

ELIXIR GERMANY

Shaping the Bioinformatics Infrastructure
for Life Sciences in Europe

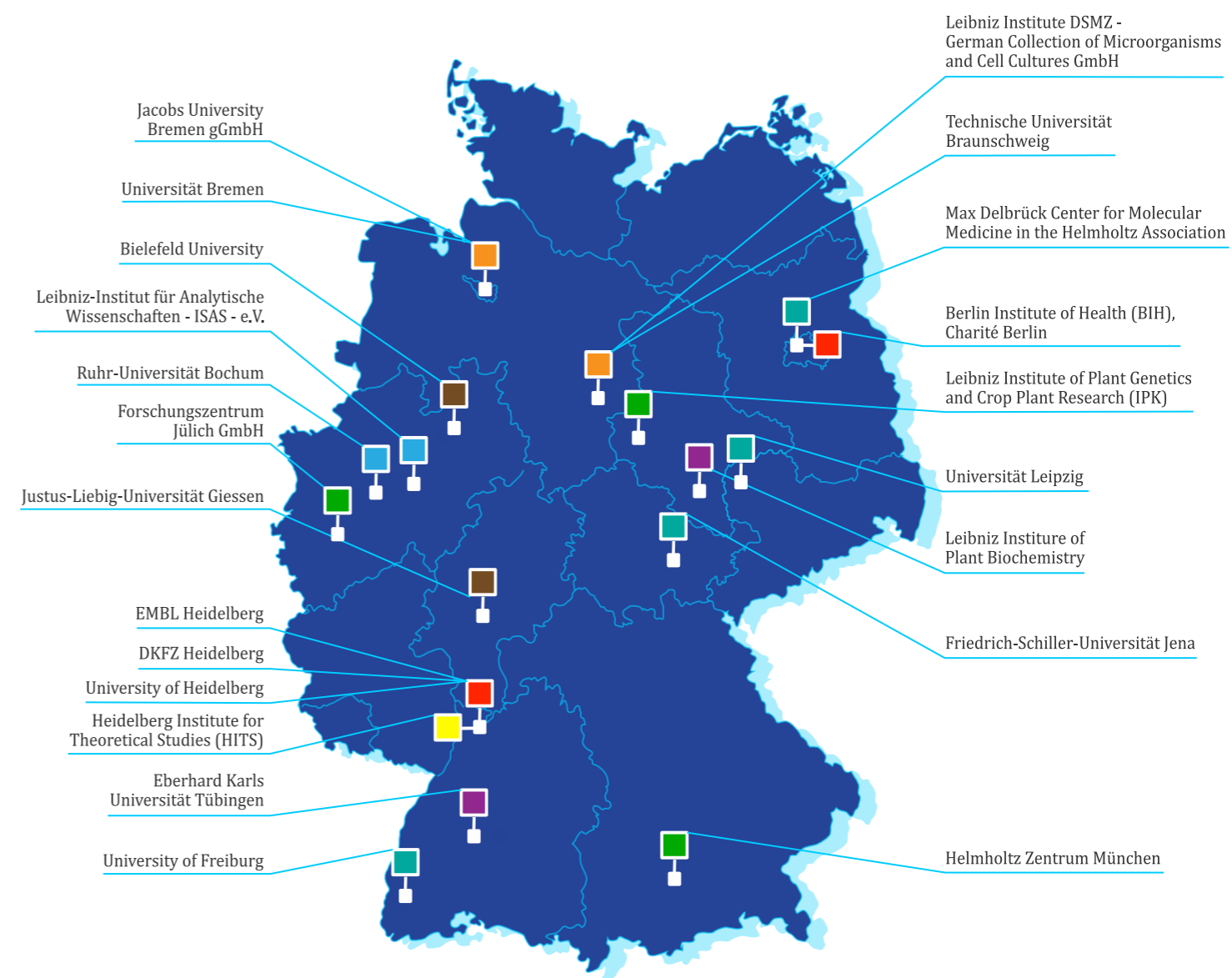
www.denbi.de/elixir-de

The bottom half of the page features a dark blue background with an abstract digital graphic. This graphic consists of glowing blue lines and dots that form a complex, interconnected network, resembling a data flow or a molecular structure. The lines are thin and create a sense of depth and movement, with some points highlighted in a brighter blue or white.

