



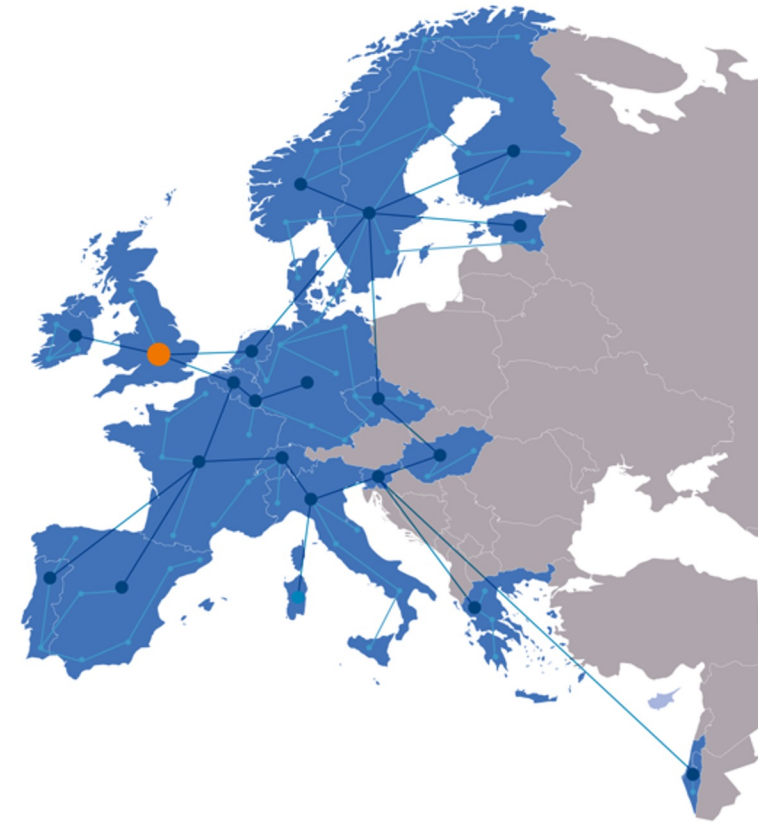
ELIXIR3: Empowering Biodiversity Research through Collaboration and Innovation



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University of Bergen | UiT the Arctic University

Introducing ELIXIR and ELIXIR Norway

Mission: to operate a sustainable European infrastructure for biological information, supporting life science research and its translation to society, the bio-industries, environment and medicine.

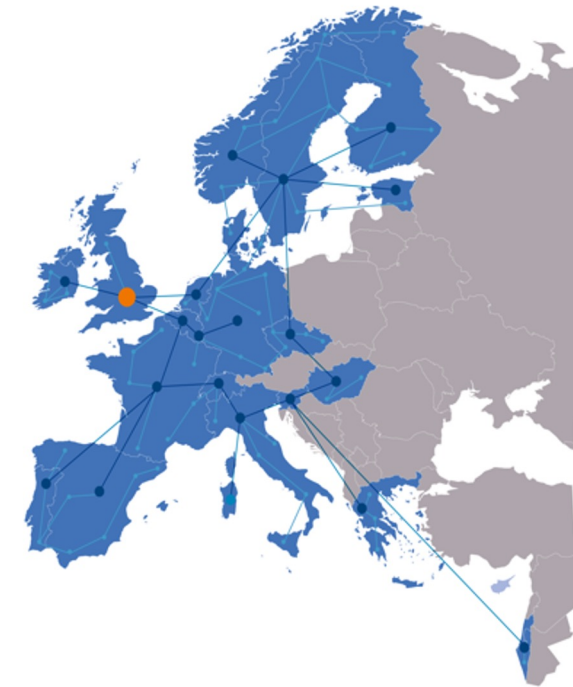


ELIXIR: 'Data for Life'

An intergovernmental organisation that brings together life science resources such as **databases, software tools, training materials, standards** and **compute resources** from across Europe.

