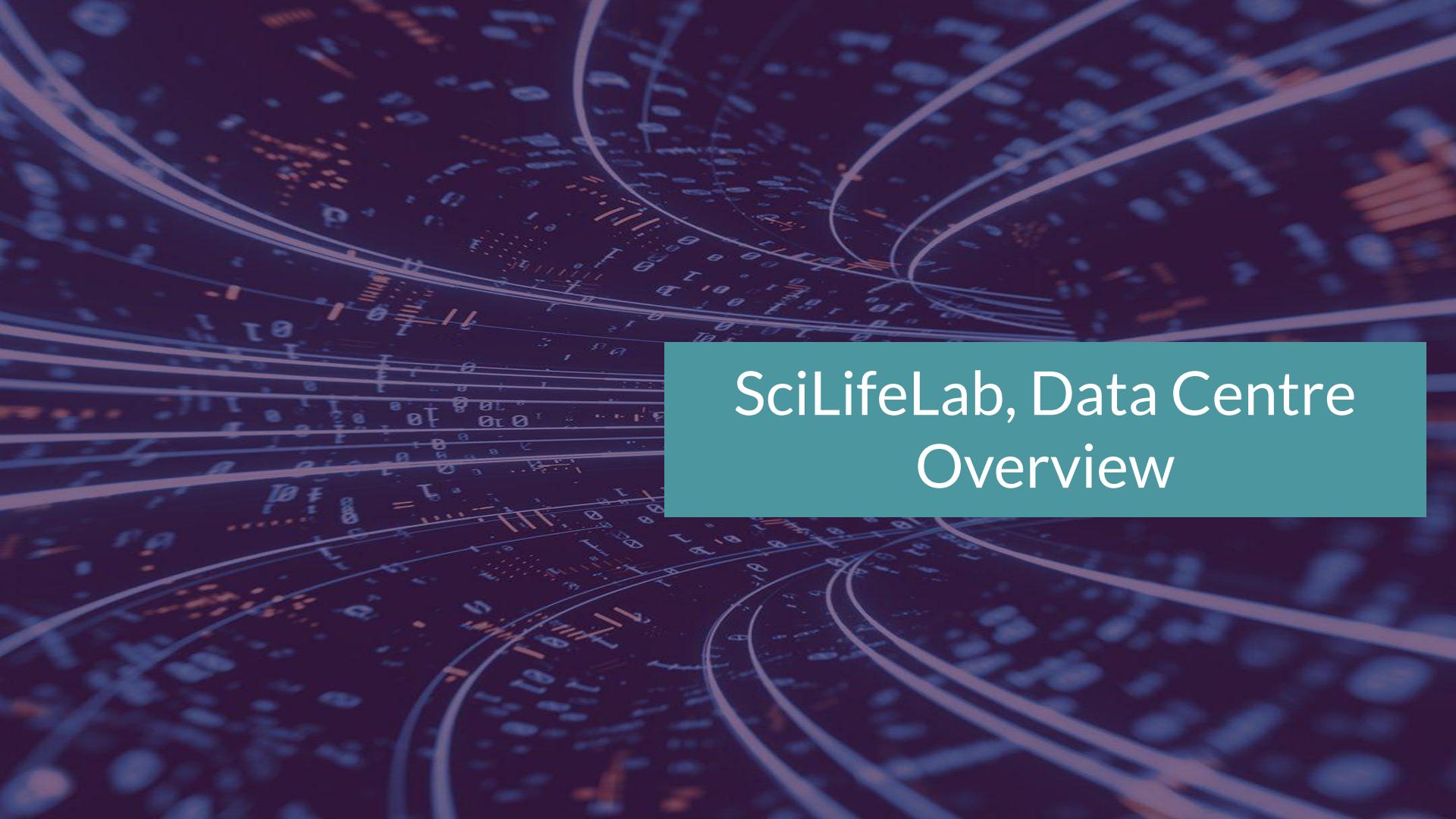




SciLifeLab's Open Science Unit: A Roadmap for Advancing and Supporting Open Science and FAIR Principles Across a Life Sciences Organisation and Beyond

Chris Erdmann
Head of Open Science, SciLifeLab
christopher.erdmann@scilifelab.uu.se
18 October 2024

The background of the slide features a complex, abstract design. It consists of numerous white, glowing lines that form a network or tunnel-like structure against a dark blue and black background. Interspersed among these lines are small, white binary digits (0s and 1s) and some orange characters, suggesting a digital or data-oriented theme.

SciLifeLab, Data Centre Overview



What is SciLifeLab?



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

National hub **enabling** life science research that would otherwise not be possible

Government appointed mission as a **national research infrastructure**

Research community gathering scientists across universities and disciplines

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

... and collaborations with healthcare, industry, other governmental agencies and international organizations

Areas of activities



Provide excellent and impactful life science infrastructure

10 service areas and 40 units
1,600 users and 3,500 projects yearly
600 technology experts



Strengthen research communities, capabilities, and global partnerships

300 group leaders across all sites
Capabilities: Precision Medicine, Pandemic Laboratory Preparedness, Planetary Biology
Drug Discovery & Development
International collaborations e.g. EMBL



Facilitate the transformation of life science data into knowledge

SciLifeLab & Wallenberg Program for Data-Driven Life Science (DDLS)
Computational and data science base for open and FAIR data sharing
AI and data science expertise in life science



Attract scientific excellence and provide advanced training

SciLifeLab and DDLS Fellows program
Training hub
PhD and postdoc training



Innovation and bridge-building for the benefit of society

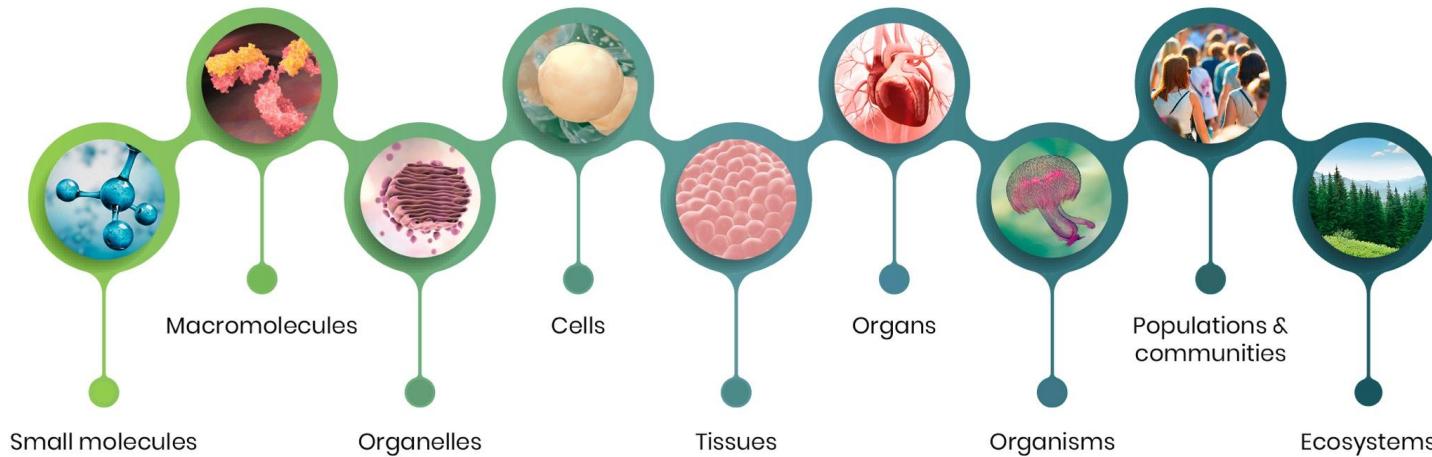
Collaborations across sectors and boarders, with industry and healthcare

