



Maximizing Scientific Output through Data FAIRness

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OSFAIR 2023 - Workshop on Open Science Knowledge Graphs

26 September 2023



EUROPEAN
SPALLATION
SOURCE



The European Synchrotron



Introduction



The *Photon and Neutron Open Science Cloud* (PaNOSC) is the science cluster representing *Photon and Neutron* (PaN) European *Research Infrastructures* (RIs), developing and providing services for its scientific community and connecting these to the *European Open Science Cloud* (EOSC).

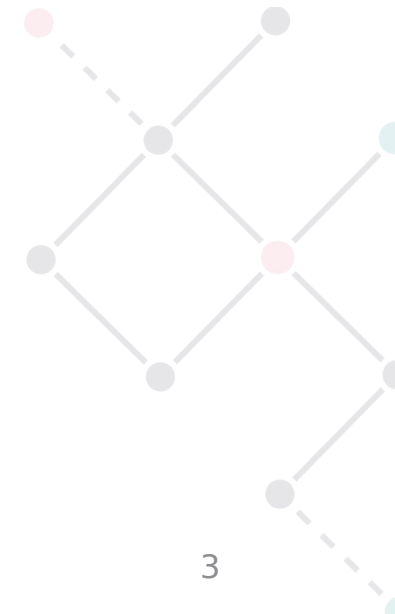
Duration: 2018 - 2022

Members:

ESRF, CERIC, ELI, ESS, EGI, EuXFEL, ILL, DESY, PSI, HZDR, Diamond, Elettra

PaNOSC Objectives

- Data FAIRness in the PaN community
- Sharing best practices
- Innovate on data services
- Encouraging data sharing and data reuse
- Foster adoption of
 - data policies
 - metadata standards
- Collaboration with EOSC





PaNOSC Data Portal

The Data Portal aims are:

- to maximize data dissemination
- to increase scientific output.

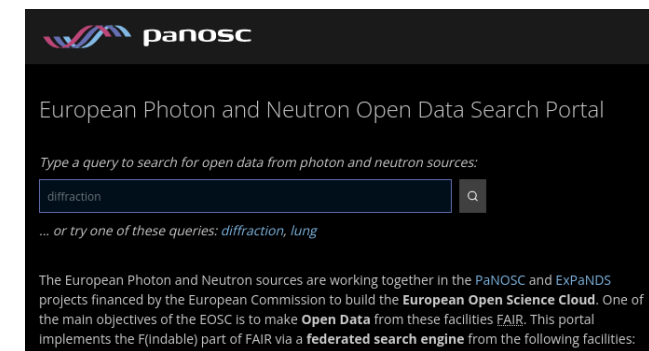
Single point of entry.

- User can search open data available in multiple RIs.

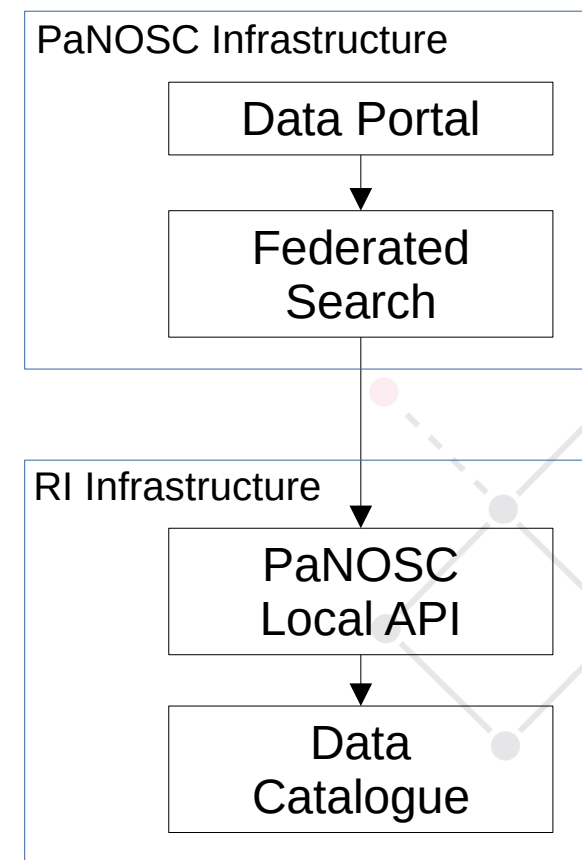
Distributed System.

- Data is stored at the source RI.
- RI retains ownership of data and control access.