Goal: **coordinate life science resources from across Europe so they form a single infrastructure**. This makes it easier for scientists to:

- Find and share data
- Exchange expertise
- Agree on best practices in scientific research



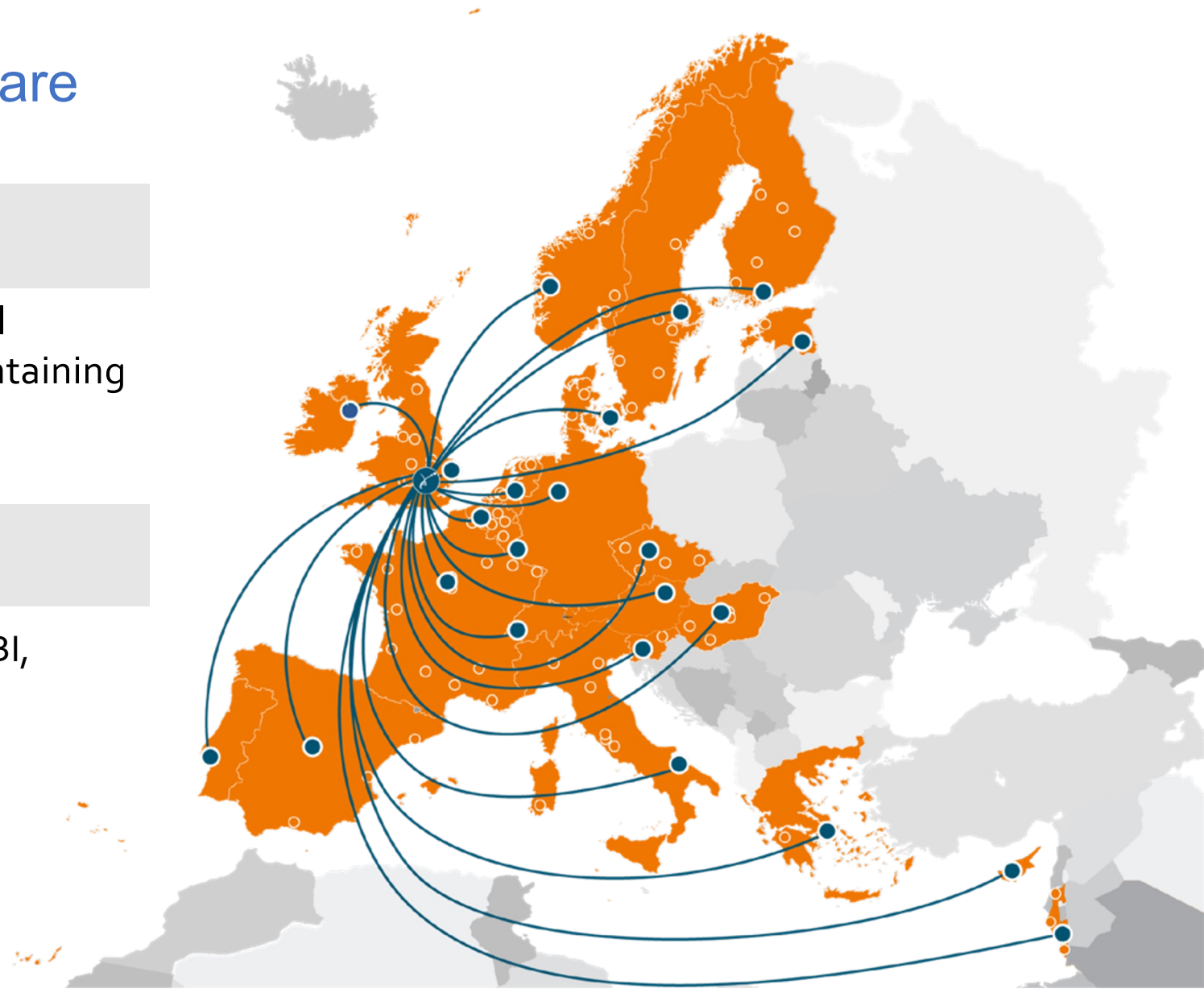
ELIXIR – who we are

24 Nodes

ELIXIR Nodes form national networks of excellence, containing a total of **245** institutes/universities

1 Hub

The Hub, located at EMBL-EBI, Cambridge, UK, provides the secretariat and coordinating activities for ELIXIR

