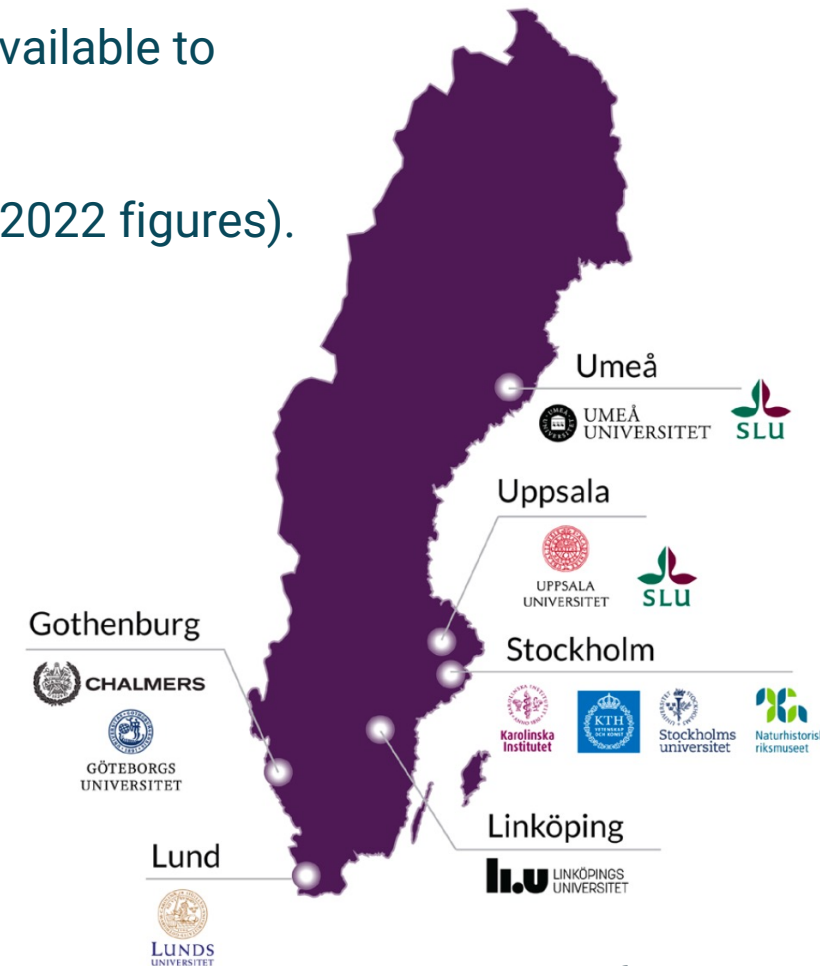
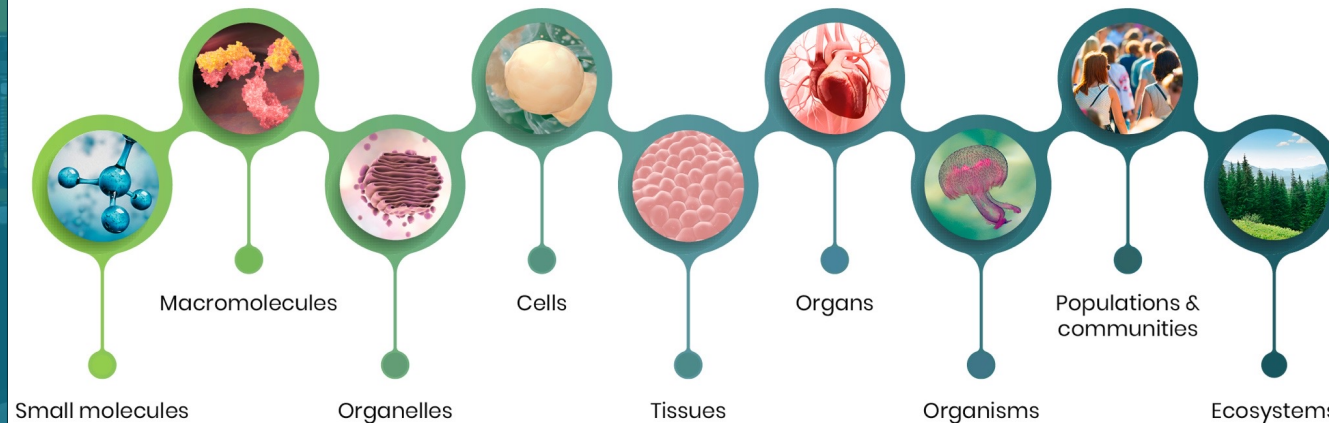
LIF: trade association for the research-based pharmaceutical industry in Sweden