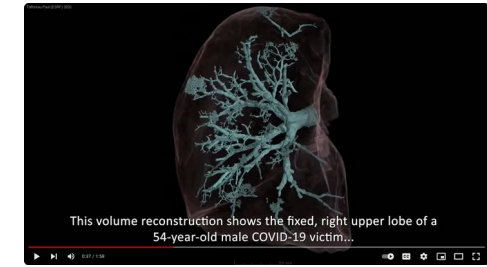
Search results needs to be properly merged



<https://data.panosc.eu>



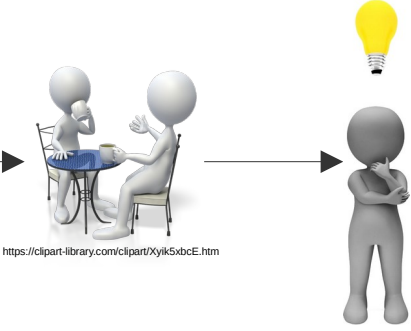
Use Case: story one



https://www.youtube.com/watch?v=wI_kfKrfDD8



<https://perchance.org/ai-text-to-image-generator>

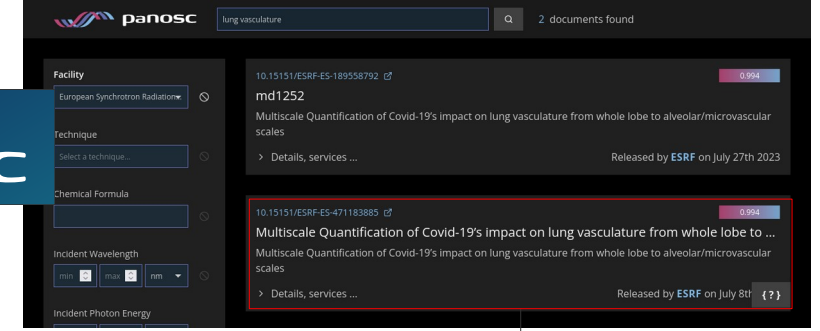


<https://clipart-library.com/clipart/xyik5xbcE.htm>

Covid-19 (whole) lung vasculature



<https://www.panosc.eu/>



<https://data.panosc.eu/search/?q=lung+vasculature&facility=ESRF>



Session **Restricted access**

Multiscale Quantification of Covid-19's impact on lung vasculature from whole lobe to alveolar/microvascular scales

Lee, Peter; Marussi, Sebastian; Tafforeau, Paul; Xian, Rui

Multiscale Quantification of Covid-19's impact on lung vasculature from whole lobe to alveolar/microvascular scales

Experimental Data	Experimental Report
The data are under embargo until 2024 but could be released earlier. Currently, they are only accessible to proposal team members.	One report has been found for this proposal.
Access data for experimental team	94736_C.pdf

<https://data.esrf.fr/doi/10.15151/ESRF-ES-471183885>

Tafforeau, P., Walsh, C., Wagner, W. L., R. Patrick Xian, Verleden, S. E., Daniyal J. Jafree, Bellier, A., Werlein, C., Kühnel, M. P., Boller, E., Walker-Samuel, S., Robertus, J. L., Long, D. A., Jacob, J., Marussi, S., Emmeline Brown, Holroyd, N., Jonigk, D. D., Ackermann, M., & Lee, P. D. (2021). Complete left lung from the body donor LADAF-2020-27 (Version 1) [dataset]. European Synchrotron Radiation Facility. doi.org/10.15151/ESRF-DC-572196058

Data Collection **Open access**

Complete left lung from the body donor LADAF-2020-27

Paul Tafforeau; Claire Walsh; Willi L. Wagner; R. Patrick Xian; Stijn E. Verleden; Daniyal J. Jafree; Alexandre Bellier; Christopher Werlein; Mark P. Kühnel; Elodie Boller; Simon Walker-Samuel; Jan Lukas Robertus; David A. Long; Joseph Jacob; Sebastian Marussi; Emmeline Brown; Natalie Holroyd; Danny D. Jonigk; Maximilian Ackermann; Peter D. Lee

Complete scan at 25.08um performed by HIP-CT on the beamline BM05 of the left lung from the body donor LADAF-2020-27 using quarter-acquisition protocol.

Experimental Data	Experimental Report
The data can be accessed by clicking on the link below	One report has been found for this proposal.
Access data	94736_C.pdf

<https://data.esrf.fr/doi/10.15151/ESRF-DC-572196058>



Use Case: story two

Human Organ Atlas EXPLORE SEARCH 3D RECONSTRUCTIONS HELP

Complete left lung from the body donor LADAF-2020-27

Description
Complete scan at 25.08um performed by HIP-CT on the beamline BM05 of the left lung from the body donor LADAF-2020-27 using quarter-acquisition protocol.