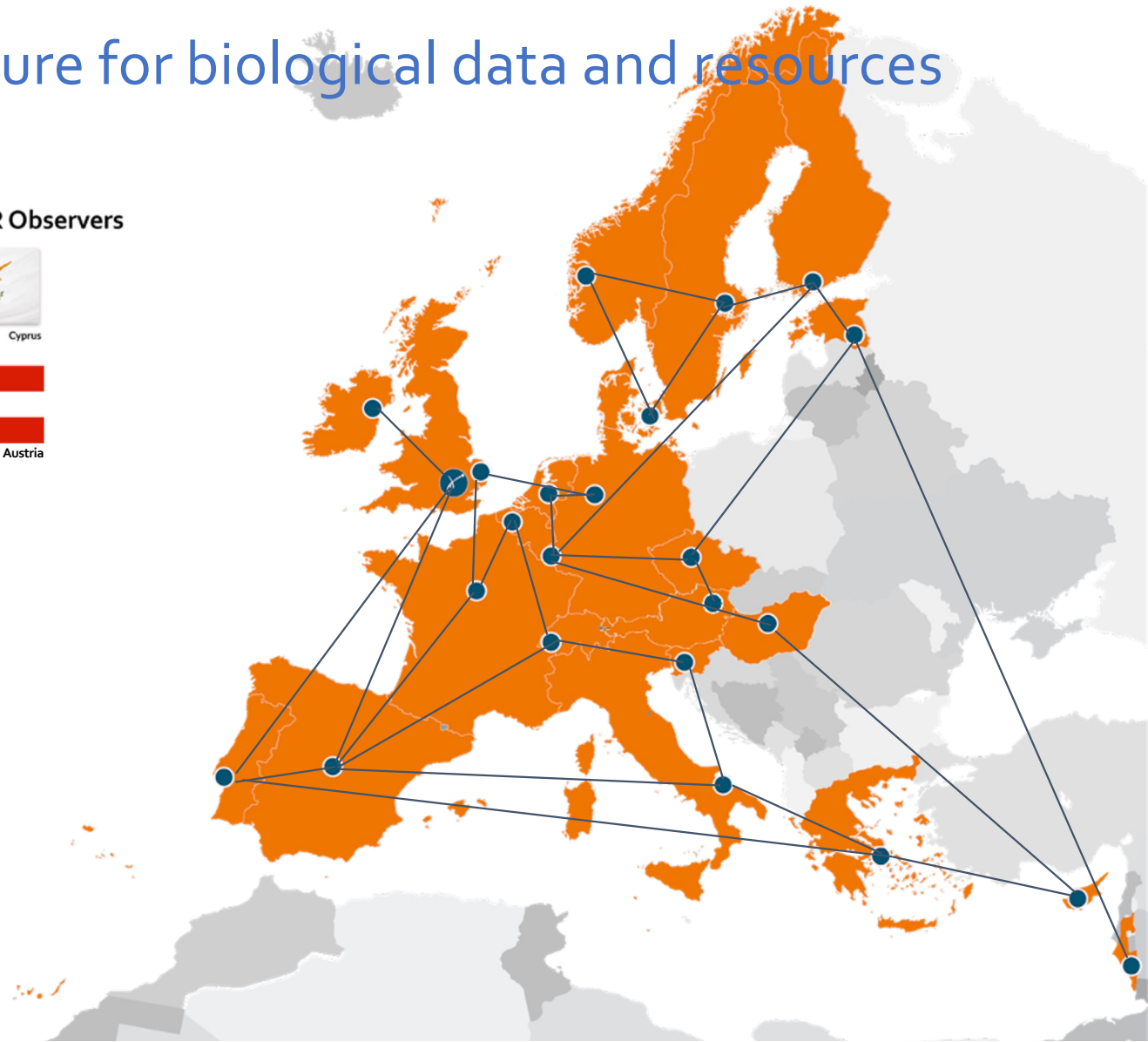
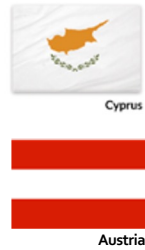


A sustainable infrastructure for biological data and resources

ELIXIR Members



ELIXIR Observers



ELIXIR Norway

SINCE 2014

The Norwegian Node of ELIXIR since 2014

Currently funded by:

The Research Council of Norway (2026)

The involved institutions: UiB, UiO, NMBU, NTNU and UiT

Services to the users:

e-infrastructure, training and support, for analysis and management of life science data

Deliverables towards ELIXIR Europe:

12 Norwegian data resources and analysis tools





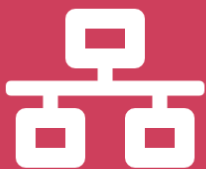
Helpdesk

Short- and long-term support with bioinformatics analyses, programming and data management tasks. [Contact the helpdesk.](#)



Services

Analysis and management of life science data within marine, health, genomics, proteomics, structural analysis and more.