SciLifeLab: Science for Life Laboratory



- National resource of **10 platforms & 45 units** and expertise available to scientists studying molecular bioscience.
- 6 locations in Sweden at 11 university locations.
- 468 employees, 1683 users, 300 group leaders & 38 fellows (2022 figures).



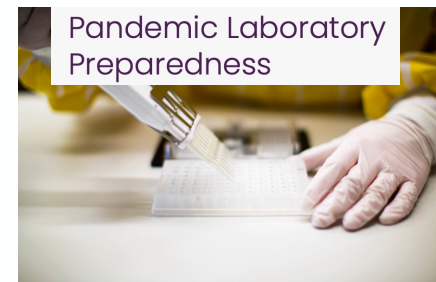
SciLifeLab: services, capabilities & DDLS



Services

BIOINFORMATICS	GENOMICS
CLINICAL GENOMICS	CLINICAL PROTEOMICS & IMMUNOLOGY
METABOLOMICS	SPATIAL & SINGLE CELL BIOLOGY
CELLULAR & MOLECULAR IMAGING	INTEGRATED STRUCTURAL BIOLOGY
CHEMICAL BIOLOGY & GENOME ENGINEERING	DRUG DISCOVERY & DEVELOPMENT

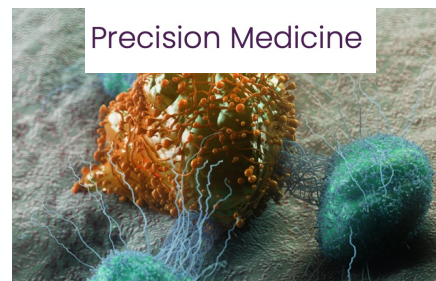
Capabilities



Pandemic Laboratory Preparedness

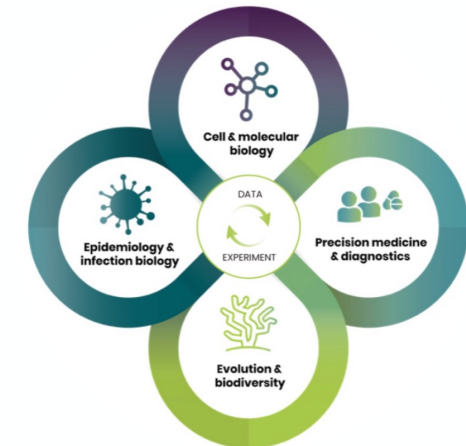


Planetary Biology



Precision Medicine

Data-Driven Life Science (DDLS)



DDLS Fellows Recruitment:
Deadline: Oct. 15th 2023

SciLifeLab: access & cost



- SciLifeLab is a national resource that is **open for researchers within academia, healthcare & industry** in Sweden but is also open for international users.
- **Cost** for academia is typically to cover reagents, consumables, instrument time and part of the labour costs but healthcare, industry and international users are charged to a full cost model. Costs can differ between platforms and units.
- **Prioritization** of projects differs between the platforms and units and is dependent on the scope of the request. Some proposals are based on "first come first served" while others are based on scientific merit or feasibility.
- **Contact** the platform or unit directly for more information.
- <https://www.scilifelab.se/services/>



Located in **Science Village Scandinavia**

City district with two of the world's most advanced science facilities

MAX IV Laboratory

Science Village

European Spallation Source (ESS)

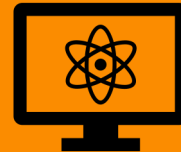
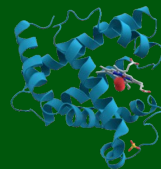
MAX IV Laboratory: an overview



- National laboratory providing X-rays for research with **16 specialized beamlines** offering a wide range of experimental options to researchers in studying both soft and hard matter.
- 300 employees & 1399 users including 33 from industry (2022 figures).