Supporting projects from all areas of life science



SciLifeLab infrastructure:

- Provides **advanced technologies, unique instruments and expert-know how**
- **Open to all academic researchers** in Sweden on equal terms
- Open to industry, healthcare, other governmental agencies and international users (subject to capacity)
- Enables to study the molecular aspects of life **from the atomic to ecosystems scale**
- Applicable across **disciplines and research fields** in life science



Infrastructure users and data



~3 700

projects
in 2022

~1 800

individual users
in 2022



~100 international users

In 2022, 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)

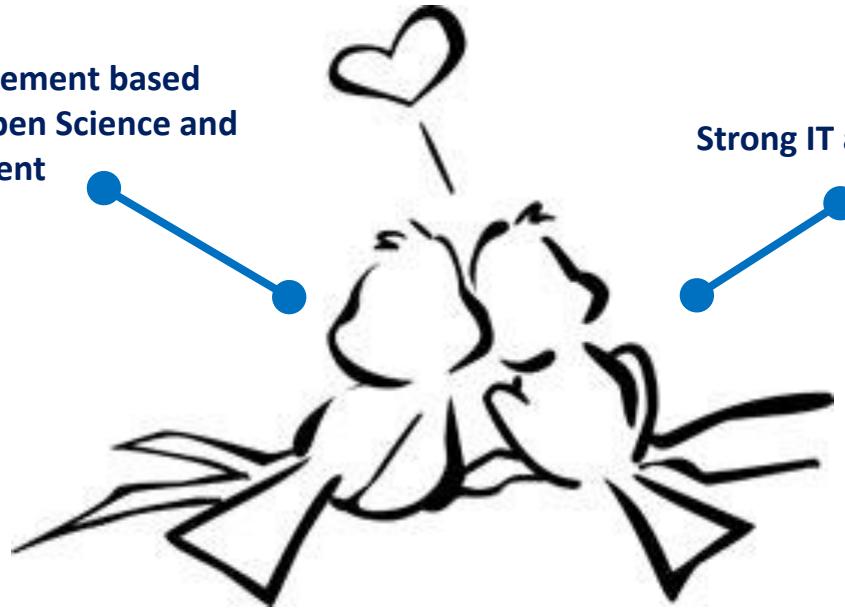


SciLifeLab Data Centre Philosophy



Research data management based
on FAIR principles, Open Science and
community engagement

Strong IT and e-infrastructure



This is the SciLifeLab Data Centre



Management and admin



Johan Rung
Head of DC
Anna Henriksson
Administrator
Mathias Brännvall
Coordinator
Lars-Owe Ivarsson
IT administration

Open Science



Chris Erdmann
Head of Open Science
Matthias Hörtnerhuber
System developer, nf-core
Harshita Gupta
System developer, Training Hub
Arthur Rosendahl
System developer
Sonja Mathias
System developer
Rickard Hammarén
System developer
Suné Joubert
Project coordinator

RDM Services and support



Hanna Kultima
Vice Head of DC
Head of Services & Support
Elisabeth Sundström
Project leader
Anna Asklöf
Data steward
Parul Tewatia
Data steward
Angela Fuentes Pardo
Data steward
Katarina Öjefors Stark
Data steward
Natashia Benzian Olsson
Data steward
Joanna Sendecka
Data steward

Associated staff



Soumi Chaki
Application expert, NSC
Xuan Gu
Application expert, NSC
Wojtek Potrzebowksi
Data science coordinator, LU

IT systems and infrastructure



Jonas Svensson
Head of IT systems and infrastructure
Ann-Charlotte Sonnhammer
Information security & legal
Konstantin Dossis
Solutions architect
Lars Rosenquist
Senior infosec advisor
Erik Sjölund
IT specialist Kubernetes
Ina Odén Österbo
Product Owner
Valentin Georgiev
Systems Developer
Alvaro Revuelta
Systems Developer
Jonas Hagberg
CTO
Aishling Cooke
Senior engineering manager
Hans Åkerman
IT specialist Kubernetes

Data science systems



Ola Spjuth
Head of AI
Liane Hughes
Project leader
Senthilkumar Panneerselvam
System developer
Arnold Kochari
Project leader
Nikita Churikov
Data engineer (AI)
Johan Alfredéen
Data engineer (AI)
Hamza Imran Saeed
Data engineer (AI)
Kazi Jahurul Islam
Systems Developer