NeLS e-infrastructure

NeLS, the Norwegian e-Infrastructure for Life Sciences, for analysis, sharing and storage of high throughput genomics data.



Training

Local and national training in bioinformatics analysis and use of our tools.

Services to Norwegian users

E-Infrastructure for Data analysis, storage and sharing

1. Non-sensitive data:

- **NeLS - the Norwegian e-infrastructure for Life Sciences**

2. Sensitive data:

- **FEGA Norway**



Support - through our nationally coordinated Helpdesk:

- **Analysis** `support@elixir.no`
- **Scripting**
- **Workflow development**
- **FAIR Data management** 
- **Data Brokering (FHI (SARS-CoV2++), EBP-Nor)**

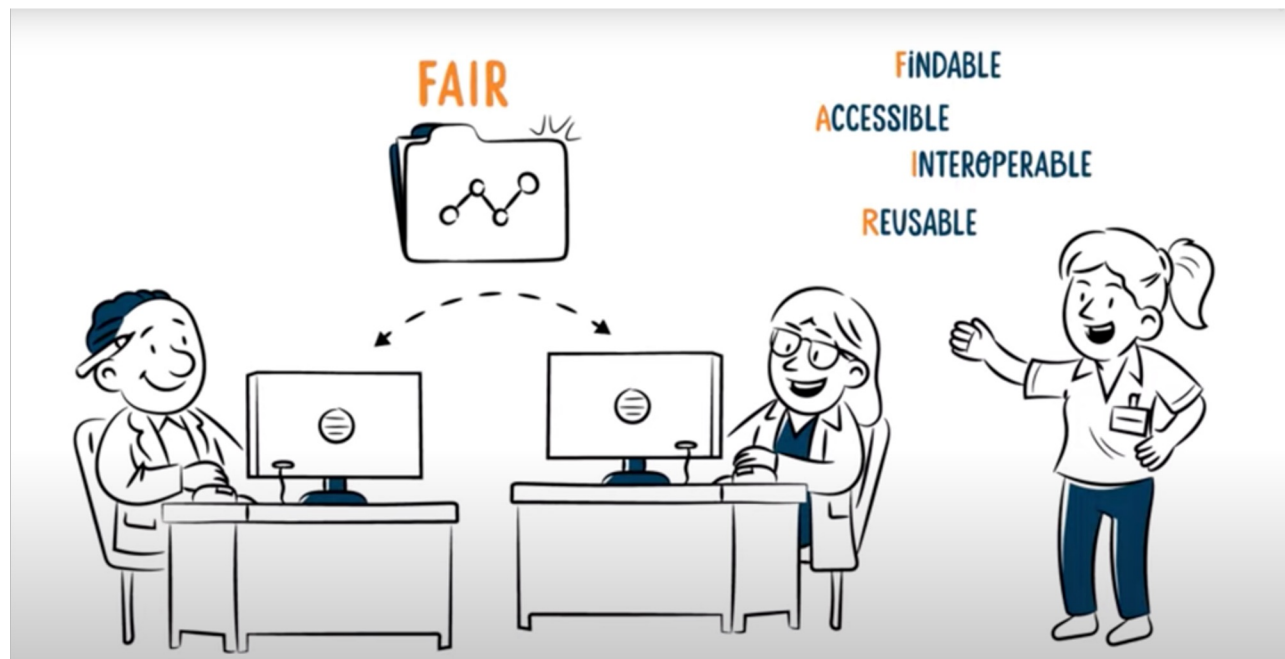
Training:

- Using our tools and workflows
- Data management



Data management support

Life cycle of Research Data



ELIXIR research data management resources

Guidance for data stewards, project managers and researchers

Overview of good data management practices



The Research Data Management Kit (RDMkit) guides you through the whole data management life cycle and includes advice specific to your domain, your role and your country.

