ELIXIR

Safeguarding the results of life science research in Europe

www.elixir-europe.org
ELIXIR connects national bioinformatics centres and EMBL-EBI into a sustainable European infrastructure for biological research data.

ELIXIR underpins life science research – across academia and industry.

- Medicine
- Agriculture
- Bioindustries
- Environment
A distributed infrastructure to scale with the challenge

**ELIXIR** data infrastructure for Europe’s life science research sector

**ELIXIR** Nodes build local bioinformatics capacity throughout Europe

**ELIXIR** Nodes build on national strengths and priorities
ELIXIR: 5 platforms of shared services led by leading European scientists

Sustaining Europe’s life science data infrastructure

Data

Compute
Access, exchange and storage

Interoperability
Services for integration of data

Tools

Bio tools for data access and exploitation

Training
Skill for managing and exploiting data

Jo McEntyre Christine Durinax

Søren Brunak Afonso Valencia

Celia van Gelder Patricia Palagi Gabriella Rustici

Luděk Matyska Tommi Nyrönen Steven Newhouse

Helen Parkinson Chris Evelo Carole Goble

elixir
ELIXIR Services

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

Data management: Genome annotation
Data management plans

Added value data: UniProt, Ensembl, OrphaNet, ...

Data Interoperability: BioSharing, identifiers.org, BioSamples and OLS

Compute: Secure data transfer, cloud computing, AAI

Bioinformatics tools: Bio.tools

Industry: Innovation and SME programme
Bespoke collaborations

Training: TeSS, Data Carpentry, eLearning
bio.tools: ELIXIR tools and data registry

- **Discovery portal** for life science tools and data resources
- Easy to browse, search and update
- Based on **EDAM ontology**
- Over 6800 entries and growing
  Community-driven curation through hackathons and workshops
- Run by ELIXIR Denmark

http://bio.tools

P05 Hervé Ménager
P10 Kenzo-Hugo Hillon
ELIXIR TeSS Portal (Training eSupport System)

- Platform to disseminate, discover & package training resources, training materials and events – led by ELIXIR UK
- Aggregating information from ELIXIR nodes and various 3rd-party content providers

http://tess.elixir-uk.org
ELIXIR Human genomics portfolio

Generate
Diverse data from diverse providers

Archive, discover, manage
Store, access and share data of multiple types and origin

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Analyse

Collaboration with IMI’s OncoTrack

Collaboration with TranSMART
ELIXIR Beacons

Funding to drive implementation of the Beacon technology within ELIXIR nodes

ELIXIR Authentication and Authorization Infrastructure

- Public: Accessible to internet users
- Registered: Accessible to bona fide researchers
- Controlled: Authorized – signed agreement needed

www.elixir-europe.org/beacons
Galaxy Working Group

Co-chairs: Frederik Coppens
          Björn Grüning

https://www.elixir-europe.org/galaxy-wg
Breakout session
ELIXIR all hands
March 30

Birds of a Feather
GCC 2015
July 7

Proposal to TeGC, TrGC, BoF
October 12

First results survey presented
HoN meeting
September 4

Final report to HoN
November 20

Presentation Final report
SAB meeting
December 8
Conclusions Survey

- **Broad usage** of Galaxy in the ELIXIR community
- **Many small local instances**
- Few resources for maintenance
- Main goal: Enable biologists to perform data intensive (NGS) analyses
Building a European / ELIXIR Galaxy community

- Galaxy Working Group: TeCG, TrCG, node representatives
  - Strategic technical discussions
  - Coordination of effort
- Community building: end-users, developers, administrators
- Events: workshops, hackathon,…
- Training most requested topic
• Sharing data, analyses, workflows
• Facilitate access to ELIXIR data resources
• Leverage ELIXIR infrastructure to deploy/use Galaxy
• Handling sensitive data
• Training using Galaxy
Architecture for Software Containers

• defining standards and best practices for containers
• developing training material
• developing documentation

http://biocontainers.pro

http://bioshadock.genouest.org
Integrating Data Resources

- Downloading (sequencing) data is non-trivial for biologists
- **European Data Repositories** represented in ELIXIR
- Goal: easily accessing all underlying data from repository IDs
- GCC2017 hackathon
  - EBI BioSamples represented
  - Proof-of-Concept with ENA, ArrayExpress data
First implementation @ hackathon

BioSamples
Select data to export to Galaxy

Sample IDs: E-MTAB-3713

Export to Galaxy

https://github.com/elixir-europe/biosamples-to-galaxy
Organizing Events

- ELIXIR-EXCELERATE / GTN / GOBLET hackathon for training material re-use
  - Cambridge, UK, May 2017

- Breakout sessions @ ELIXIr All-Hands meeting
  - Rome, Italy, March 2017

- European Galaxy Developer Workshop
  - Strasbourg, France, January 2017

- Technical hackaton: Tools, workflows and workbenches
  - Paris, France, May 2016

- Galaxy Devops workshop
  - Heidelberg, Germany, April 2016
Galaxy Training material

ELIXIR/GOBLET/GTN hackathon for Galaxy training material re-use

- May 22-24 2017, Cambridge, UK
- Participants from Belgium, Germany, France, Netherlands, Norway, Portugal, United Kingdom, Australia and US

- Topics
  - Slides
  - Datasets
  - Tools
  - Workflows
  - Metadata (Bioschemas and EDAM)
  - Docker containers
  - Interactive tours
  - Start integration into Galaxy Hub
European Galaxy Administrator Workshop

- 8 - 12 January 2018, Oslo, Norway

- Training course for Galaxy administrators to learn how to install, configure, customize, and extend their own Galaxy servers. Topics will include:
  - tool configuration
  - authentication and user management
  - using heterogeneous storage and compute services

- Registration opens in Autumn 2017