18 nationalities
23 M / 18 F
40% PhD
Developers / engineers / data stewards

Data Centre develops and operates data services

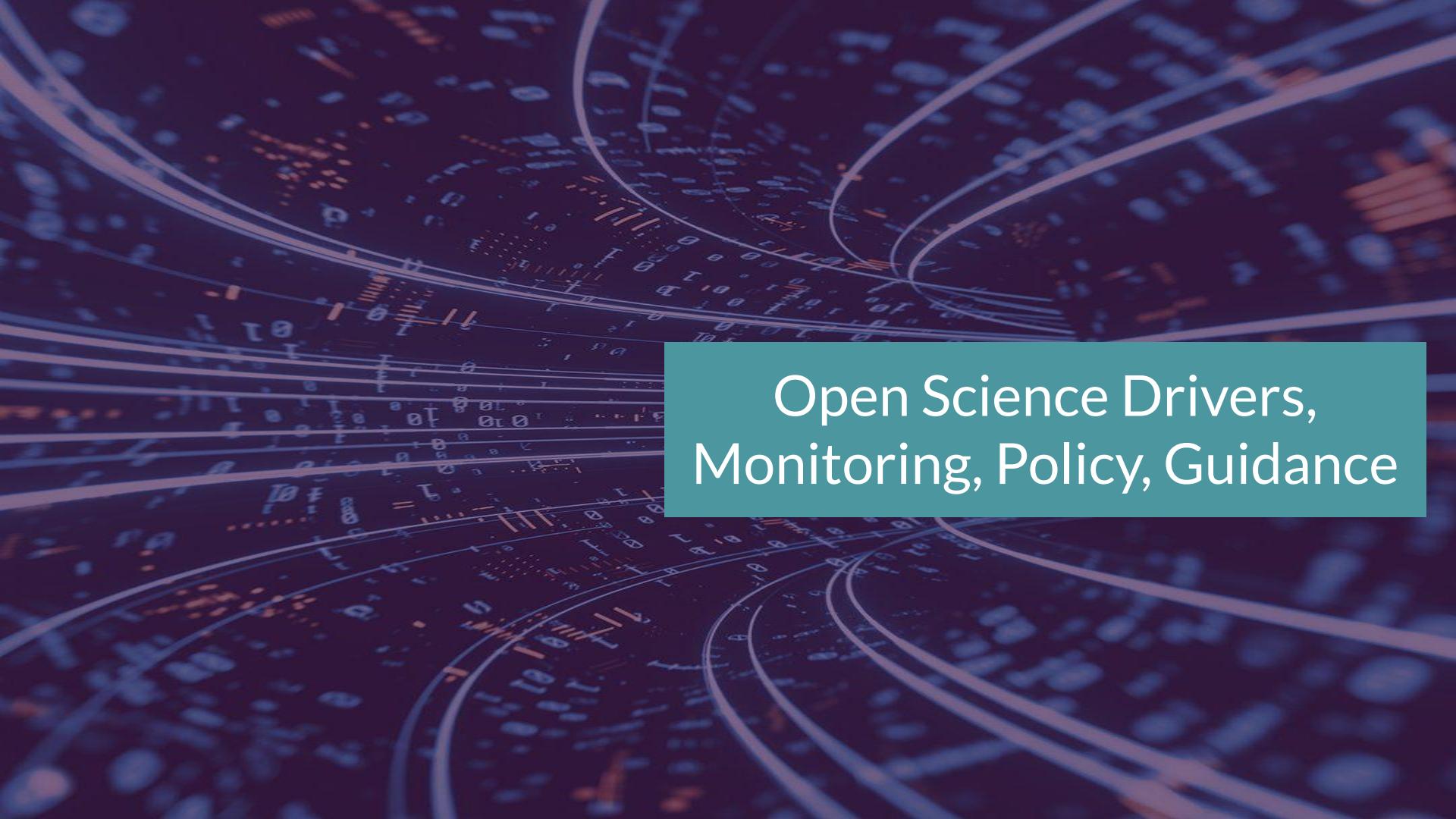


- Pathogens Portal
- RDM Services & Guidelines (NBIS)
- Data Stewardship Wizard
- Serve
- FAIR Storage
- Data Delivery System
- Nf-core
- Seminar Series / Events
- Collaborations: EMBL-EBI, VIB, CSC, CERN, SDSC...

The collage includes:

- PATHOGENS SciLifeLab**: Welcome to the new Swedish Pathogens Portal. It features a dashboard with a landscape image, a "Data Platform" section, and a "Hub for data-driven life science research in Sweden".
- SciLifeLab Data Platform**: A dashboard showing 41,343 views and 27,488 downloads.
- SciLifeLab RDM Guidelines**: Knowledge hub for the management of life science research data in Sweden. It includes sections on the purpose of guidelines, research data management, and a "Research data life cycle" diagram.
- SciLifeLab Serve**: A service for publishing and serving machine learning models. It shows a "About this platform" section and a "Get your work featured!" section.

data.scilifelab.se

The background of the slide features a complex, abstract design. It consists of numerous white, glowing lines that form a network or a series of paths across a dark blue to black gradient. Interspersed among these lines are small, white binary digits (0s and 1s) and some orange hexidecimal characters (like F, E, D, C). The overall effect is one of digital data flow, computation, and connectivity.

Open Science Drivers,
Monitoring, Policy, Guidance

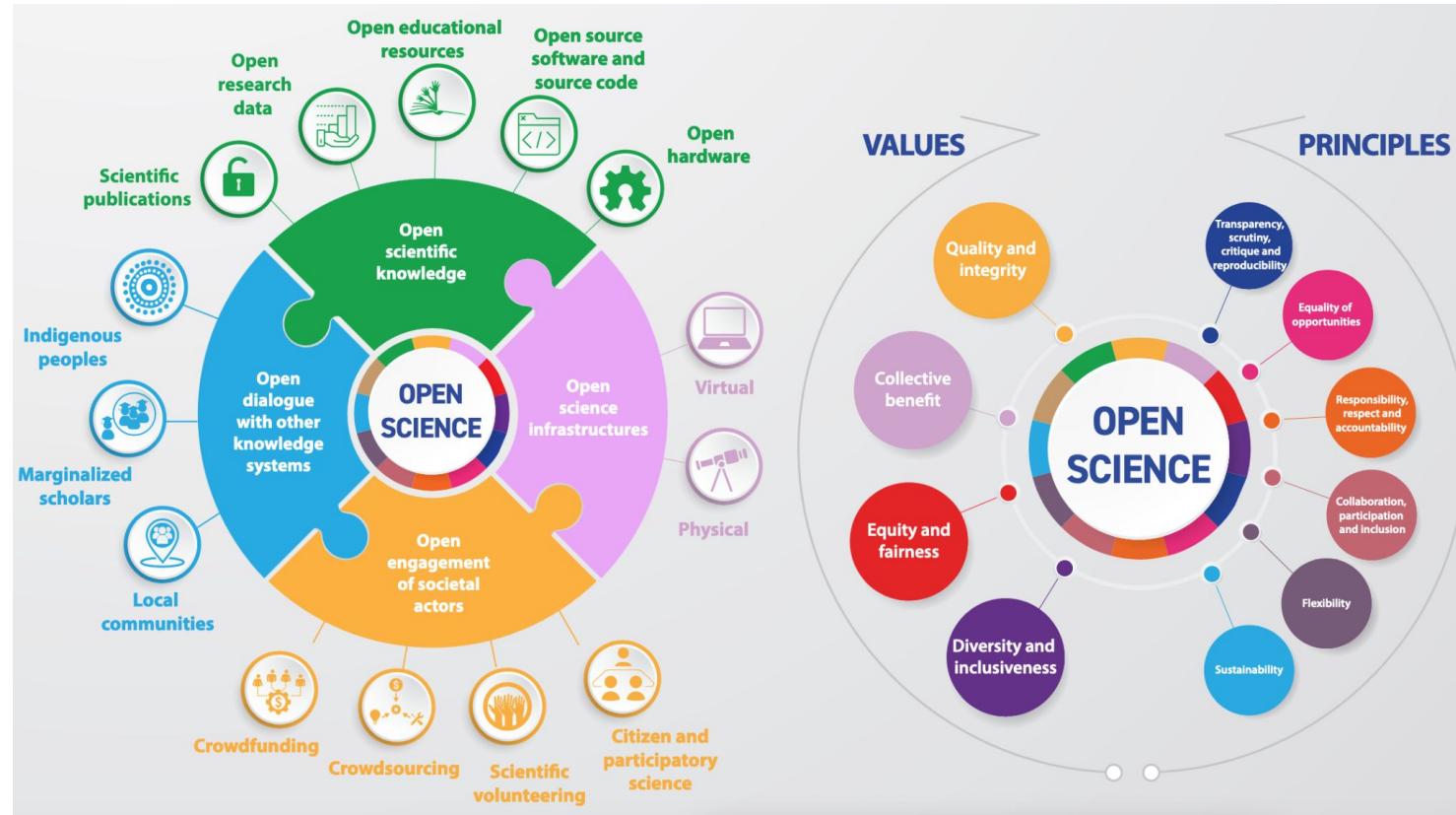
UNESCO Open Science Definition



An **inclusive** construct that combines various movements and practices aiming to make multilingual scientific knowledge **openly** available, accessible and reusable for everyone, to increase scientific **collaborations** and **sharing** of information for the benefits of science and **society**, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors **beyond the traditional** scientific community.



UNESCO Open Science Recommendations & Toolkit





Coalition for Advancing Research Assessment

Our vision is that the assessment of research, researchers and research organisations recognises the diverse outputs, practices and activities that maximise the quality and impact of research. This requires basing assessment primarily on qualitative judgement, for which peer review is central, supported by responsible use of quantitative indicators.

National Guidelines for Open Science



National guidelines for promoting open science in Sweden

15 januari 2024

Open Science (In
English)

On behalf of the Swedish government, the National Library of Sweden (Kungliga biblioteket, KB) has developed national guidelines for open science. The guidelines are intended to provide support and guidance to actors in Sweden who have an important role to play in the transition to open science.