Step-by-step instructions



The FAIR Cookbook contains step-by-step recipes to accomplish specific data management tasks and to make your data FAIR (Findable, Accessible, Interoperable, Reusable).

Data management plan wizard



The Data Stewardship Wizard (DSW) is an online tool that guides researchers and data stewards through their data management planning.

EBP-Nor Databases for Meta-data (aka. Brokering Part I)

- (Semi)-automatic import from sampling sheets
- + manual curation
- Federated with NeLS/StoreBioinfo
- Used to provide annotation for upload to European Nucleotide Archive (ENA)



Portal for the EBP-Nor database

Species Isolate Specimens Sequencing Assembly

Species

Species

1.0

Sphagnum

Showing records 1 to 7 out of 7 (total dataset count: 159)

Page size 25

Species name	Unique ID	Common name (nor.)	Common name (engl.)	Family	Isolate	Specimen	Sequencing	Assembly
Sphagnum arcticum	000000348	Polartorvmose	Moss	Sphagnaceae				
Sphagnum annulatum	000000344	Pisktorvmose	Peatmoss	Sphagnaceae				
Sphagnum jenseni	000000343	Flarktormose	Moss	Sphagnaceae	- 000000044 - 000000045	- 000000036 - 000000037	- 000000020 - 000000021 - 000000022 - 000000023 - 000000024 - 000000025	- 000000004 - 000000005
Sphagnum balticum	000000342	Sveltormose	Baltic bog-moss	Sphagnaceae	000000048	000000040	- 000000010 - 000000013 - 000000026	
Sphagnum compactum	000000341	Stivtormose	Compact bogmoss	Sphagnaceae	000000046	000000038	- 000000012 - 000000014 - 000000015	
Sphagnum tenellum	000000329	Dvergtormose	Soft bog-moss	Sphagnaceae	000000047	000000039	- 000000017 - 000000018 - 000000019	
Sphagnum troendelagicum	000000325	Trøndertormose	Moss	Sphagnaceae	000000043	000000035	- 000000008 - 000000009 - 000000016	- 000000003 - 000000004

databases.ebpnor.org

Raw data from NeLS/StoreBioinfo to ENA (Brokering Part II)

The screenshot displays the ENA Brokering interface. At the top, navigation tabs include 'Basic Details', 'Datasets', 'Members', and 'ENA Integration' (with a notification badge '2'). Below the navigation is a search bar with 'Search Text' and a '+ Import Metadata' button. A list of datasets is shown on the left, with two items visible:

- Sphagnum jensensii (Moss) genome assembly, SphJen** (EBP-Nor): Waiting for all exports to be completed.
- Rangifer tarandus subsp. platyrhincus (Reindeer) genome assembly** (EBP-Nor): Releasing project scheduled in Apr 4, 2024.

Below the list is a pagination control showing '1 - 2 of 2' items and 'Items per page: 10'. The main content area shows detailed views for a selected study and two manifests:

Study View: Accession **ebp-nor_prj_SphJen9** (PRJEB74134). ENA Type: **study**. ENA Status: **PRIVATE**. Includes a 'Show submitted XML' button.

Sample View: Accession **csSphJens29** (ERS28250001). ENA Type: **biosample**. ENA Status: **PRIVATE**. Includes a 'Show submitted XML' button.

Submission Accession: **ERA29531559**. Status: **Metadata is valid**.

Manifest 1 View: Accession **ebp-nor_exp1_csSphJens2_capitula9**. Context: **ebp-nor_prj_SphJen9**. Sample: **csSphJens29**. Status: Linking files completed, Validating data failed, Validating data completed, Exporting data completed. Includes buttons for 'Show Report', 'Modify', 'Validate', and 'Export'.

Manifest 2 View: Accession **ebp-nor_exp2_csSphJens2_capitula9**. Context: **ebp-nor_prj_SphJen9**. Sample: **csSphJens29**. Status: Linking files completed, Validating data failed, Validating data completed, Exporting data completed. Includes buttons for 'Show Report', 'Modify', 'Validate', and 'Export'.

