SciLifeLab

Advancing life sciences

Annika Jenmalm Jensen, Infrastructure director

Sandra Falck, Head of Operations

MAX IV user meeting January 14th 2025.

What is SciLifeLab?

Founded in 2010 by Karolinska Institutet, KTH Royal Institute of Technology, Stockholm University and Uppsala University

Enabling life science research otherwise not possible

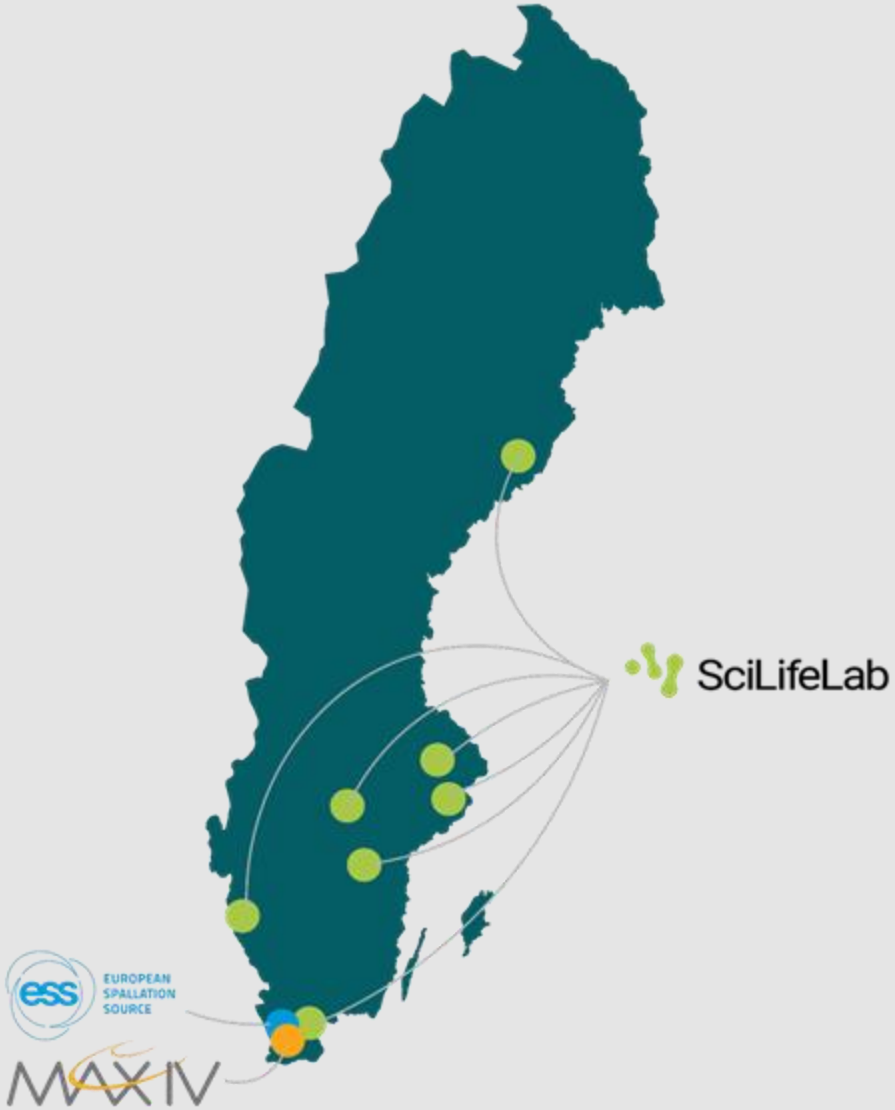
Government commissioned **national research infrastructure**

Research community bridging universities and disciplines

Today, activities at **all major Swedish universities** with sites launched in Linköping, Lund, Gothenburg and Umeå

Collaborations with **healthcare, industry,** other governmental agencies and international organizations

Partner of ESS and MAX IV, e.g. through InfraLife



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Growth 2014-2024

2014

~2 600
projects
in 2014

- National research infrastructure **153 MSEK**
- SFO funding **149 MSEK**
- Drug development **41 MSEK**

30% Of academic users are based outside founding universities

2024

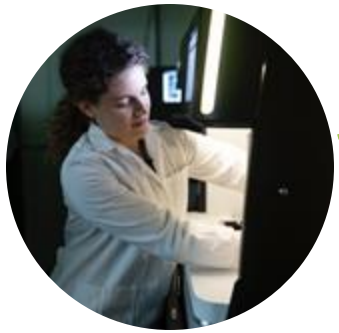
~4 300
projects
in 2024

Governmental
- National research infrastructure **289 MSEK**
- SFO funding **174,5 MSEK**
- Drug development **59 MSEK**
- Pandemic laboratory preparedness **32 MSEK**

Non-governmental
- DDLS **320,5 MSEK**

60% Of academic users are based outside founding universities

Areas of activities



Provide cutting-edge life science infrastructure

10 service platforms
40 units
1,600 users
3,500 projects
600 technology experts

Empower research & form global partnerships

300 group leaders across all sites

Strategic capabilities:
Precision Medicine, Planetary Biology, Pandemic Laboratory Preparedness, Drug Discovery & Development

International collaborations

Transform life science data into knowledge

SciLifeLab & Wallenberg Program for Data-Driven Life Science (DDLS)