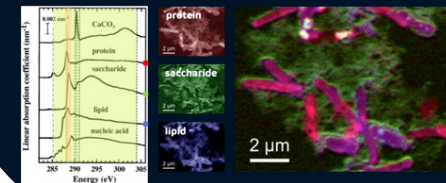
Scattering & diffraction:
how the atoms of your material are organised



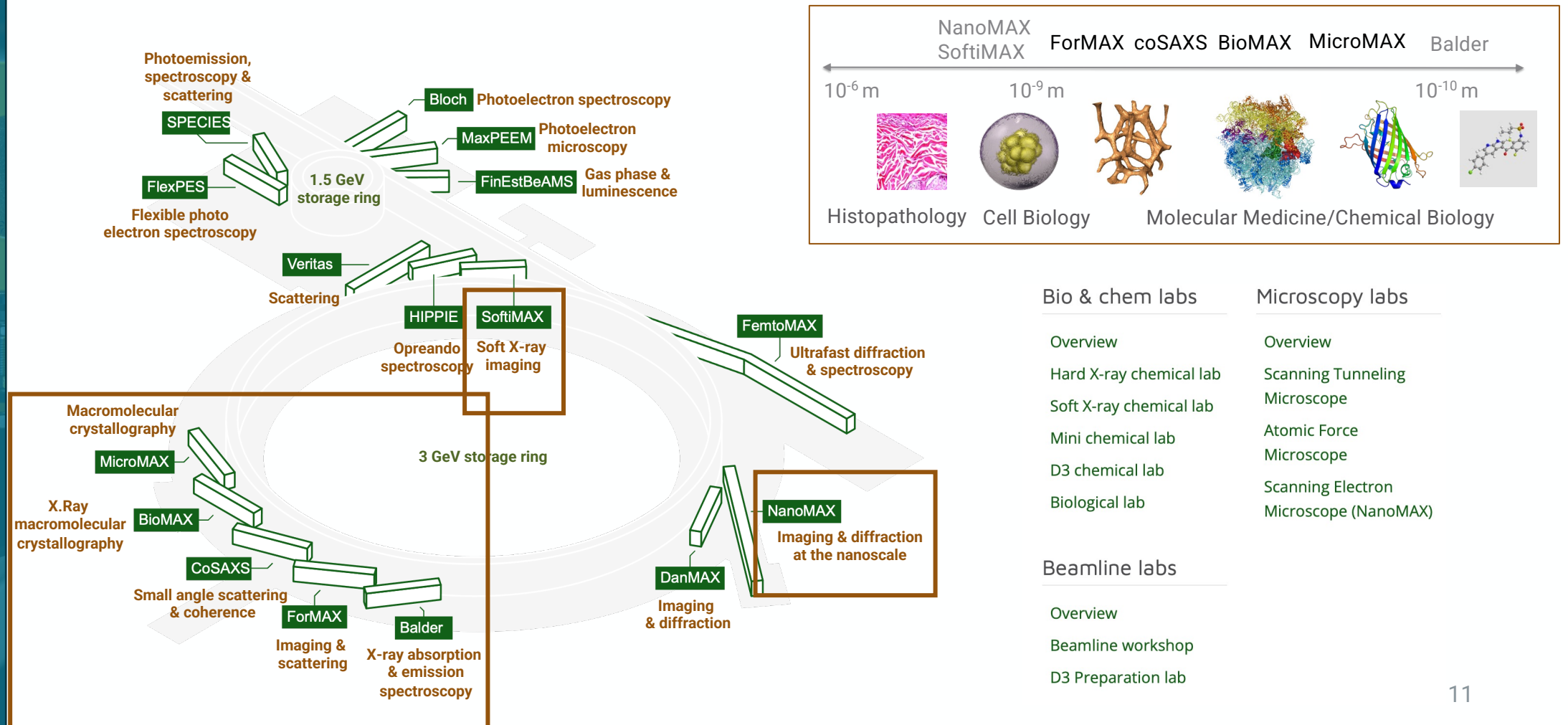
Imaging: multi-dimensional images of your material