The Biodiversity Working Group

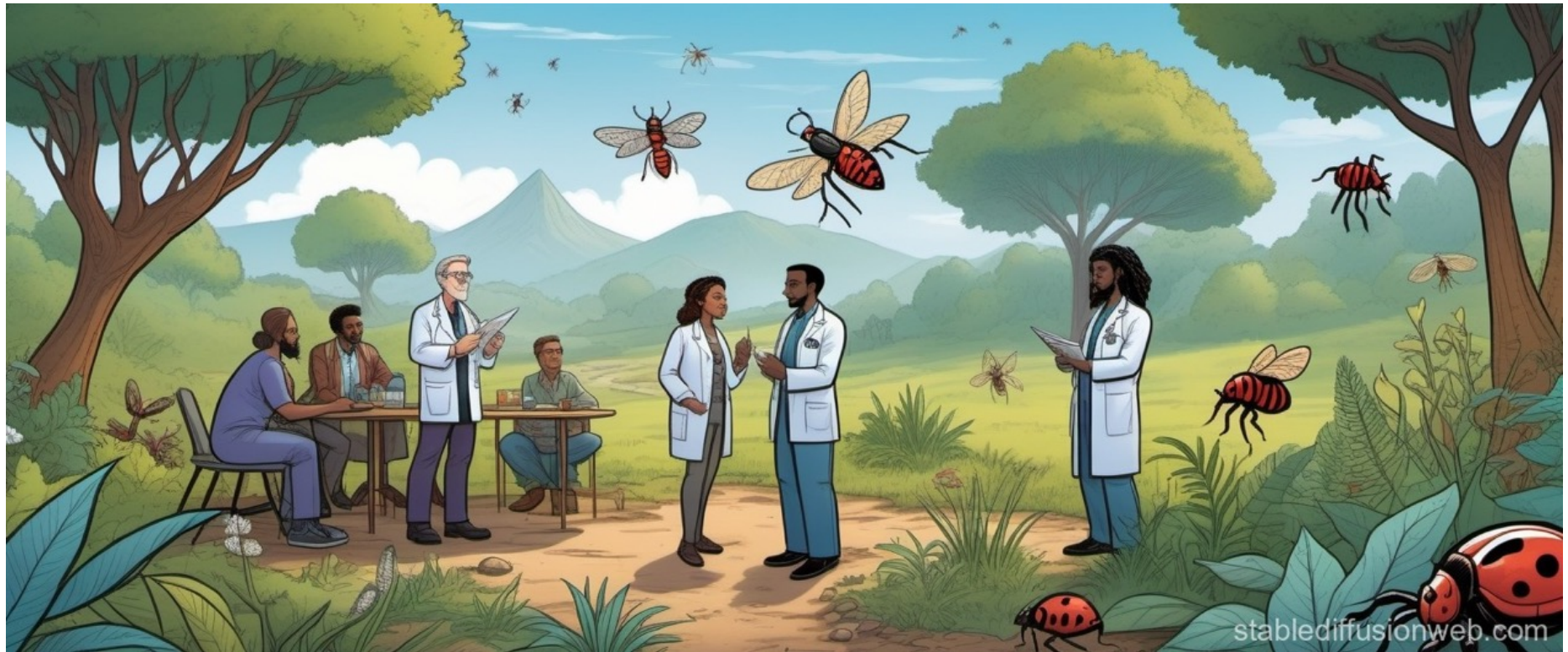
- Working group representing the key players in biodiversity
- Established through Elixir WP6
- Monthly meetings
- Topics: Data collection, management best practices
- Establishing collaboration and information sharing
- Getting a better understanding of the needs of the community



NHMO
DNA Bank



2024 Survey of the Norwegian Biodiversity Community



Driving Progress in Biodiversity Research: Your Thoughts on Enhancing Molecular Biodiversity Data Management

Updated: 11 March 2024 at 15:54

Are you working with biodiversity data? Help the community improve by identifying the current needs by taking our 10-minute questionnaire. Your contribution is valuable, and your privacy is protected - no personal information is collected, only role and affiliation which can be anonymized to your preference.









- Designed in WP6
- Distributed via the Biodiversity Working Group in March '24
- 58 questions covering the whole RD life-cycle
- Respondents from 16 different Norwegian institutions
- There are some key results

Association with initiatives is very diverse

- Majority of respondents is associated with large national or transnational initiative
- Also, a large group `other`

(2) Are you affiliated with one or more large national, transnational initiatives?