- **Open Access to Scholarly Publications:** Research publications freely available without any subscription or payment barriers
- **Open Access to Research Data:** Availability/accessibility of research data for reproducibility, to further scientific inquiry
- **Open Research Methods:** Transparency of research methodologies to facilitate replication and validation of research findings
- **Open Educational Resources:** Freely accessible educational materials to enhance learning and teaching practices
- **Public Engagement in Science:** Public, community, citizen science to increase public understanding and trust in science
- **Infrastructures Supporting Open Science:** Develop/support infrastructures for open science ecosystem, including repositories and data management systems

Swedish Research Council - Open Data by 2026



Vision: As open as possible, as closed as necessary

The national goal is that the transition to open access to research data shall be fully implemented no later than 2026.

This is the Swedish Research Council's vision:

- Research data that is produced by publicly funded research should be made accessible according to the principle: "as open as possible, as closed as necessary". Open access to research data is part of the transition to an open science system.
- An assessment of the opportunities to make data openly accessible is a natural part of the research process.
- A long-term national coordinating organisation to promote and support open access to and the usability of research data.
- Research infrastructures support open access to research data.
- Fully developed incentive systems that support the transition to open access to research data have been established.

SciLifeLab Data Policy



SciLifeLab board no. 56, 220309
Appendix 3

SciLifeLab Data Policy (version 1.1.)

As the national infrastructure for life science and operator of the large life science research program (KAW-funded Data Driven Life Science, DDLS), SciLifeLab has a leading role in shaping the future of research data practices. In line with this responsibility, we hereby express our firm commitment to the values of 1) Open Science, 2) Transparent research, and 3) FAIR (Findable, Accessible, Interoperable, Reusable) principles as described in the following documents:

<https://www.scilifelab.se/wp-content/uploads/2022/06/SciLifeLab-data-policy.pdf>

SciLifeLab Data Policy



Examples of potential activities motivated by this Data Policy, that may be developed in the future:

National platforms - part of SciLifeLab infrastructure:

- Require supported projects to commit to FAIR data sharing, and maintain Data Management Plans (DMPs).
- Provide the support and tools necessary for user projects to adhere to FAIR data sharing, including providing platform specific meta-data required for reproducibility and data sharing.
- Make methods and software workflows publicly available.
- Operate in a way that ensures reproducibility and the ability to trace and audit projects.
- Make operational data publicly available when specified in SciLifeLab reporting requirements.

<https://www.scilifelab.se/wp-content/uploads/2022/06/SciLifeLab-data-policy.pdf>

Open Science Policy Comparisons (July 2023)



OA Required	✓	✓	✓	✓	✓	✓
Preprint Required	✓	X	X	X	X	X
Data Sharing	✓	✓	✓	✓	✓	✓
Code Sharing	✓	✓	✓	✓	✓	✓
Materials/Resource Sharing	✓	X	X	X	X	X
Protocol Sharing	✓	X	X	X	X	X

Open Science Indicators and Monitoring



The screenshot shows the homepage of the Open Science Monitoring Initiative. At the top left is the logo "Open Science Monitoring Initiative" with a network icon. A search bar is at the top right. Below the header is a navigation menu with links: ABOUT ▾, PRINCIPLES, TECHNICAL SPECIFICATIONS, NEWS, MONITORS, and CONTACT. The main content area features a large image of a group of people at a workshop. To the right of the image, the title "Open science monitoring initiative (OSMI)" is displayed in bold blue text. Below the title, a paragraph explains OSMI's purpose: "OSMI brings together institutions and individuals involved in monitoring open science. OSMI aims to encourage the adoption of open science monitoring principles and to promote their practical implementation." A caption below the image states: "After being debated during the workshop at Unesco and subsequently reviewed online by more than 20 experts, the principles are now being submitted to Unesco for approval." A "MORE INFORMATION →" button is located at the bottom right of this section.

Explore the first Open Science Indicators dataset—and share your thoughts

December 12, 2022 / PLOS / Open Code Open Data Open Science Open Science Indicators Preprints



Written by Lauren Cadwallader, Lindsay Morton, and Iain Hrynaszkiewicz

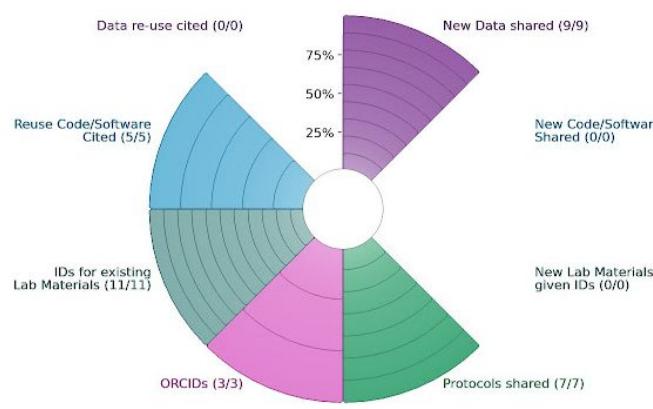
Open Science is on the rise. We can infer as much from the proliferation of Open Access publishing options; the steady upward trend in bioRxiv postings; the periodic rollout of new national, institutional, or funder policies.

Examples: UNESCO Open Science Monitoring Initiative, PLoS

Monitoring Open Science and FAIR



- Dashboard that tracks SciLifeLab open and FAIR research outputs (publications, data, software, protocols, etc.)
- Mining and indexing service to improve discovery of these outputs (e.g., Europe PMC)



OA Report

PUT OA POLICY INTO PRACTICE AT your institution

Find an organization by name, acronym, or ROR... About

2023 2022 2021 All time

INSIGHTS ON ARTICLES

Total published articles 3,054	Free-to-read 92%	OA policy-compliant 64%	Open Access 53%
With data availability statements 52%	With Open Data 13%	With Open Code 2%	

DATA EXPLORATION

Europe PMC

About Tools Developers Help

Do data resources managed by EMBL-EBI and our collaborators make a difference to your work? If so, please take 10 minutes to fill in our survey, and help us make the case for why sustaining open data resources is critical for life sciences research.

Take survey

Europe PMC plus

Search life-sciences literature (44 087 585 articles, preprints and more)

synuclein Advanced search

Q Search Save & create alert

1-25 of 51 765 results

Sort by: Relevance Times cited Date

1 2 3 Next ...

Cerebrospinal fluid *α-synuclein* adds the risk of cognitive decline and is associated with tau pathology among non-demented older adults.

Liu W, Li W, Liu Z, Li Y, Wang X, Guo M, Wang S, Wang S, Li Y, Jia J Alzheimers Res Ther. 16(1):103, 10 May 2024

lower *α*-synuclein group (*α*-synuclein-L, n = 245) and a higher *α*-synuclein group (*α*-synuclein-H, n = 86...) disorders *α*-synuclein-L Lower level of *α*-synuclein *α*-synuclein-H Higher level of *α*-synuclein GSEA Gene Cited by: 0 articles | PMID: 38725083 | PMCID: PMC11084056

+ Add to export list

Export citations

Subscribe to RSS

Free full text in Europe PMC

FAIR & Persistent Identifiers (PIDs)



FAIR Guiding Principles (GO FAIR)

Meant to **improve the Findability, Accessibility, Interoperability, and Reuse** of digital assets.

Emphasise **machine-actionability** (i.e., the capacity of computational systems to find, access, interoperate, and reuse data with none or minimal human intervention) to assist with the computational nature of research.

A national persistent identifier research strategy

Delivering sector-wide cost savings through improved automation and technical integration.