Computational and data science services for real-time FAIR data sharing

AI and data science expertise in life science

Attract scientific excellence and provide advanced training

International junior faculty programs

Training tech. experts

PhD and postdoc training together with industry

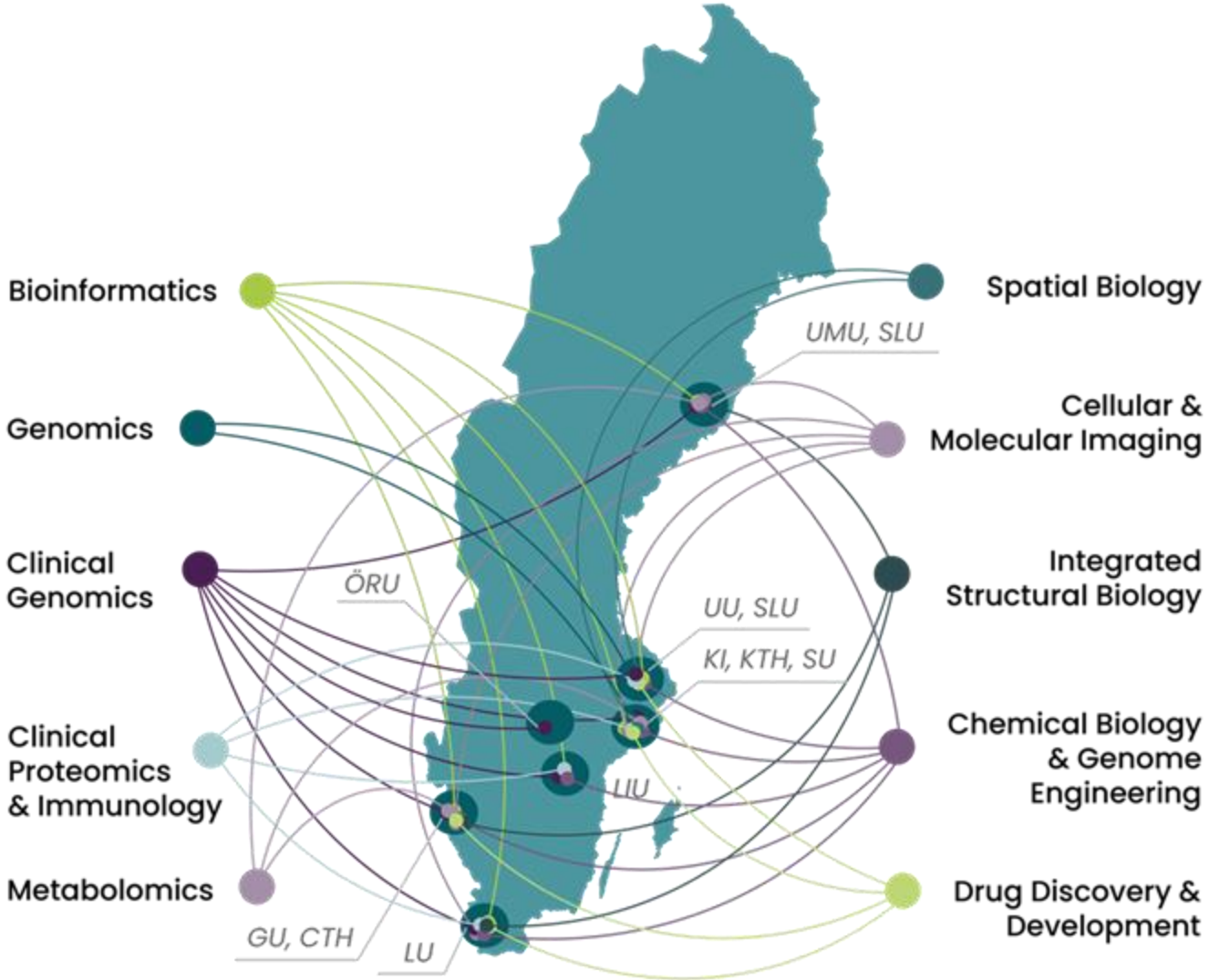
Innovation and impact for the benefit of society

Collaborations across sectors and borders, with industry and healthcare

SciLifeLab

Infrastructure

SciLifeLab Infrastructure



Infrastructure staff

632 staff scientists

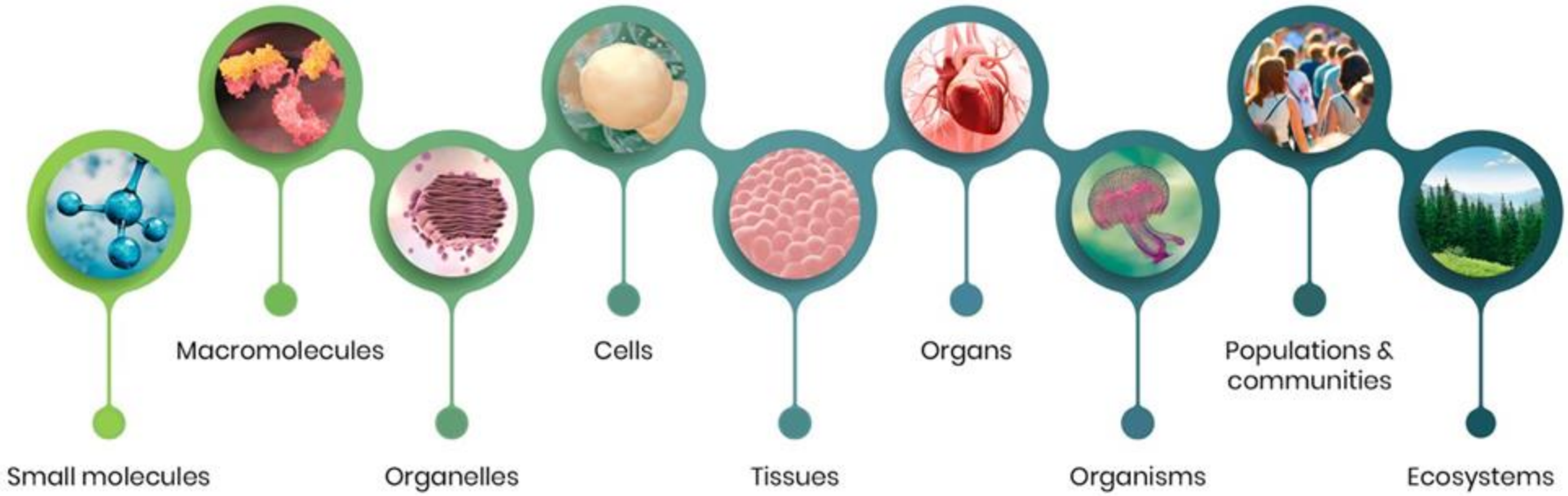
52% women

~70%

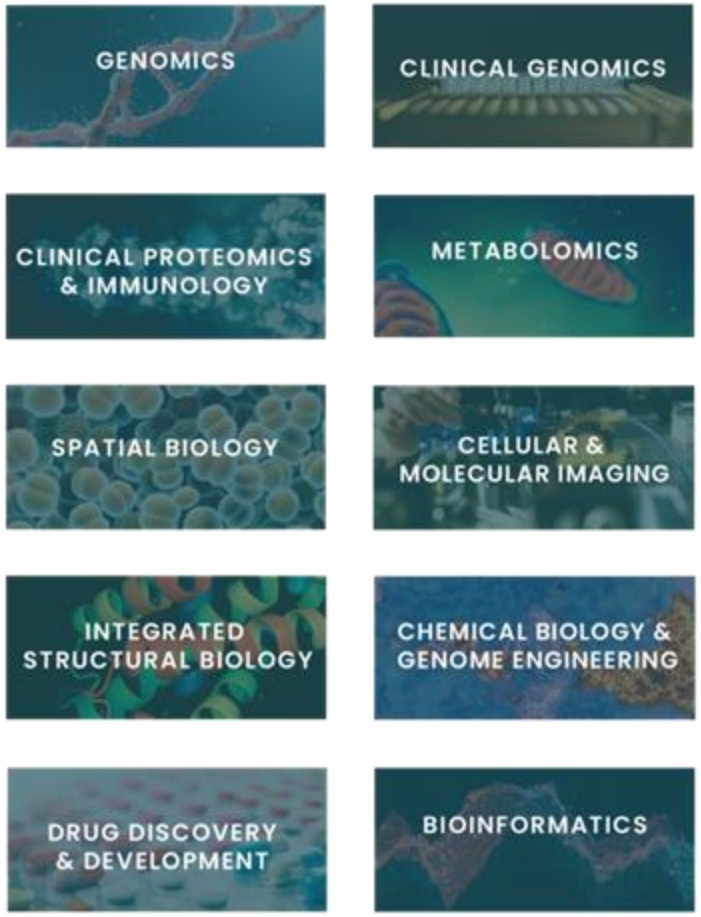
Of infrastructure staff hold PhD

Access for you via https://www.scilifelab.se/services/

Supporting projects from all aspects of life science



Award-winning technology available to all researchers in Sweden on equal terms



Nobel Prize-winning technologies

Available at SciLifeLab since before award

Technology	Award year
Ancient DNA	2022
Click chemistry	2022
CRISPR-CAS	2020
Phage display	2018
Cryo-EM	2017
Super-res microscopy	2014