Spectroscopy: what your material consists of



MAX IV Laboratory: Life science beamlines & labs



MAX IV Laboratory: access & cost



- ✓ Free
- ✓ Apply for beamline (2 calls/year)
- ✓ Proposals ranked on scientific merit
- ✓ Publish your results
- ✓ Can collaborate with academia/industry



- ✓ Paid
- ✓ Faster, industry-tailored
- ✓ Full confidentiality & IP rights
- ✓ One-time or long term agreement
- ✓ Ownership of results

Spring24 Cycle call for proposals

	Standard Access
DUO opens for submission	2023-09-04
Submission deadline	2023-09-25 23:59 CET
Beamtime period	Mar 2024 - Aug 2024
MAX IV aims to communicate final decisions to users during	Week 49

<https://www.maxiv.lu.se/user-access/call-for-proposals/>

<https://www.maxiv.lu.se/industry/>

IndustryOffice@maxiv.lu.se



Magnus
Larsson

Head of Industrial
Relations

ESS: European Spallation Source



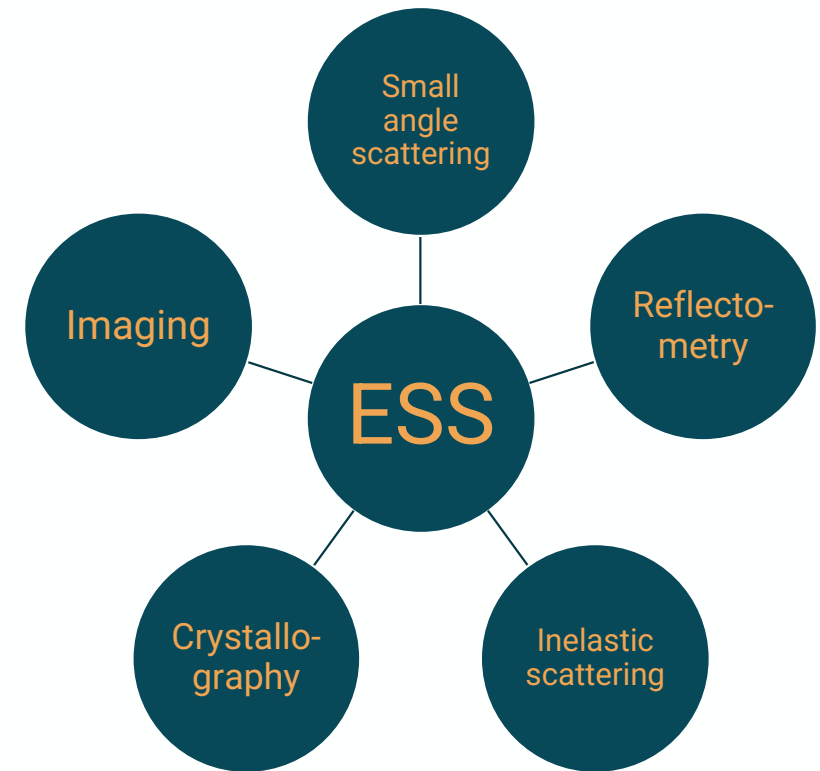
- European multi-disciplinary research facility based on the world's most powerful neutron source with **15 beamlines**.
- 526 employees (2022 figures).
- Set to open for user operations in 2027.