Started 01 Jul 2019

Expected outcome:
Advice

- People ([ORCID iDs](#))
- Outputs ([Crossref](#) and [DataCite](#) DOIs)
- Grants ([Crossref grant DOIs](#))
- Organisations ([ROR identifiers](#))
- Projects ([RAiDs](#))

Identifiers assist with the exchange of metadata

State of FAIR



 National Institute of
Allergy and
Infectious Diseases



Key Insights from the Preliminary NIAID Landscaping Report

Summary & Strategic Recommendations from GO FAIR US
Presented July 2024



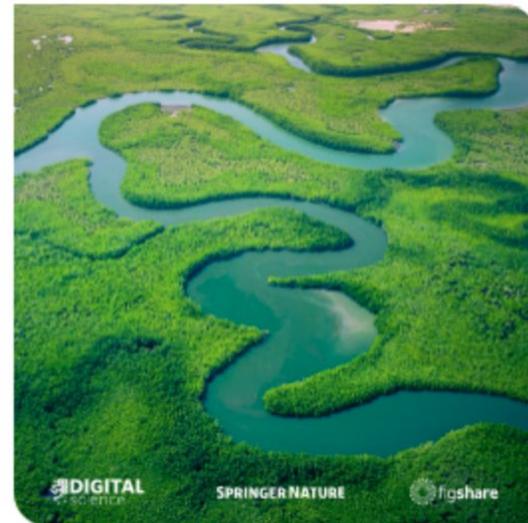
A Digital Science Report

November 2023

The State of Open Data 2023

The longest-running longitudinal survey and analysis on open data.

With opening remarks from Springer Nature's CFO, Hanh Jagadeesan, and Digital Science's CEO, Daniel Hock, Authors Mark Hahnel, Graham Smith, Niko Scaplehorn, Henning Schönenberger and Laura Day.



DIGITAL
SCIENCE

SPRINGER NATURE

figshare

Community of Practice



A group of people that collaboratively work with SciLifeLab and the Data Centre to tackle challenges together ranging from developing systems to disseminating best practices.

Forms of participation can range from providing feedback on new feature via Slack to joining a webinar to speak about research aspects of a service.

We will recruit roughly 20 community members, from diverse backgrounds (e.g., early career, international, infrastructure developers) with the hope of growing the community over time.

Our hope is to make this a prestigious role similar to being a member of a review board and where there is some form of compensation.

Image from -
<https://www.swoopanalytics.com/blog/building-communities>

Accessibility of Publications

Open Access on the Rise at SciLifeLab and in the Life Sciences



SCIENCE|BUSINESS®

Search...

Stockholm University: Open access in life sciences on the rise

08 Jul 2024 | Network Updates | Update from Stockholm University

These updates are republished press releases and communications from members of the Science|Business Network



90 percent of the articles from SciLifeLab in 2023 were published open access. There are obvious advantages in publishing open access, according to Christopher Erdmann, head of open science at SciLifeLab.

Open science is an important and integrated part of **SciLifeLab**, the national research infrastructure for molecular biosciences in Sweden. The SciLifeLab Data Centre is located at Uppsala University, serving the entirety of SciLifeLab. Some of the staff at the Data Centre are distributed at other of the SciLifeLab sites, like the one in Stockholm hosted by Karolinska Institutet, Stockholm University and KTH Royal Institute of Technology. There are roughly 40-50 people working at the Data Centre with open science/data in some shape. For instance, there is a team of data stewards that collaborate with **National Bioinformatics Infrastructure Sweden (NBIS)** to provide data management services, IT/software developers maintaining and implementing data driven services to support the research in our community, and staff supporting data science at the various SciLifeLab nodes.

<https://sciencebusiness.net/network-updates/stockholm-university-open-access-life-sciences-rise>



Data and Code Accessibility

Open Access, Data/Software Availability



849 SciLifeLab Publications in 2023 ([Dimensions](#))

- 95% Open Access (40% Gold vs 29% Green)
- 86% w/ CC-BY License (for Gold)
- 47% w/ “Data Availability” (20% w/ available “upon request”)
 - Other Challenges: No Links/Citations, References to Uncitable Supplements...

Avoid parachuting into data/software and do more to guide them

Preserve the data/software via a repository (e.g., [Zenodo](#)) and cite



Data Available Upon Request



Data Availability Statement

Research data used in this article are available from the corresponding author on request.

Availability Statement Templates



The [type of data] data used for [brief context, description] in the study are available at [repository, source name] via [DOI, persistent identifier link] with [license, access conditions] [in-text citation in References]

[Version number] of the [software name] used for [brief context, description of what the software was used for] is preserved at [DOI, persistent identifier link], available via [license type, access conditions] and developed openly at [software development platform link]. [in-text citation in References]

Data & Software Shared



Data availability

All primary data associated with each figure has been deposited in a repository; most can be found at <https://doi.org/10.5061/dryad.3tx95x6j7>. Quantitation data of the blots in Figure 3-figure supplement 4 (for the bar graphs in Figures 3C and 3D) can be found at doi (10.5281/zenodo.7057419). Analysis presented in Figure 8--figure supplement 1 can be found at <https://doi.org/10.5281/zenodo.7108943>. All code is available at https://github.com/PfefferLab/Vides_et_al_2022 (copy archived at <https://zenodo.org/record/5205252.html>).

The following data sets were generated

Vides EG, Pfeffer SR (2022) **Dryad Digital Repository** Data from: A feed-forward pathway drives LRRK2 kinase membrane recruitment and activation. <https://doi.org/10.5061/dryad.3tx95x6j7>

Limouse C, Vides EG, Adhikari A, Pfeffer SR (2022) **Zenodo** PfefferLab/Vides_et_al_2022: v1.0. <https://doi.org/10.5281/zenodo.7108943>

Lis P, Alessi DR (2022) **Zenodo** Figure 3-Figure Supplement 4 of the paper 'A Feed-forward Pathway Drives LRRK2 kinase Membrane Recruitment and Activation'. <https://doi.org/10.5281/zenodo.7057419>

<https://elifesciences.org/articles/79771>

Citing Data/Software



DOI Citation Formatter

Paste your DOI:

10.7554/eLife.79771

For example 10.1145/2783446.2783605

Select Formatting Style:

apa

Begin typing (e.g. Chicago or IEEE.) or use the drop down menu.

Select Language and Country:

en-US

Begin typing (e.g. en-GB for English, Great Britain) or use the drop down menu.

Format

- Include a bracketed description with your data/software citation ([Data set], [Computer software])
- Use DOI Citation Formatter
- The DOI and bracketed description allow the data/software to be indexed in Crossref/DataCite
- This improves discovery and credit for the data/software

Vides, E. G., Adhikari, A., Chiang, C. Y., Lis, P., Purlyte, E., Limouse, C., Shumate, J. L., Spínola-Lasso, E., Dhekne, H. S., Alessi, D. R., & Pfeffer, S. R. (2022). A feed-forward pathway drives LRRK2 kinase membrane recruitment and activation. In eLife (Vol. 11). eLife Sciences Publications, Ltd. <https://doi.org/10.7554/elife.79771>

Improve Discovery and Accessibility



Europe PMC

About Tools Developers Help Europe PMC plus

Do data resources managed by EMBL-EBI and our collaborators make a difference to your work?
If so, please take 10 minutes to fill in our survey, and help us make the case for why sustaining open data resources is critical for life sciences research.

[Take survey](#)

Search life-sciences literature (44 087 585 articles, preprints and more)

synuclein

Advanced search

Search Save & create alert

Free full text access ⓘ

Full text in Europe PMC (41 004)

Link to free full text (3 753)

Type ⓘ

Research articles (32 896)

Review articles (17 334)

Preprints (1 200)

Books & documents (10)

1-25 of 51 765 results

Sort by: ⓘ Relevance ⌈ Times cited ⌈ Date ⌈ 1 2 3 Next ...