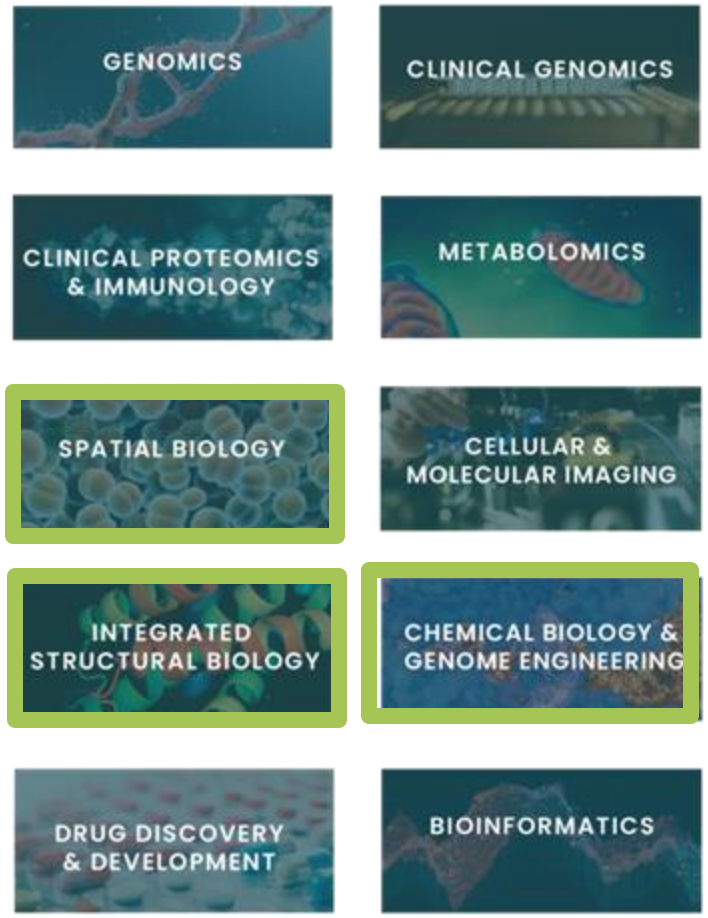
Nature Method of the Year-winning technologies

Available at SciLifeLab

Method	Award year
Spatial proteomics	2024
Long-read sequencing	2022
Protein structure prediction	2021
Spatial transcriptomics*	2020
Single-cell multimodal omics	2019
Epitranscriptome analysis	2016
Single-particle Cryo-EM	2015
Light-sheet fluorescence microscopy	2014
Single-cell sequencing	2013
Targeted proteomics	2012

In large part developed at SciLifeLab

Afternoon session presentations



Charlotte Stadler

Cecilia Persson

Flavio Ballante

15:00	Integrated Structural Biology in Sweden, a collaborative and scientific example *– Tobias Krojer (MAX IV)* *– Josefin Lundgren Gawell, Cecilia Persson & Flavio Ballante (SciLifeLab)* *– Esko Oksanen (ESS)*
16:00	Spatial Imaging Methods, a collaborative scientific example with MAX IV and SciLifeLab *– Marc Obiols & Bryan Falcones (MAX IV)* *– Oxana Klementieva (LU)* *– Charlotte Stadler (SciLifeLab)*

Infrastructure user statistics

~4 300
projects in 2024

~1 900
individual users in 2024

- Academia, national 78%
- Healthcare 14%
- Academia, international 4%
- Industry 2%
- Other gov. agencies 2%

~300 international users & collaborations

In 2024, projects from Asia, Africa, Europe, Oceania, North America and South America.

>10 petabytes

of data generated annually by the infrastructure (*equal to 10,000 terabytes*)

Infrastructure user statistics

Academic users

2024	%
Karolinska Institutet	18
University of Gothenburg	16
Uppsala University	14
International universities	12
Lund University	10
Umeå University	10
Stockholm University	5
SLU	5
Linköping University	4
KTH	3
Chalmers	2
Other Swedish universities	2

Non-academic users

~150
industry users or projects

71,000
patient samples analyzed by Clinical Genomics in 2024 (26,000 for research and clinical studies, 45,000 for healthcare)