**Life Science & Soft
Condensed Matter**

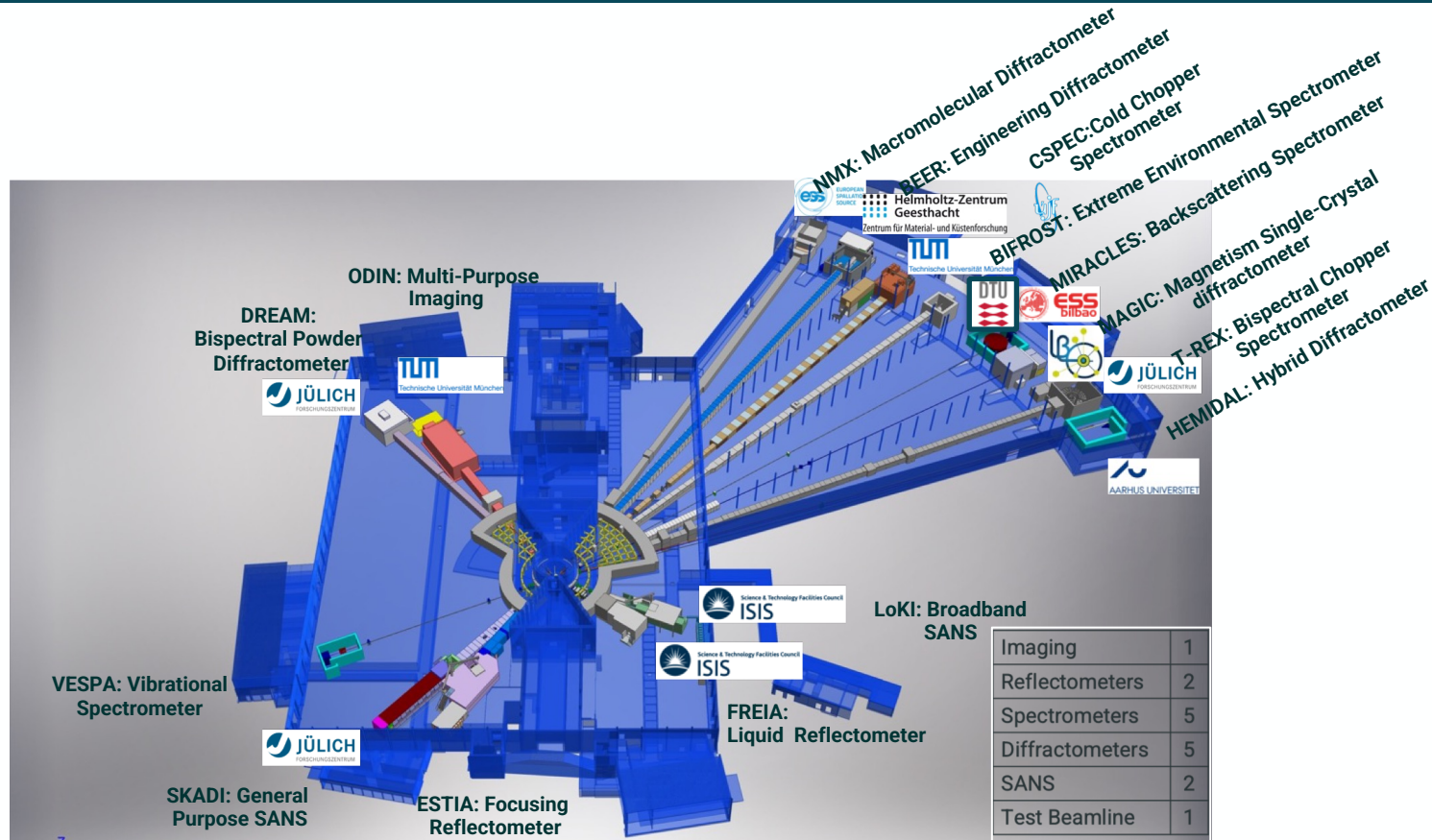
Chemistry of Materials,
Magnetic & Electronic
Phenomena