Cerebrospinal fluid α -synuclein adds the risk of cognitive decline and is associated with tau pathology among non-demented older adults.

Liu W, Li W, Liu Z, Li Y, Wang X, Guo M, Wang S, Wang S, Li Y, Jia J
Alzheimers Res Ther, 16(1):103, 10 May 2024

lower α -synuclein group (α -synuclein-L, n = 245) and a higher α -synuclein group (α -synuclein-H, n = 86... disorders α -synuclein-L Lower level of α -synuclein α -synuclein-H Higher level of α -synuclein GSEA Gene

Cited by: 0 articles | PMID: 38725083 | PMCID: PMC11084056

+ Add to export list ⌈ Free full text in Europe PMC

Export citations

Subscribe to RSS

Academic search/databases like [Europe PMC](#) are able to index openly accessible research and therefore curate and improve the discoverability, accessibility of it

Importance of Data Management, Choosing a Repository



Data Stewardship Wizard:

<https://dsw.scilifelab.se/>

Resources for data management (including repositories):

<https://data-guidelines.scilifelab.se/resources/>

SciLifeLab Data Repository:

<https://figshare.scilifelab.se/>

Contact:

data-management@scilifelab.se



Supporting and Sustaining Research Software

EVERSE, ReSA, Steps Forward



ADORE.software

About ▾ Declaration Signatories Toolkit News Events ▾ Contact ☰ ▾ GET INVOLVED

2024 International Research Software Funders Workshop

Towards a monitoring framework to benchmark the ADORE.software recommendations and improve the sustainability of research software

Save the dates: September 11-13, 2024, in Uppsala, Sweden

The SciLifeLab Data Centre and the Research Software Alliance (ReSA) are hosting an international workshop in Uppsala **September 11-13, 2024**. And the European Virtual Institute for Research Software Excellence (EVERSE) is hosting a satellite workshop on **September 10** in Uppsala (and online).



National guidelines
for promoting open
science in Sweden





About ▾ Declaration Signatories Toolkit News Events ▾ Contact 不A ▾

Research software is a critical part of research

The Amsterdam Declaration on Funding Research Software Sustainability is setting the future international agenda and comprehensively changing the way funders deal with research software.

[GET INVOLVED](#)

[Read the Declaration](#)





Additional Information: Web Presence and Contact

Open Science Roles, Online Presence



- Currently building team (roles in Open Science Communities, Metrics, Software, FAIR Metadata, Semantic Technologies)
- Planning to set up a help desk (and resources) for SciLifeLab, Life Sciences community

The screenshot shows the EMBL Open Science homepage. At the top, there's a navigation bar with the EMBL logo, a search bar, and links for 'Directory' and 'Search'. Below the header, a banner features two scientists in a lab setting with icons related to science and technology. The main headline reads 'Open Science at EMBL' with the tagline 'For a positive culture change in life science research'. Below this, a section titled 'We're dedicated to making science open and accessible to the global scientific community.' includes a quote from Edith Heard: 'Open science has always been part of the fabric of EMBL. I am very pleased that we can announce this new policy, at a time when the world needs to share knowledge and accelerate research more than ever before.' A photo of Edith Heard is shown next to the quote. At the bottom of the page, there's a link to 'EMBL's Open Science policy'.

The screenshot shows the TODO Group website. The top navigation bar includes links for 'TODO', 'ABOUT', 'RESOURCES', 'COMMUNITY', and 'BLOG', along with 'JOIN' and a search icon. The main title 'TALK OPENLY DEVELOP OPENLY' is prominently displayed in large green letters. Below the title, a sub-section for 'Open Source Practitioners' is shown with the text: 'For open source practitioners committed to Open Source Program Offices (OSPO).'. To the right, there's a colorful illustration of three people working together at a table with laptops and documents. At the bottom, there's a 'ABOUT US' button.

Questions?



Open Science Team @ SciLifeLab:

christopher.erdmann@scilifelab.uu.se

sune.joubert@scilifelab.uu.se

parul.tewatia@scilifelab.se

Thank you!



SciLifeLab

*Knut and Alice
Wallenberg
Foundation*



Vetenskapsrådet

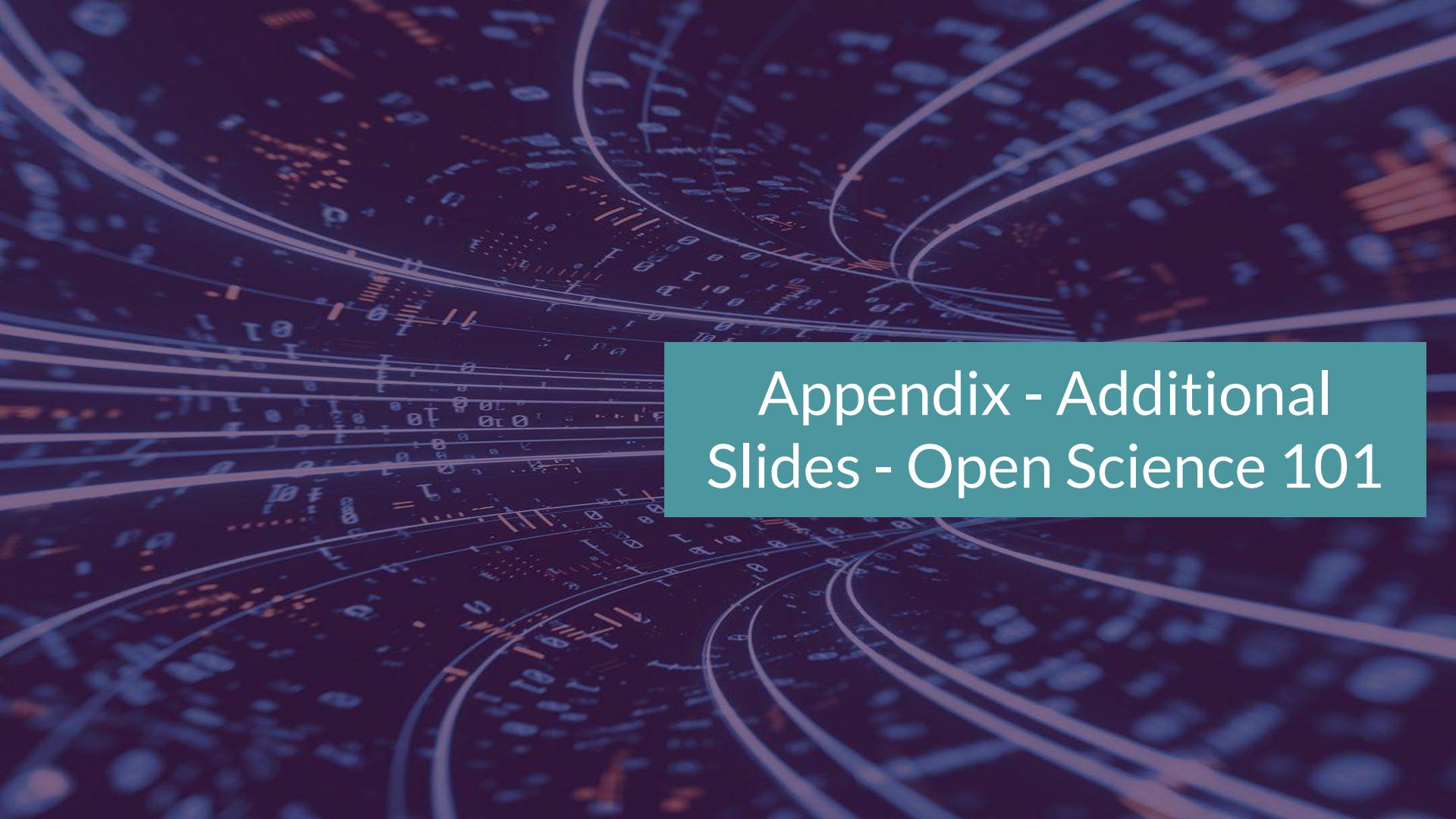


Visit us: scilifelab.se/data



Scilifelab-data-centre

@SciLifeLab_DC

The background of the slide features a dark blue and black abstract design. It consists of numerous curved white lines that resemble light trails or data streams. Interspersed among these lines are small, glowing binary digits (0s and 1s) and some larger, stylized numbers. The overall effect is one of digital information flowing through a network or space.