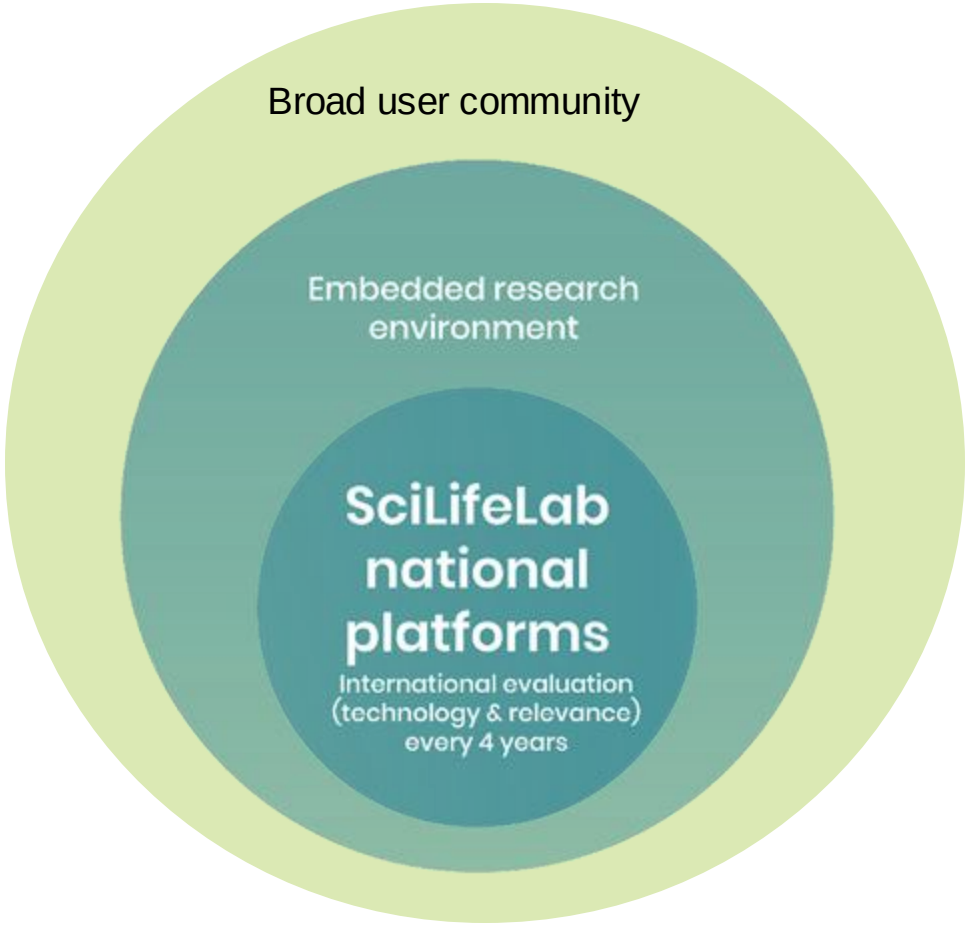
Infrastructure staff

~70%
Of infrastructure staff hold PhD

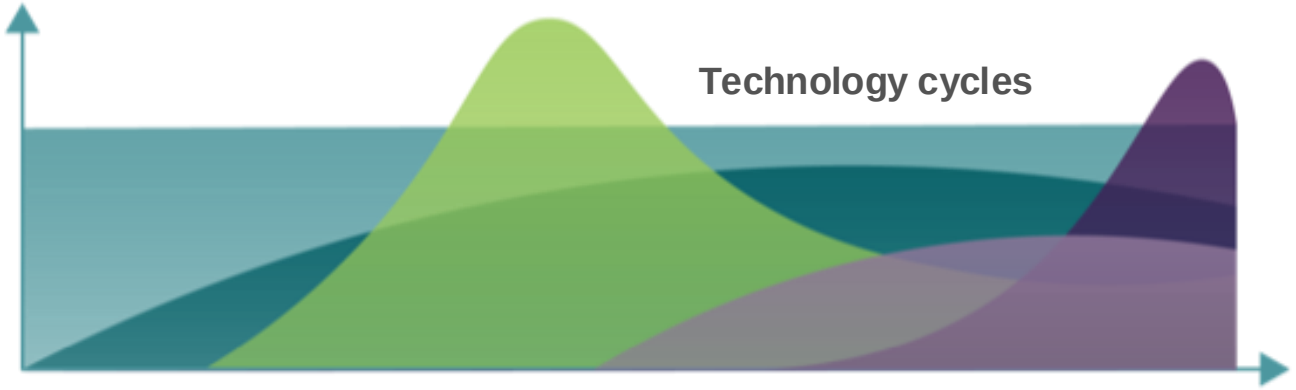
632 staff scientists

52% women

Keep infrastructure at the global forefront

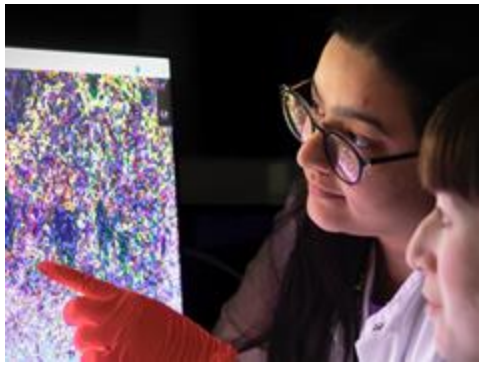


- **Platform centric organisation** continuously reacting to emerging needs
- **Internal tech development**, 20% (General terms and conditions for funding)
- **Interaction** with associated research environments
- **Tech. dev. project** and **Expensive instrument calls**
- **International review** every 4 years with mid-term checkup in between + annual reporting –**IEC 2024**



Summary of strategic advice from IEC 2024

Data and AI strategy

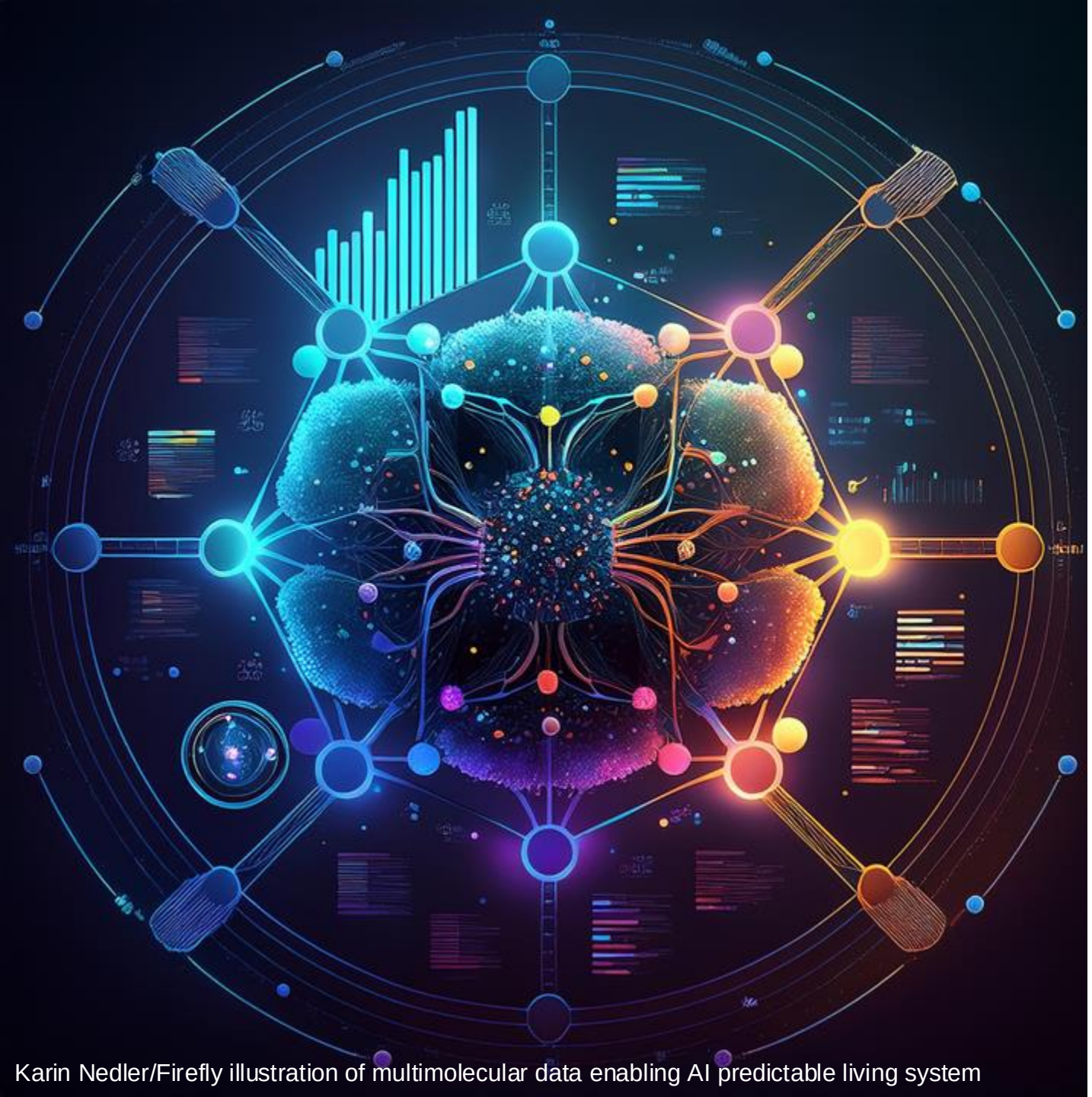


New technology uptake

Cross-platform collaboration & workflows

Better translation from research to healthcare

career development of expert staff



Karin Nedler/Firefly illustration of multimolecular data enabling AI predictable living system