ELIXIR GERMANY

Participating Institutes

The ELIXIR Germany is coordinated by members of de.NBI, the German Network for Bioinformatics Infrastructure, which has been established to provide bioinformatics services to users in life sciences research and biomedicine in Germany and Europe. de.NBI is coordinated from Bielefeld University and includes over twenty partner institutes across Germany.



Thematic focuses:

- | | |
|---|---|
| ■ Human Bioinformatics | ■ Bioinformatics for Proteomics |
| ■ CropPlant Bioinformatics | ■ Integrative Bioinformatics |
| ■ Microbial Bioinformatics | ■ BioData Services |
| ■ RNA Bioinformatics | ■ Systems Biology |

ELIXIR GERMANY

The German Node in ELIXIR



Representing Entity:

Website:

Service Units:

Bielefeld University

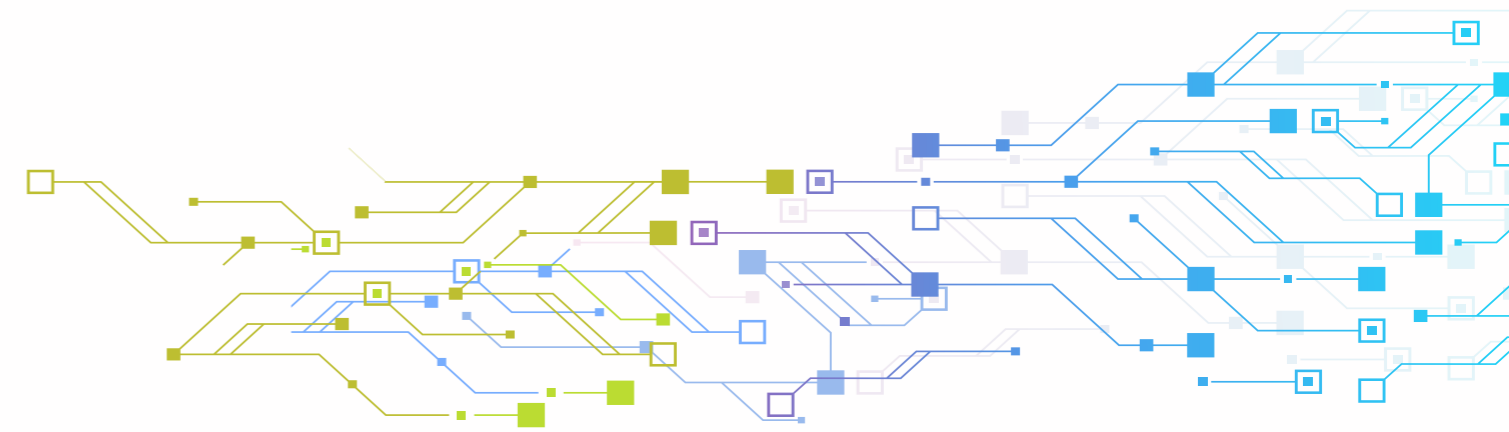
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- Human Bioinformatics
- CropPlant Bioinformatics
- Microbial Bioinformatics
- RNA Bioinformatics
- Bioinformatics for Proteomics
- Integrative Bioinformatics
- BioData Services
- Systems Biology



Prof. Dr. Andreas Tauch
Head of Node ELIXIR-DE

"The German ELIXIR Node is significantly shaping the European bioinformatics infrastructure through its numerous activities."