DOI 10.15151/ESRF-DC-572196058

Users
Paul Tafforeau, Claire Walsh, Willi L. Wagner, R. Patrick Xian, Stijn E. Verleden, Daniyal J. Jafree, Alexandre Bellier, Christopher Werleins, Mark P. Kühnel, Elodie Boller, Simon Walker-Samuel, Jan Lukas Robertus, David A. Long, Joseph Jacob, Sebastian Marussi, Emmeline Brown, Natalie Holroyd, Danny D. Jonigk, Maximilian Ackermann, Peter D. Lee

Technique
Hierarchical Phase-Contrast Tomography

Instrument
BM05, ESRF

Download files with Globus

- ZIP 25.08um_LADAF-2020-27_lung-left_pag-0.11_0.25_jp2_... 62.4 MB
- ZIP 50.16um_LADAF-2020-27_lung-left_pag-0.11_0.25_jp2_... 7.8 MB
- ZIP 100.32um_LADAF-2020-27_lung-left_pag-0.11_0.25_jp2_... 974.8 MB
- ZIP 200.64um_LADAF-2020-27_lung-left_pag-0.11_0.25_jp2_... 121.7 MB
- JPG pictures/IMG_4814 6.8 MB
- JPG pictures/IMG_4818 6.0 MB

<https://human-organ-atlas.esrf.eu/datasets/572195982>

panosc lung vasculature 2 documents found

Facility
European Synchrotron Radiator

Technique
Select a technique

Chemical Formula

Incident Wavelength

Incident Photon Energy

10.15151/ESRF-E5-189558792 07
md1252
Multiscale Quantification of Covid-19's impact on lung vasculature from whole lobe to alveolar/microvascular scales
Released by ESRF on July 27th 2023

10.15151/ESRF-E5-471183885 07
Multiscale Quantification of Covid-19's impact on lung vasculature from whole lobe to ...
Released by ESRF on July 8th 2023

<https://data.panosc.eu/search/?q=lung+vasculature&facility=ESRF>

Data Collection Open access

Complete left lung from the body donor LADAF-2020-27
Paul Tafforeau; Claire Walsh; Willi L. Wagner; R. Patrick Xian; Stijn E. Verleden; Daniyal J. Jafree; Alexandre Bellier; Christopher Werleins; Mark P. Kühnel; Elodie Boller; Simon Walker-Samuel; Jan Lukas Robertus; David A. Long; Joseph Jacob; Sebastian Marussi; Emmeline Brown; Natalie Holroyd; Danny D. Jonigk; Maximilian Ackermann; Peter D. Lee

Complete scan at 25.08um performed by HIP-CT on the beamline BM05 of the left lung from the body donor LADAF-2020-27 using quarter-acquisition protocol.

Experimental Data
The data can be accessed by clicking on the link below
[Access data](#)

Experimental Report
One report has been found for this proposal.
[94736_C.pdf](#)

<https://data.esrf.fr/doi/10.15151/ESRF-DC-572196058>

Article | [Open Access](#) | [Published: 04 November 2021](#)

Imaging intact human organs with local resolution of cellular structures using hierarchical phase-contrast tomography

C. L. Walsh, P. Tafforeau, Walker-Samuel, J. L. Robertus, Ackermann & P. D. Lee

Nature Methods 18, 1532-1538 (2021) | [View Article](#) | [View Abstract](#) | [Full Text](#) | [Supplementary Information](#)

97k Accesses | 61 Citations

Resolution	Sample	DOI	Energy	Flux	Time
25.08 μm	Complete organ	10.15151/ESRF-DC-572196058	~93 keV	145	24
35.35 μm	FSC A&B	10.15151/ESRF-DC-572221247	~88 keV	145	1.8

<https://doi.org/10.1038/s41592-021-01317-x>

- <https://www.nature.com/articles/s41596-023-00804-z>
UK, DE - 2023
- <https://doi.org/10.1016/j.ebiom.2022.104296>
DE, UK, BE, CH, US - 2022
- <https://doi.org/10.1016/j.lanepc.2022.100330>
DE - 2022
- <https://doi.org/10.1164/rccm.202206-1041ST>
US, EU, JP, CL, ... - 2022
- <https://doi.org/10.48550/arXiv.2211.06689>
CN - 2022
- <https://doi.org/10.48550/arXiv.2209.15180>
CN - 2022
- <https://doi.org/10.1101/2022.12.03.518948>
CN - 2022

- Data Preparation
- Disease Analysis
- Data Compression Techniques



26/09/2023

Open Science Knowledge Graphs workshop at OSFAIR 2023

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Benefits and Challenges

Benefits

- Easy discovery of other resources
- Hidden connections
- Increase scientific output and better quality
- Driving innovation and best practices

Challenges

- Data access and sharing
- Proper data curation
- Cross institution and cross national collaboration
- Right tools for the job



A decorative network diagram is positioned in the top left corner, featuring several nodes (circles) connected by lines, with some nodes highlighted in teal and pink.

Future plans

- Technical improvements in:
 - Federated search
 - Merging results from multiple RIs
 - Local api interface
- Support for data curation at RIs
- Updated documentation for easier adoption and integration
- Sustainability: how can we support this effort?





Thank you

Thank you

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Renaud Duyme, ESRF
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Fredrik Bolmsten, ESS
Stefania Amodeo, openAIRE