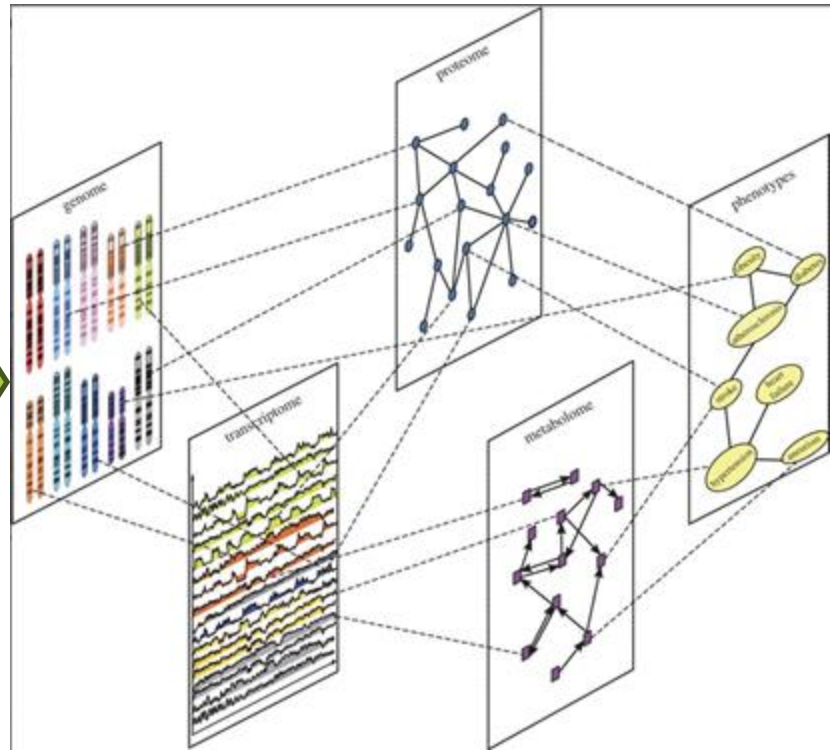
Life science is at a turning point in history

- Driven by large amounts of **quantitative molecular data**
- Moving from molecular inventories to map living systems in **space and time**
- Harnessing the AI revolution to **predict** and **explain** living systems
- Molecularly predictive understanding of living systems will allow to address **health** and **environmental challenges**

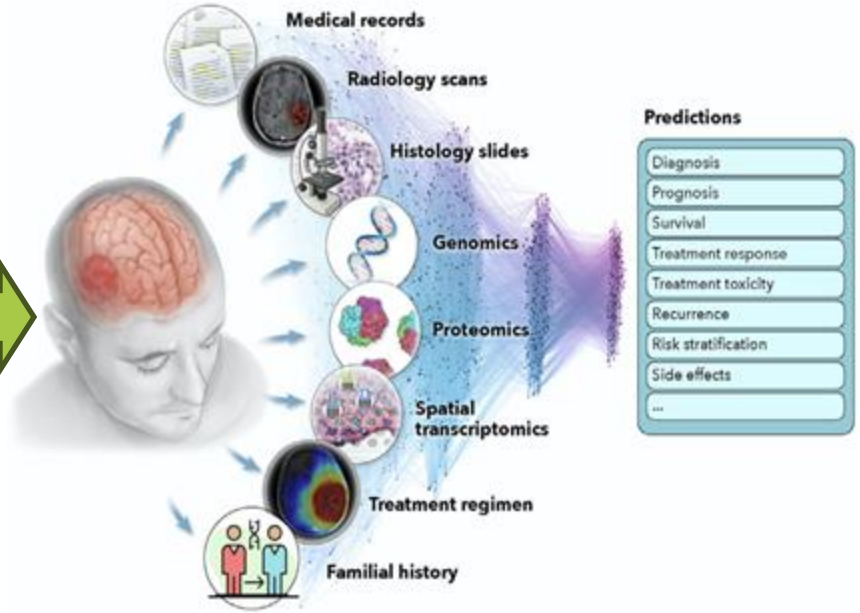
SciLifeLab technology- and data-driven capabilities to understand the “languages of life”

SciLifeLab Infrastructure

Data: Understanding the language of genomics (evolution), transcriptomics, proteomics, metabolomics, single cells, spatial biology, function etc.



AI-based integration and prediction of outcomes



Gligorijević & Pržulj, 2015

Capabilities

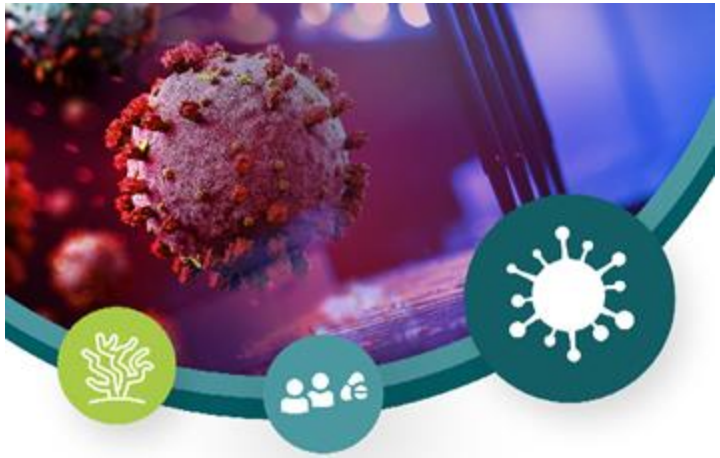
Strategic capabilities around which SciLifeLab gathers infrastructure technology, research & expertise

Planetary Biology

Studying life in the environmental context

Precision Medicine

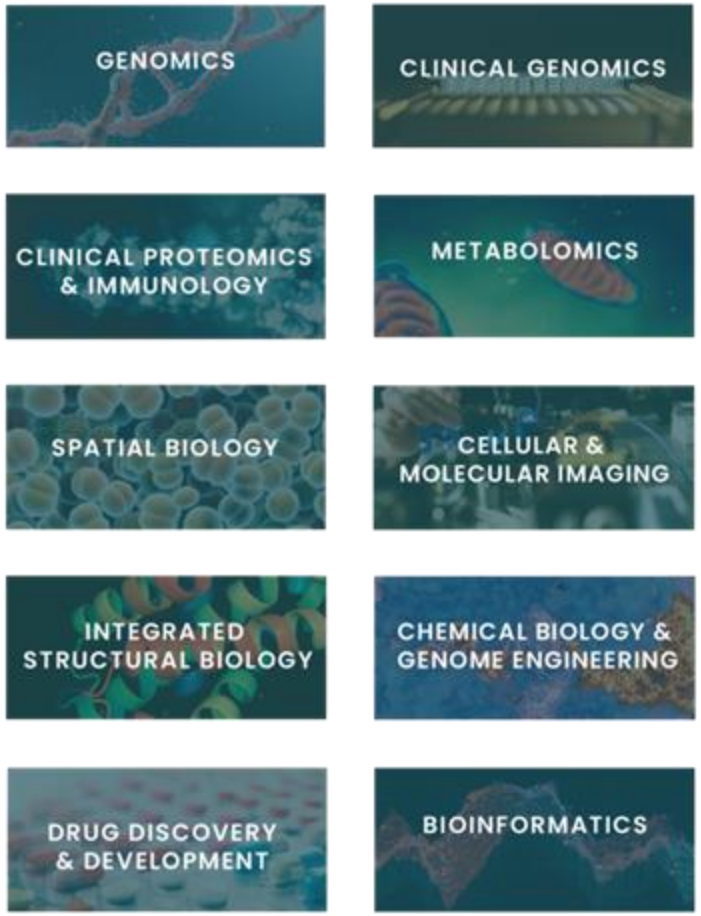
Bringing cutting-edge tech. and first-class expertise towards patient benefit