Engineering Materials,
Geosciences, Archeology &
Heritage Conservation and
Fast Neutron Applications

Particle Physics



ESS: beamlines & science support systems



SCIENCE SUPPORT SYSTEMS

PREMP: Sample Environment Systems for High Pressure and Mechanical Processing

FLUCO: Sample Environment Systems for Fluids Including Gases, Liquids and Complex Fluids

TEFI: Sample Environment Systems for Temperature and Fields

DEMAX: Deuteration and Macromolecular Crystallisation

SULF: Sample Handling and General Use Labs

MESI: Sample Environment Mechatronics and Software Integration

SCUO: Science Coordination and User Office

DEMAX at ESS: access



Chemical Deuteration: Organic synthesis of small molecules, monomers (e.g. pyruvate, lactic acid), lipids (e.g. POPC, SOPC, POPE), surfactants (e.g. sugar-based), other novel molecules.



Biological Deuteration: Deuterated biomass from *E. coli*, *B. braunii*, *P. pastoris*; recombinant soluble proteins, plasmid DNA, yeast-derived lipids (e.g. total, phospholipid).



Macromolecular Crystallization: High- and low-throughput screening, large crystal volume optimization, X-ray testing & data collection at room temp.

- **DEMAX Deuteration and Macromolecular Crystallisation.**
- Access to DEMAX support is managed through a peer-reviewed, proposal-based system and during this pilot phase, free of charge to users upon acceptance.
- Calls for proposals are issued periodically with submission deadlines or continuously through Rolling Access.

How can MAX IV, ESS & SciLifeLab be used in the field of structural biology?



MAX IV

- Macromolecular crystallography
- Serial crystallography
- Structure-based drug design
- BioMAX, MicroMAX & FragMAX



SciLifeLab

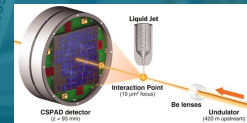
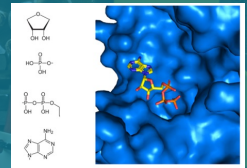
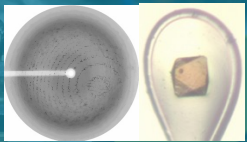
- Swedish NMR Centre (G)
- Structural Proteomics (Lu)
- Cryo-EM (S, Um, G, Lu, U)
- Drug Discovery & Development Platform

G=Gothenburg, Lu=Lund,
S=Stockholm, Um=Umeå,
U=Uppsala



ess
EUROPEAN
SPALLATION
SOURCE

- Macromolecular crystallography
- NMJ (2027)
- Deuteration and Macromolecular Crystallisation (DEMAX) platform (open)



InfraLife activities



Integrated Structural Biology Course 2022

- 2-week course in Lund, Gothenburg & Stockholm.
- Lectures, tours & practical work.



Nordic Life Science Days 2022

- 2-day event with hundreds of companies.
- Booth & meetings.
- Will attend again in 2023.



Some of the participants at the InfraLife Exchange dialogue on Fragment screening from spring 2022.

InfraLife Exchange Dialogues

- Seminars & discussions from all 3 infrastructures.
- Fragment Screening & Imaging took place in 2021-2022.
- All presentations are available on the InfraLife website.

InfraLife stories

- Stories involving any of the 3 infrastructures.
- Highlight the research being done and also informing others of what can be done at MAX IV, SciLifeLab and using neutrons.
- Mainly industry cases but others from academia too.
- **Industry case Webinar outreach series coming soon, stay tuned on LinkedIn.**



Creating tastier vegan cheese using synchrotron X-rays

by Josefin Lundgren / August 16, 2023

The quest for tastier, more sustainable vegan cheese has led Swedish food company Cassius AB to take a closer look at cheese protein structures. Using... [Read More](#) »



Industry case: SciLifeLab spin-out Rarity Bioscience enables precision medicine with superRCA technique

by Josefin Lundgren / June 13, 2023

Rarity Bioscience and SciLifeLab are collaborating to advance superRCA, a powerful tool for nucleic acid detection. The technique, initially a Technology Development Project at SciLifeLab, improves... [Read More](#) »



