



ELIXIR Europe

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ELIXIR Services



Data deposition:
ENA, EGA, PDBe, EuropePMC, ...



Compute:
Secure data transfer, cloud
computing, AAI



Data management:
Genome annotation
Data management plans



Bioinformatics tools:
Bio.tools



Data access :
UniProt, Ensembl, OrphaNet, ...



Industry:
Innovation and SME programme
Bespoke collaborations



Data Interoperability:
Standards, Identifiers, FAIR,
Ontologies



Training:
TeSS, Data Carpentry,
eLearning



ELIXIR position on FAIR Data Management

The screenshot shows the F1000Research website interface. At the top, there is a navigation bar with the F1000Research logo (Open for Science), a search bar, and a 'SUBMIT YOUR RESEARCH' button. Below the navigation bar, there are links for 'BROWSE', 'GATEWAYS', 'HOW TO PUBLISH', 'ABOUT', and 'BLOG' on the left, and 'MY RESEARCH' and 'SIGN IN' on the right. The main content area features a document card with a 'DOCUMENT' label, a 'NOT PEER REVIEWED' badge, and a 'VIEW FULL SCREEN' link. The document title is 'ELIXIR position paper on FAIR Data Management in the life sciences'. Below the title, there is a summary text starting with 'Findable, Accessible, and Interoperable life-science data are reused'. To the right of the document card, there are metrics (131 Views, 29 Downloads), a 'DOWNLOAD FULL PDF' button (246.69 KB), and 'SHARE' and 'CITE' buttons. Below these, there is a section titled 'PART OF THE GATEWAY' with the ELIXIR logo.

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↑ SUBMIT YOUR RESEARCH

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DOCUMENT

NOT PEER REVIEWED

Metrics | 131 Views | 29 Downloads

VIEW FULL SCREEN

ELIXIR

ELIXIR position paper on FAIR Data Management in the life sciences

Findable, Accessible, and Interoperable life-science data are reused

Biological sciences have a long tradition of open research data where vast data sets are made available for community reuse -- sometimes even prior to publication. ELIXIR, the European research infrastructure for life-science data, is committed to coordinating, integrating and sustaining deposition databases and supports European life scientists in making their data Findable, Accessible, Interoperable and Reusable (FAIR).¹ The coordinated action of national Nodes ensures harmonised data handling and management and provides the mechanism for FAIR data in collaborative European life-science projects.

FAIR data in the life sciences are stored in well-maintained, long-term sustainable repositories that are recognised and broadly supported by the community. ELIXIR maintains a list of recommended deposition databases for the life sciences.²

Wherever possible, persistent identifiers should be used according to community best-practice, datasets annotated using recognised and publicly-available standards and data should have a license or terms of use that clearly sets out conditions for reuse. This can easily be achieved by depositing data in an ELIXIR recommended deposition database. Much reuse takes place inside computational workflows; data archives should provide formats and annotation that support this.

Well-managed research data in the life sciences generates value far beyond the initial researcher's laboratory: in the research community, industry, education and society at large. The extensive reuse of data from life-science data resources is a testament to the societal value of open data and the FAIR principles.

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PART OF THE GATEWAY

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ELIXIR position on FAIR Data Management

- Open sharing of research data is a core principle for publicly-funded research and ELIXIR encourages all funders to adopt Open Data mandates.
- Data Management is crucial part of good scientific practice and research excellence.
- Whenever possible, biological research data should be submitted to the recommended community deposition databases.
- All data submitted to Open Data archives must be annotated in accordance with community-defined standards.
- ELIXIR Nodes are the national implementation of a harmonised FAIR Data Management programme for the life sciences.
- FAIR data management requires professional skills and adequate resources.
- Good research data management requires appropriate funding for data infrastructures.

Recommended Deposition Databases

ELIXIR Deposition Database list

Deposition Database	Data type	International collaboration framework ¹
ArrayExpress	Functional genomics data. Stores data from high-throughput functional genomics experiments.	
BioModels	Computational models of biological processes.	
EGA	Personally identifiable genetic and phenotypic data resulting from biomedical research projects.	European Bioinformatics Institute and the Centre for Genomic Regulation
ENA	Nucleotide sequence information, covering raw sequencing data, contextual data, sequence assembly information and functional and taxonomic annotation.	International Nucleotide Sequence Database Collaboration
IntAct	IntAct provides a freely available, open source database system and analysis tools for molecular interaction data.	The International Molecular Exchange Consortium
MetaboLights	Metabolite structures and their reference spectra as well as their biological roles, locations and concentrations, and experimental data from metabolic experiments.	
PDBe	Biological macromolecular structures.	
PRIDE	Mass spectrometry-based proteomics data (protein expression information (intensity values) and the support	

- “Whenever possible, biological research data should be submitted to the recommended community deposition databases”

ELIXIR Core Data Resources

ELIXIR Core Data Resource list

Core Data Resource	Data type
ArrayExpress	Functional Genomics Data from high-throughput functional genomics experiments.
CATH	A hierarchical domain classification of protein structures in the Protein Data Bank.
ChEBI	Dictionary of molecular entities focused on 'small' chemical compounds.
ChEMBL	Database of bioactive drug-like small molecules, it contains 2-D structures, calculated properties and abstracted bioactivities.
EGA	Personally identifiable genetic and phenotypic data resulting from biomedical research projects.
ENA	Nucleotide sequencing information, covering raw sequencing data, sequence assembly information and functional annotation.
Ensembl	Genome browser for vertebrate genomes that supports research in comparative genomics, evolution, sequence variation and transcriptional regulation.
Ensembl Genomes	Comparative analysis, data mining and visualisation for the genomes of non-vertebrate species.
Europe PMC	Europe PMC is a repository, providing books, patents and clinical publications.

- A sub-set of critical databases to the functioning of life sciences
- 5 indicators
 - Scientific focus
 - Impact
 - Governance
 - Quality
 - Community
- See "[Identifying ELIXIR Core Data Resources](#)"

<https://www.elixir-europe.org/platforms/data/core-data-resources>

Software sustainability best practice

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Check for updates

OPINION ARTICLE

Four simple recommendations to encourage best practices in research software [version 1; referees: 3 approved]

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 Grant information

 This article is included in the **ELIXIR** gateway .

- Make source code publicly accessible from day one
- Make software easy to discover by providing software metadata via a popular community registry
- Adopt a license and comply with the license of third-party dependencies
- Define clear and transparent contribution, governance and communication processes



Thank you

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