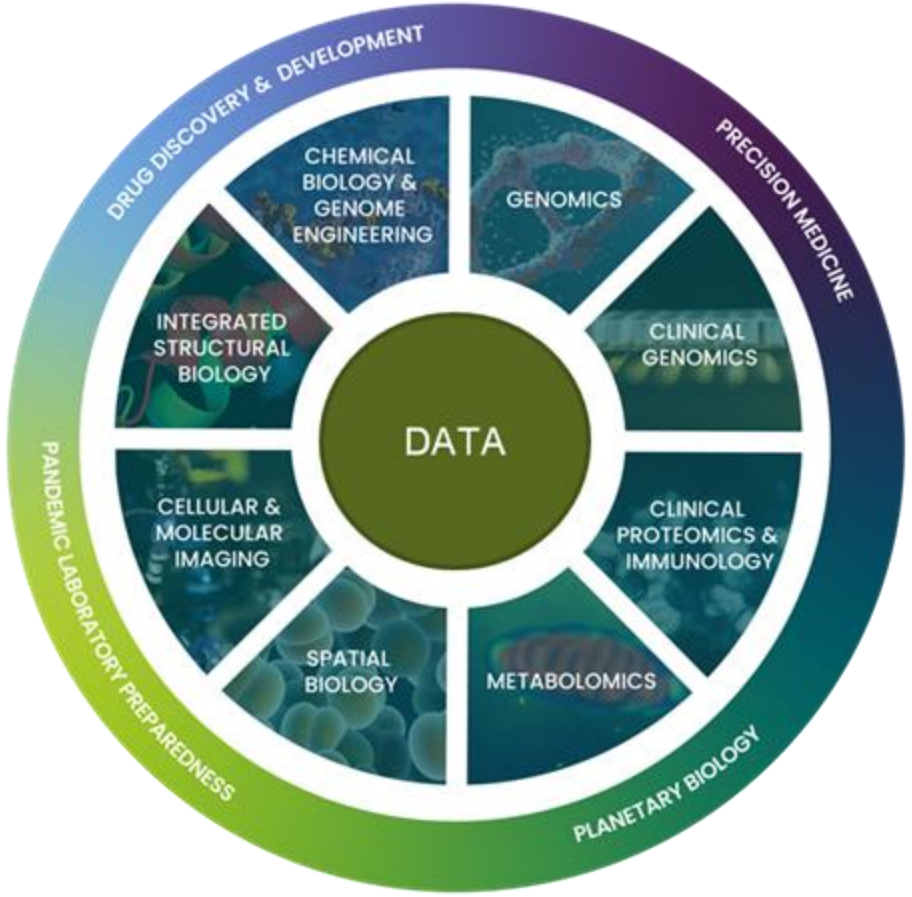
Pandemic Laboratory Preparedness

Building laboratory capacity to assist in future pandemics

SciLifeLab Infrastructure future

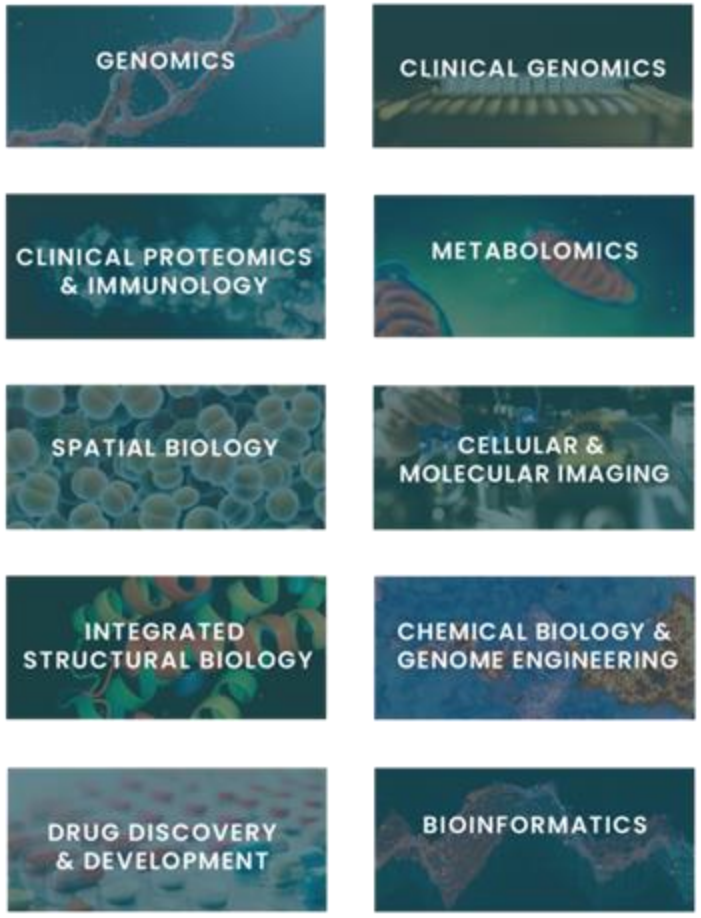


Today