Industry case: Finding treatments for type 2 diabetes using X-ray crystallography

by Josefin Lundgren / May 26, 2023

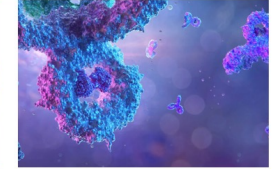
Diabetes is a chronic disease and a major cause of blindness, kidney failure, heart attacks, stroke, and lower limb amputation. The drug discovery company Implexion Pharma and Lund... [Read More](#) »



Industry case: Stable emulsions under X-rays

by Josefin Lundgren / March 13, 2023

Speximo AB and MAX IV Laboratory used the unique properties of synchrotron light combined with SAXS and WAXS techniques to obtain new information on the... [Read More](#) »



Industry case: "How biological drug development benefits from photons"

by Josefin Lundgren / February 8, 2023

Alligator Bioscience in collaboration with SARomics Biostructures used X-ray crystallography to unveil the unique characteristics of one of their antibody-drug candidates, proving how valuable synchrotron... [Read More](#) »



Industry case: Spearpoint Analytics develops algorithms to improve prostate cancer diagnostics

by Josefin Lundgren / May 25, 2023

Spearpoint Analytics has used AI compute and data sharing services available at SciLifeLab AIDA Data Hub to improve the diagnostic tools available for prostate cancer... [Read More](#) »



Industry case: Identifying leaking syringes with neutrons

by Josefin Lundgren / May 5, 2023

The biopharmaceutical company Sobi together with neutron experts from RISE used neutron radiography for the detection of leakages in prefilled syringes. The results show the... [Read More](#) »



Industry case: Investigating tablets

by Josefin Lundgren / May 4, 2023

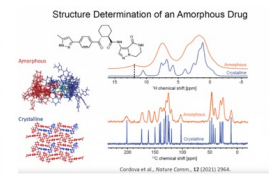
Magle Chemoswed is a Malmö-based contract development and manufacturing organization that supports companies in the pharmaceutical and medical device industry. In collaboration with Smilec Incubator... [Read More](#) »



Industry case: "Discover the true potential of your biomaterial with X-rays"

by Josefin Lundgren / January 20, 2023

BoneSupport AB and scientists from Lund University used X-ray tomography to observe how the bone substitute produced by the company behaves inside the bone. They... [Read More](#) »



Industry case: "Breakthrough high sensitivity NMR technique available through SciLifeLab/AstraZeneca collaboration"

by Josefin Lundgren / January 16, 2023

As a result of a long-term collaboration between the SciLifeLab Swedish NMR (Nuclear magnetic resonance) centre and AstraZeneca, advanced Dynamic Nuclear Polarization (DNP) NMR is... [Read More](#) »

SciLifeLab New Site Days

11th Sept.: UMEÅ



SciLifeLab UMEÅ UNIVERSITY
SLU
SciLifeLab Day
Umeå
11.SEP.2023
Registration now open!

More info and registration here

Linda Sandblad
Site Director

Sara Sandin
Site Coordinator

QR code for registration

<https://www.scilifelab.se/event/scilifelab-day-umea/>

28th Sept.: LUND



SciLifeLab LUND UNIVERSITY
SciLifeLab Day
Lund
28.SEP.2023
Registration now open!

Scan for programme and registration

Follow us on LinkedIn
SciLifeLab Lund

Markus Heidenblad
Site Director

Esther González-Padilla
Site Coordinator

QR code for registration

<https://www.scilifelab.se/event/scilifelab-day-lund/>

10th Oct.: LINKÖPING



SciLifeLab LINKÖPING UNIVERSITY
SciLifeLab Day
Linköping
10.OCT.2023
Registration now open!