Appendix - Additional Slides - Open Science 101

The background of the slide features a complex, abstract digital design. It consists of numerous curved, glowing white lines that form a network or tunnel-like structure against a dark blue to black gradient. Interspersed among these lines are small, glowing binary digits (0s and 1s) and other small digital symbols, suggesting a flow of data or information through a digital space.

ORCiD & Digital Presence

ORCiD & Digital Presence



https://orcid.org/0000-0003-1374-6015

AuthorCarpentry R Programming Professional Personal GoToMeet.Me Geographic access b... Adobe Document Clo...

ORCID
Connecting Research and Researchers

Hugh P. Shanahan

ORCID ID
<https://orcid.org/0000-0003-1374-6015>

Print view

Also known as
Hugh Shanahan

Websites
Lab page

Keywords
Computational Biology, Bioinformatics, FAIR Data

Other IDs
Scopus Author ID: 7004258684

Biography
Hugh Shanahan has a background in Computational Biology, focussing on transcriptomics and metagenomics combined with a deep background in Computational and Theoretical Physics. He completed his PhD in 1994 in Lattice QCD and completed postdocs in Glasgow, Cambridge and Tsukuba before moving into Bioinformatics in 1999. In 2005 he joined the department of Computer Science at Royal Holloway, University of London where he is now Reader.

Employment (2)

Royal Holloway University of London: Egham, Surrey
2014-01-01 to 2017-12-31 | Senior Lecturer (Computer Science)
Employment

Source: Hugh P. Shanahan ★ Preferred source

Royal Holloway University of London: Egham, Surrey
2005-01-01 to 2013-12-31 | Lecturer (Computer Science)
Employment

Source: Hugh P. Shanahan ★ Preferred source

Education and qualifications (3)

University of Edinburgh: Edinburgh, Edinburgh
1991-10-01 to 1994-09-01 | Ph.D. (Physics)
Education

Source: Hugh P. Shanahan ★ Preferred source

University College Cork: Cork, Cork
1990-10-01 to 1991-06-01 | Msc (Experimental Physics)
Education

Source: Hugh P. Shanahan ★ Preferred source

ORCiD - Unique, PID for researchers/authors which you can link to your publications, data, software, and more.

Stall, S., Specht, A., Amato, J. G., Corrêa, P. L. P., Curivil, F. A. L., David, R., Erdmann, C., et al. (2023). **Digital Presence Checklist**. Zenodo. <https://doi.org/10.5281/zenodo.7841734>

How to link your ORCiD w/ Crossref (for publications)



How to add works to your ORCID iD using CrossRef

YouTube · Ebling Library · 30 Mar 2017



<https://www.youtube.com/watch?v=sfWP1tqHknI>

How to link your ORCID w/ DataCite (for data, software, etc)



[!\[\]\(a1e0a5692bfe5587ddab16c1d1c029b8_img.jpg\) DataCite](#) [Feedback](#) [Home](#) All content CC-BY

[Home](#) [Guides](#) [API Reference](#)

Integrations from Registered Service Providers
Code Examples in GitHub

MORE DATA CITE SERVICES

DataCite Service Status
DataCite Public Data File
DataCite Citation Formatter
DataCite Profiles
DataCite and ORCID
ORCID Auto-Update
Troubleshooting Guide
DataCite Statistics
Data Citation Corpus

USAGE AND CITATIONS

> Views and Downloads
> Citations and References
Displaying Usage and Citations in your Repository

DataCite and ORCID

DataCite provides Persistent Identifiers (DOIs) for all research outputs. ORCID provides Persistent Identifiers (ORCID IDs) for all researchers. The two organisations work closely together to identify research and connect it to the researchers that created it.

DataCite's integration with ORCID's API means it is quick and easy for researchers to link any works which have a DataCite DOI to their ORCID profile.

Here we describe the two ways in which your works with a DataCite DOI can be linked to your ORCID profile.

 **What is a claim?**

In DataCite, when a work (a DOI) is sent to an ORCID record via either of the methods outlined below, this is known as a "claim" and simply means a request has been sent to ORCID to connect a specific DOI to an ORCID profile. Failed claims will also be listed in the settings of your Profiles account.

1. ORCID Search & Link Wizard

The [ORCID Search & Link wizard](#) allows you to manually add your works to your ORCID record from DataCite Commons.

<https://support.datacite.org/docs/datacite-and-orcid>

Accessibility of Publications

Preprints



Cold Spring Harbor Laboratory

bioRxiv
THE PREPRINT SERVER FOR BIOLOGY

HOME | SUBMIT | FAQ | BLOG | ALERTS / RSS | ABOUT | CHANNELS

Search Advanced Search

COVID-19 SARS-CoV-2 preprints from medRxiv and bioRxiv

Subject Areas

All Articles

Animal Behavior and Cognition	Ecology	Paleontology
Biochemistry	Epidemiology*	Pathology
Bioengineering	Evolutionary Biology	Pharmacology and Toxicology
Bioinformatics	Genetics	Physiology
Biophysics	Genomics	Plant Biology

- Scholarly manuscripts made available before peer review (e.g., [bioRxiv](#), medRxiv, arXiv, OSF, Zenodo, also see [ASAPbio](#))
- Help w/ rapid dissemination, visibility, and feedback
- Open, versioned, and establish priority of discoveries
- Option of open peer review (e.g., [PREreview](#))

Additional Paths Towards Open



- Deposit final peer reviewed manuscript in institutional repository, Europe PMC/PMC, [Shareyourpaper.org](https://www.shareyourpaper.org)
- [Choose a license](#), Creative Commons Attribution 4.0 Generic License ([CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)) or an equivalent license and include the license in the paper/metadata/acknowledgement
- [Author Rights: Using the SPARC Author Addendum](#)
- Institutional support for open access publication charges (APCs)

Check your openness



Europe PMC About Tools Developers Help Europe PMC plus

Do data resources managed by EMBL-EBI and our collaborators make a difference to your work?
If so, please take 10 minutes to fill in our survey, and help us make the case for why sustaining open data resources is critical for life sciences research.