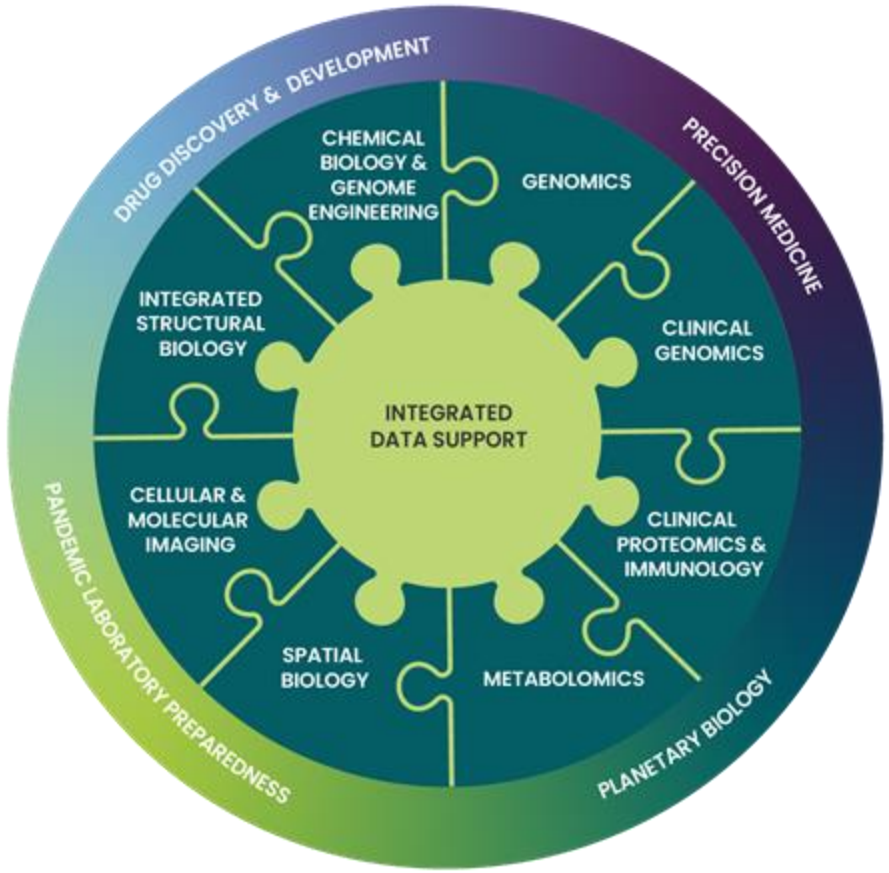


Future

SciLifeLab Infrastructure future



Today



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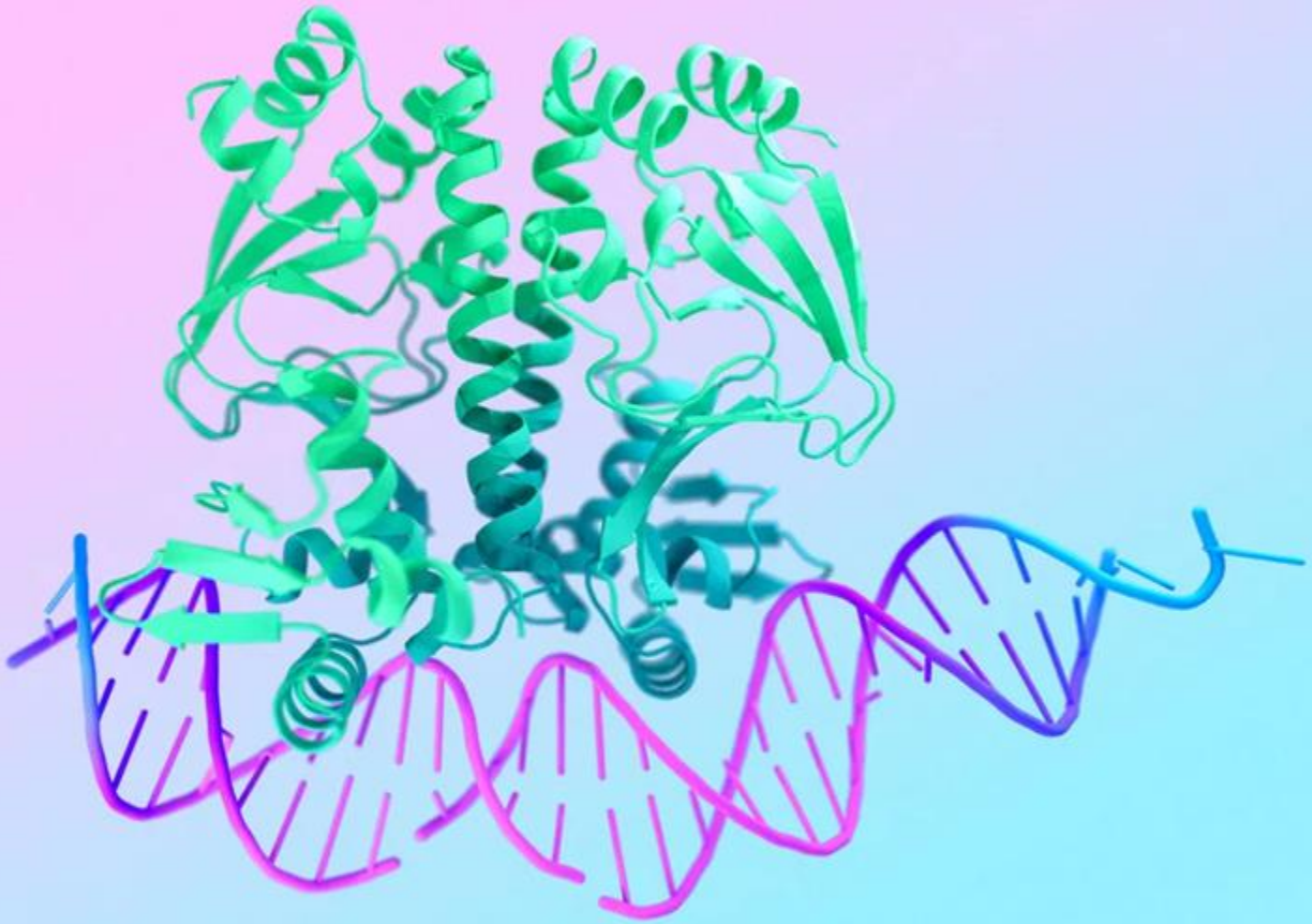
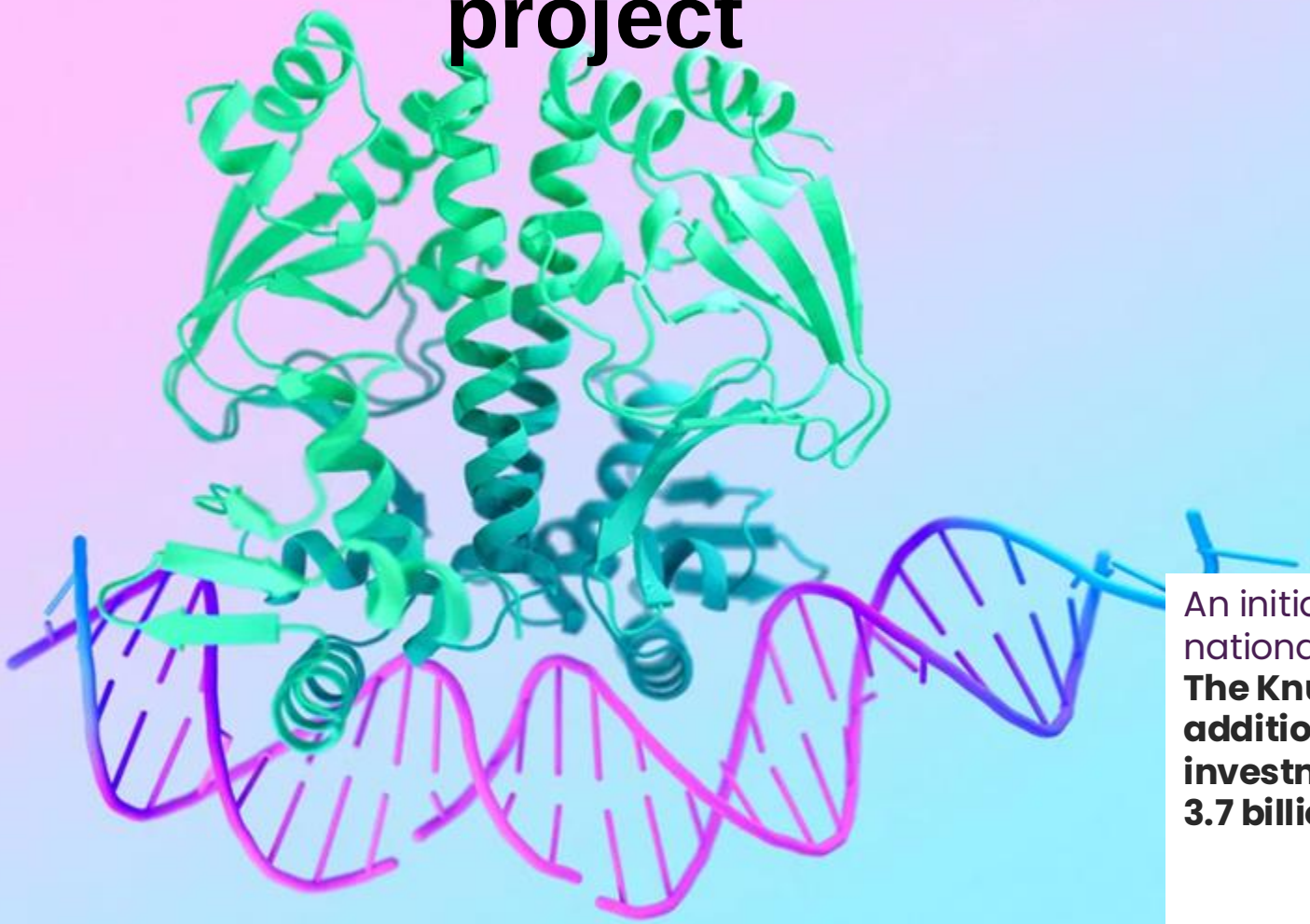