Scan for more info and registration

Connect with us on LinkedIn
SciLifeLab Linköping

Fredrik Elinder
Site Director

Josefine Sandström
Site Coordinator

Henrik Green
Organisation Committee

QR code for registration

<https://www.scilifelab.se/event/scilifelab-day-linkoping/>

SciLifeLab relevant upcoming events

COURSE
SEP
26

Basic Course in Scanning and Transmission Electron Microscopy for Life Sciences

This course covers lectures and practical demonstrations in SEM and TEM techniques, specifically for life science applications. The contents include principles of electron microscopy, specimen preparation, cryo-electron microscopy and correlative [...]

📍 SciLifeLab Umeå 📍 KBC Building Umeå Linneaus Väg 6, Umeå

🕒 September 26 @ 08:00 - September 28 @ 17:00 CEST

Registration closes: September 15th.

Location: Umeå

<https://www.scilifelab.se/event/basic-course-in-scanning-and-transmission-electron-microscopy-for-life-sciences/>

EVENT
OCT
4

6th CryoNET Symposium in Stockholm

CryoNet is a Nordic network in Cryo-electron microscopy that aims to promote collaboration and knowledge sharing across national borders. A main goal is to help establish state-of-the-art cryo-electron microscopy as [...]

📍 CryoNet
📍 G Lecture Hall, Arrhenius Laboratories Svante Arrhenius väg 20C, Stockholm University, Stockholm, Sweden

🕒 October 4 @ 09:00 - October 5 @ 17:00 CEST

Registration open. Abstracts welcome.

Location: Stockholm

<https://www.scilifelab.se/event/6th-cryonet-symposium-in-stockholm/>

COURSE
OCT
17

Cryo-EM sample preparation and data collection

The purpose of the course is to prepare and train Cryo-EM facility users in sample preparation methods, introduce users to the image data acquisition workflow, expand knowledge about cryo-EM methods [...]

📍 SciLifeLab Umeå 📍 KBC Building Umeå Linneaus Väg 6, Umeå

🕒 October 17 @ 08:00 - October 19 @ 17:00 CEST

Applications close: September 29th.

Location: Umeå

<https://www.scilifelab.se/event/cryo-em-sample-preparation-and-data-collection-2/>

MAX IV/LINXS relevant upcoming events

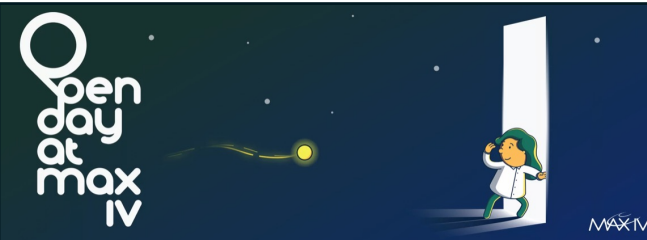


Registration closes: September 4th for symposium and lectures.
LINXS & MAX IV
1000-1500 SEK
Location: Lund & Online option
<https://www.linxs.se/events/2023/09/18-22/spdd-symposium-phd-course>

PRISMAS PhD Programme



Call opens in September/October 2023
PRISMAS=PhD Research and Innovation in Synchrotron Methods and Applications in Sweden
<https://www.maxiv.lu.se/education-outreach/programs-and-activities/prismas/>



September 16th 2023
Apply for free tickets from August 15th 2023 and September 8th 2023.
<https://www.maxiv.lu.se/education-outreach/open-days/>

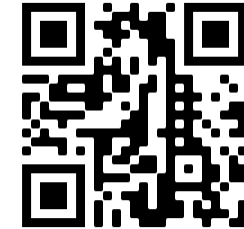
Contacts

Josefin Lundgren Gawell

Project Coordinator

Location: Stockholm

josefin.lundgren.gawell@scilifelab.se



<https://www.infralife.se>



InfraLife



[https://www.linkedin.com/
company/infralife](https://www.linkedin.com/company/infralife)



Claire Lyons

Project Coordinator

Location: Lund

claire.lyons@maxiv.lu.se

ESS
MAX IV



SciLifeLab