Number of submissions: 58

Submissions	Count	% of submissions	
EBP	16	27.6%	 27.6%
ERGA	6	10.3%	 10.3%
BIOSCAN / IBOL / NorBOL	12	20.7%	 20.7%
ELIXIR	15	25.9%	 25.9%
DISSCo	3	5.2%	 5.2%
GBIF	8	13.8%	 13.8%
eLTER	1	1.7%	 1.7%
Other	26	44.8%	 44.8%

Most are both data provider and consumer of public data

(10) Do you use pre-existing, published datasets?





Number of submissions: 58

Submissions	Count	% of submissions	
Yes	52	89.7%	 89.7%
No	4	6.9%	 6.9%
Don't know	2	3.4%	 3.4%

Over 90% publish molecular data.

(20) Are the datasets in your projects intended for re-use by others?

Number of submissions: 58

Submissions	Count	% of submissions	
Yes, always	23	39.7%	 39.7%
Most of the time	29	50%	 50%
Seldom	5	8.6%	 8.6%
No, never	0	0%	0%
Don't know	1	1.7%	 1.7%



Strong support for using controlled vocabularies



Support of meta-data standards and standard operating procedures



Majority does validation checks on meta-data



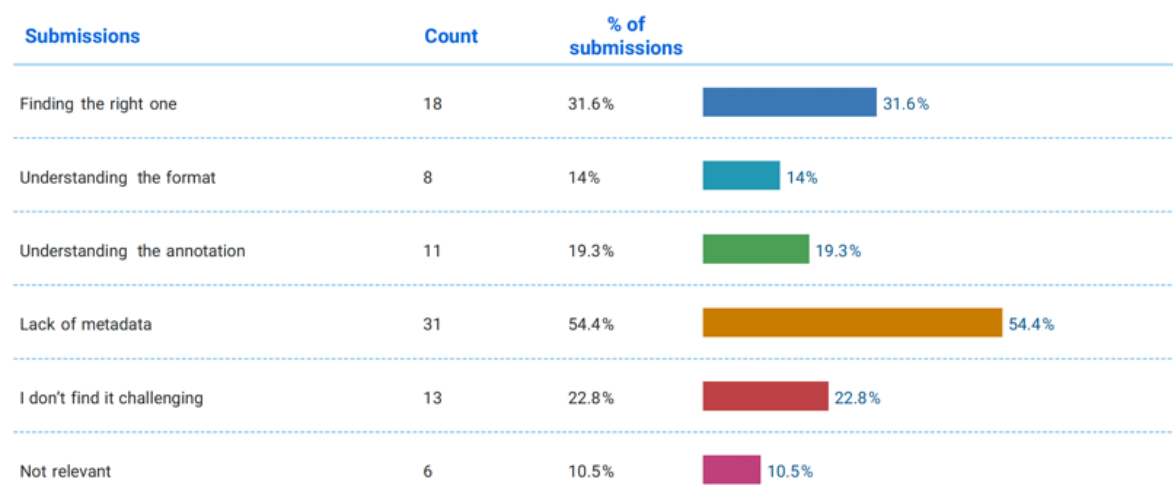
Good awareness of the FAIR principles

But there are some challenges with existing data tools...

- Wide-spread use of spreadsheet programs
- Lack of meta-data in published data
- Taxonomic classification is sometimes challenging
- Need for more taxonomic expertise

(13) What do you find most challenging when using published sequence databases?

Number of submissions: 57



Conclusions

Hub among actors in the biodiversity domain,
nationally and internationally

FAIRification, mobilisation of data from other
large infrastructures including GBIF, Living
Norway, Bioscan and DiSSCO

Data mobilisation for Norwegian Earth
Biogenome Project (EBP-Nor)

ELIXIR outreach strengthening awareness for
meta-data standards and best practices



contact@elixir.no

@elixirnorway



- Joint effort across 5 institutions
- More than 50 people involved:
 - Software developers
 - Bioinformaticians
 - Coordinators
 - Researchers



UNIVERSITY OF BERGEN



UiT The Arctic University of Norway



UiO : University of Oslo



Norwegian University of Science and Technology



Norwegian University of Life Sciences