Image: Google DeepMind and Isomorphic Labs

From alpha-fold **to alpha cell**

- We can predict – but *not* explain – the structure of individual macromoleus
- **In the next decade, we should aim to predict – <u>and</u> explain – the fundamental unit of life, the cell**

Alpha cell - Expansion of DDLS KAW project



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An initiative to strengthen AI and life science for increased national competence

The Knut and Alice Wallenberg Foundation allocates an additional SEK 600 million to data-driven life science. The total investment from the Foundation in the area now amounts to SEK 3.7 billion.

SciLifeLab PULSE postdoctoral program

- Funded by Marie Skłodowska-Curie Actions COFUND
- 48 postdocs recruited in two calls: Jan 2025 and Jan 2026 (first cohort starts Oct 2025)
- First call: Jan 7 - March 31, 2025
- 3-year fellowships hosted by SciLifeLab Group Leaders across 9 universities, with secondments at 24 partners
- Focus on innovative, fundamental, and translational research in diverse environments
- Offers academic (32 positions) and entrepreneurial (16 positions) tracks
- Provides skills for long-term career sustainability through specialised training and mentor support

For application details or hosting inquiries, visit scilifelab.se/research/pulse

Co-funded by the European Union

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Annika

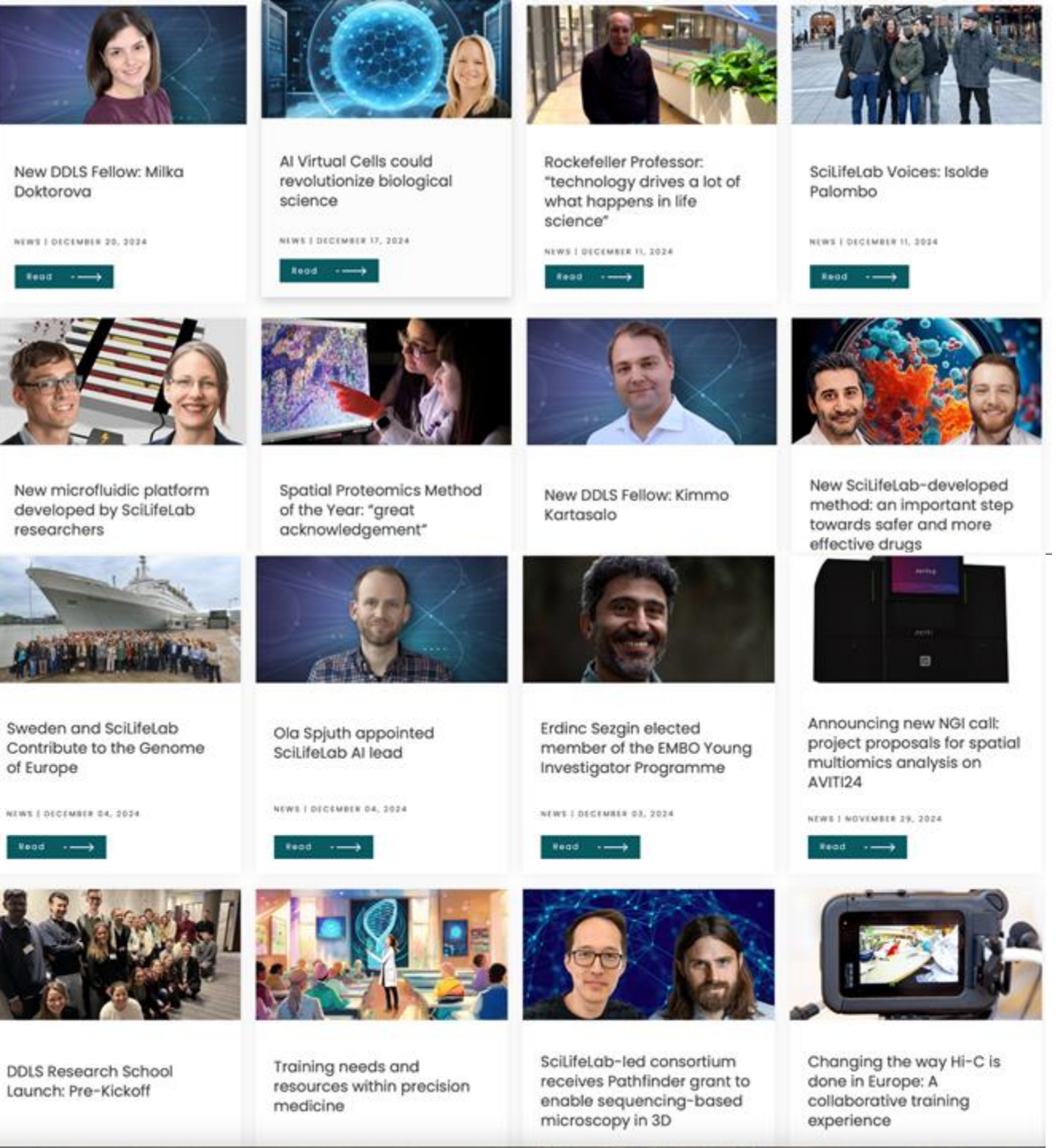
Sandra

Josefin

THANK YOU!

Come talk to us.

We look forward to having you as an infrastructure user, course participant, PULSE applicant…



SciLifeLab newsletter

- Research highlights
- Technology development
- Calls
- Courses
- Open positions

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