[Take survey](#)

Search life-sciences literature (44 087 585 articles, preprints and more)

synuclein [Search](#) [Save & create alert](#)

Advanced search

Free full text access ⓘ
 Full text in Europe PMC (41 004)
 Link to free full text (3 753)

1-25 of 51 765 results
Sort by: Relevance Times cited Date [1](#) [2](#) [3](#) [Next ...](#)

[Export citations](#)
[Subscribe to RSS](#)

Cerebrospinal fluid α-synuclein adds the risk of cognitive decline and is associated with tau pathology among non-demented older adults.
Liu W, Li W, Liu Z, Li Y, Wang X, Guo M, Wang S, Wang S, Li Y, Jia J
Alzheimers Res Ther, 16(1):103, 10 May 2024
lower α-synuclein group (α-synuclein-L, n = 245) and a higher α-synuclein group (α-synuclein-H, n = 86... disorders α-synuclein-L Lower level of α-synuclein α-synuclein-H Higher level of α-synuclein GSEA Gene
Cited by: 0 articles | PMID: 38725083 | PMCID: PMC11084056
[+ Add to export list](#) [Free full text in Europe PMC](#)

- Academic search/databases like [Europe PMC](#) are able to index openly accessible research and therefore curate and improve the discoverability, accessibility of it
- Search your profile/papers to see what level of openness you are and what publications are linked to data, software, etc.
(See link your ORCID/publications feature)



Preserving and Citing Software

Release Code (GitHub), Preserve, and Cite w/ Zenodo



GitHub Docs | Version: Free, Pro, & Team ▾
Repositories / Archive a repository / Reference & cite content

Referencing and citing content

You can use third-party tools to cite and reference content on GitHub.

Issuing a persistent identifier for your repository with Zenodo

To make your repositories easier to reference in academic literature, you can create persistent identifiers, also known as Digital Object Identifiers (DOIs). You can use the data archiving tool [Zenodo](#) to archive a repository on GitHub.com and issue a DOI for the archive.

Tips:

- Zenodo can only access public repositories, so make sure the repository you want to archive is [public](#).
- If you want to archive a repository that belongs to an organization, the organization owner may need to [approve access](#) for the Zenodo application.
- Make sure to include a [license](#) in your repository so readers know how they can reuse your work.

- ① Navigate to the [login page](#) for Zenodo.
- ② Click Log in with GitHub.
- ③ Review the information about access permissions, then click Authorize zenodo.

A screenshot of the Zenodo web interface. At the top, there's a blue header bar with the Zenodo logo, a search bar, and navigation links for "Upload" and "Communities". On the right, there's a user profile dropdown showing "zenodo@michaeljfox.org". Below the header, the main content area has a sidebar titled "Settings" with options like "Profile", "Change password", "Security", "Linked accounts", "Applications", "Shared links", and "GitHub" (which is highlighted in blue). The main content area shows a "GitHub" section with the heading "Software preservation made simple!". It includes a "Connect" button and a note: "To get started, click "Connect" and we will get a list of your repositories from GitHub.".

Software Journals (e.g., JOSS)



The Journal of
Open Source Software

About

Papers

Docs

Blog

Submit

Log in with ORCID



The Journal of Open Source Software is a developer friendly, open access journal for research software packages.

Committed to publishing quality research software with zero article processing charges or subscription fees.

Submit a paper to JOSS

Volunteer to review

Explore Papers

Documentation

Learn More

Software Citation Files (.CFF, GitHub)



GitHub Docs

Version: Free, Pro, & Team ▾

☰ Repositories / Manage repository settings / Customize your repository / About CITATION files

About CITATION files

You can add a CITATION file to your repository to help users correctly cite your software.

About CITATION files

You can add a `CITATION.cff` file to the root of a repository to let others know how you would like them to cite your work. The citation file format is plain text with human- and machine-readable citation information.

Example `CITATION.cff` file:

```
cff-version: 1.2.0
message: "If you use this software, please cite it as below."
authors:
- family-names: "Lisa"
  given-names: "Mona"
  orcid: "https://orcid.org/0000-0000-0000-0000"
- family-names: "Bot"
  given-names: "Hew"
  orcid: "https://orcid.org/0000-0000-0000-0000"
title: "My Research Software"
version: 2.0.4
```

Resources and Protocols

Resource Identification



Research Resource Identifiers (RRIDs)

Resources (e.g., cell lines, transgenic models, plasmids/clones, antibodies, and other reagents) identification, discovery, and reuse.

Example Identifier: Antibody:

RRID:AB_9075 Materials & Methods >
Recommended Citation: (Millipore Cat# AB1542, RRID:AB_90755)

Find RRIDs at SciCrunch (registry for tracking/credit) and
Add a Resource

RRID Portal ABOUT ▾

Resource Summary Report New Search Previous Search Results

Home / Resource Reports / Antibodies / [Resource Summary Report](#)

Antibody Name *NOTICE: Multiple vendors found, please select your record: Millipore - AB1542

Sheep Anti-Tyrosine Hydroxylase (TH, Tyrosine Monooxygenase)
Polyclonal antibody, Unconjugated

RRID:AB_90755

[PDF REPORT](#) [HOW TO CITE](#)

Antibody Information

URL: http://antibodyregistry.org/AB_90755
Proper Citation: (Millipore Cat# AB1542, RRID:AB_90755)
Target Antigen: Tyrosine Hydroxylase
Host Organism: Sheep

Sharing Protocols



protocols.io

FEATURES

PLANS

BLOG

CASE STUDY

Bring structure to your research

A secure platform for developing and sharing reproducible methods.

SEARCH



computational workflows

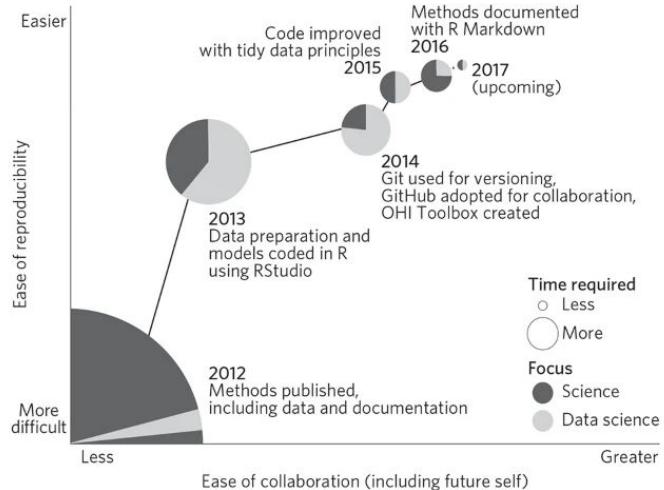
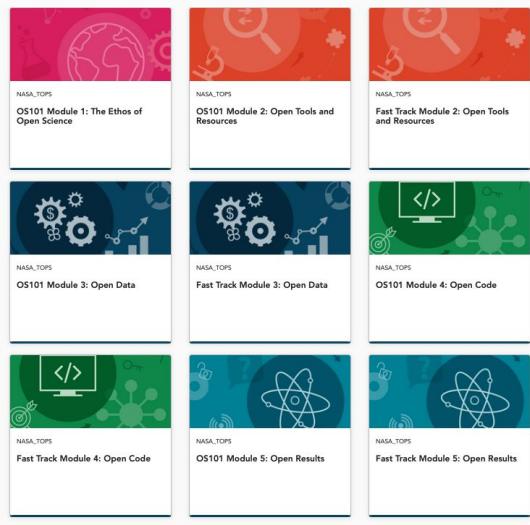
clinical trials

operational procedures

- Repository for step-by-step detailed protocols that are indexed (i.e. searchable on the web)
- A platform to organize, exchange, and keep method details up to date
- Allows for versioning tracks who is viewing, exporting, bookmarking these protocols
- Can use this platform to register protocols and cite in methods section of your paper
- Introduction to [protocols.io \(video\)](#)

Additional Sources

TOPS Open Science 101, Turing Way, Our Path to Better Science (OpenScapes)



- <https://openscience101.org/>
- <https://the-turing-way.netlify.app/index.html>
- <https://www.nature.com/articles/s41559-017-0160>
- <https://openscapes.org/>