ELIXIR-DE in 2021

- The ELIXIR Collaboration Agreement signed
- Extension of the SDP to 104 bioinformatics services
- 40 training courses conducted with 1150 participants
- Participation in 15 ELIXIR Implementation studies
- Involved in 7 proposals for new Implementation Studies
- Co-authorship in 6 ELIXIR publications



COVID-19 IN FOCUS

- Priority access to computing resources of the de.NBI Cloud and the European Galaxy server
- Establishment of the de.NBI/ELIXIR-DE task force for COVID-19 human omics data management and international dissemination
- This task force acts as the national point of contact for omics data for ELIXIR and the COVID-19 Data Portal
- Support of the COVID-19 disease map consortium through the FAIRDOMHub service



ELIXIR EUROPE

Distributed infrastructure for biological data

ELIXIR, the European Life Science Infrastructure for Biological Information, was founded in 2014 as an intergovernmental organization and brings together life science resources from across Europe. The consortium currently consists of 22 member states plus EMBL, and Cyprus which is an observer country. All ELIXIR activities are organised in Platforms and Communities.

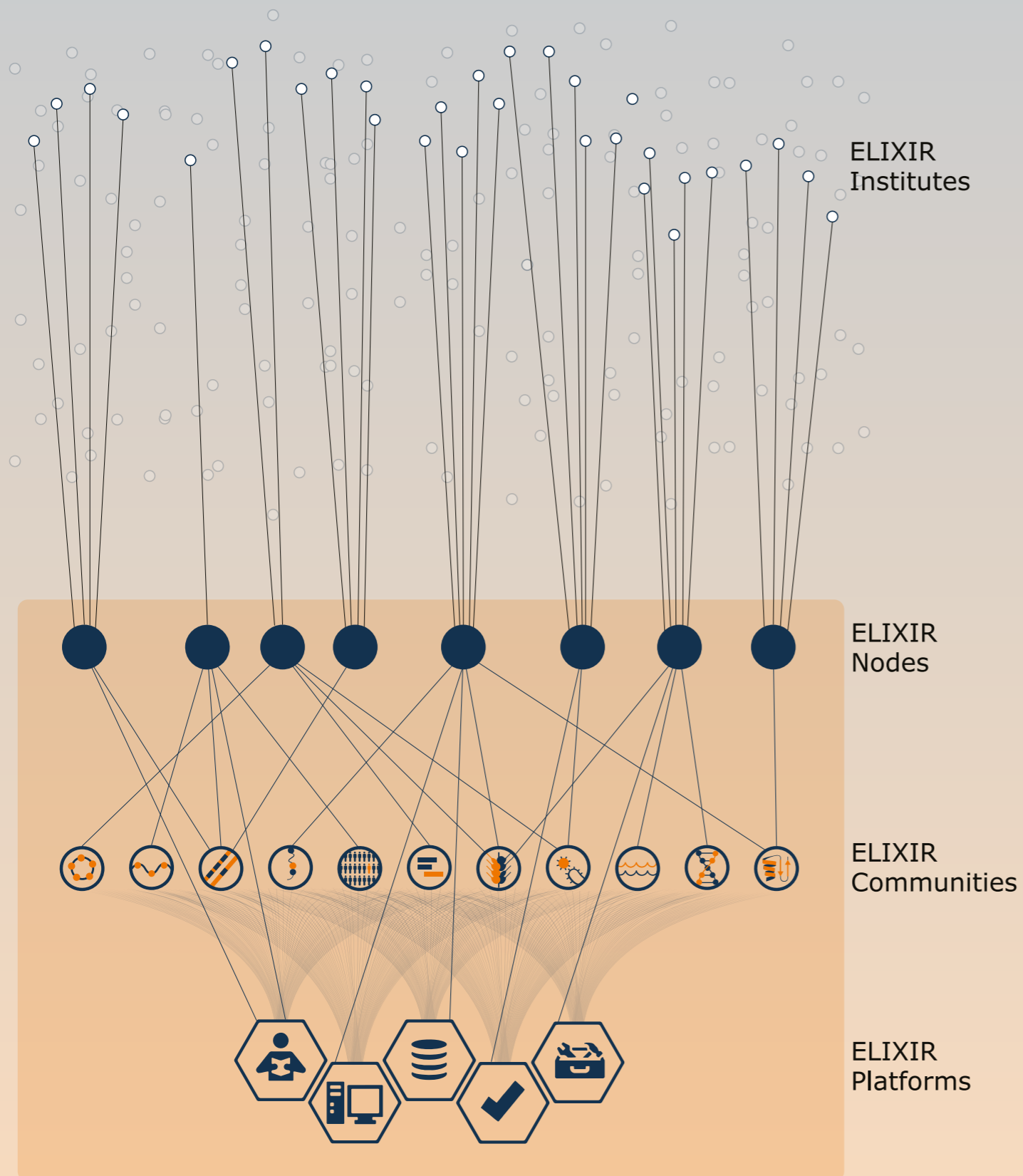


Dr. Niklas Blomberg
ELIXIR Director

"Our goal is to create a unified infrastructure for life science resources across our national Nodes and beyond"

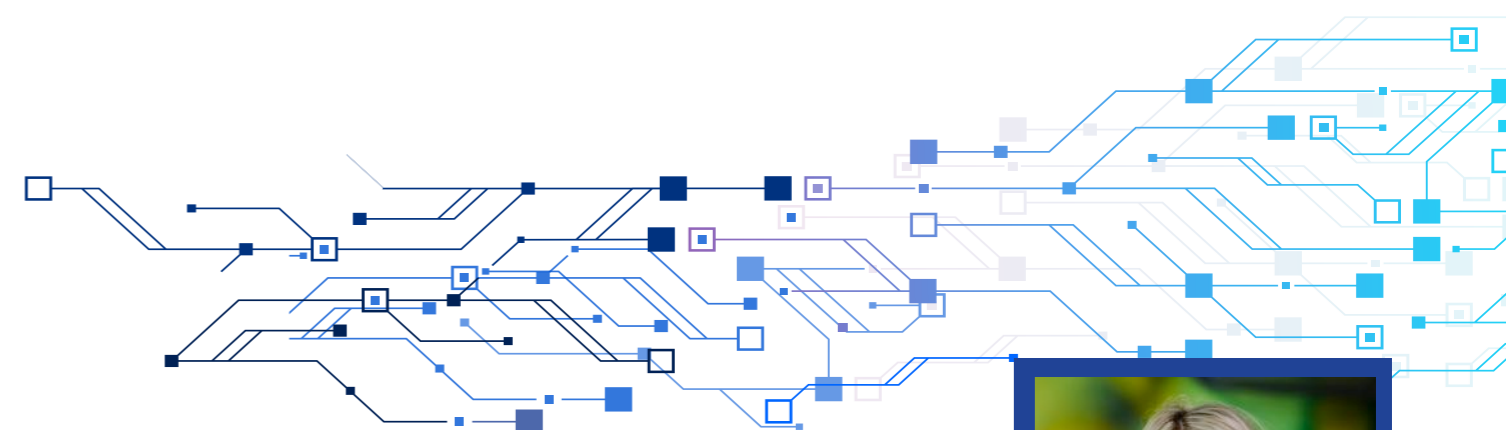
ORGANISATION OF ELIXIR

Layers of Activity



ACTIVITIES OF ELIXIR-DE in the European Infrastructure

The German Node of ELIXIR was established in 2016 and is run by members of the German Network for Bioinformatics Infrastructure (de.NBI). The infrastructure of ELIXIR Germany is represented by eight service units distributed across Germany and the associated EMBL Heidelberg. German representatives are active in all ELIXIR **Platforms** and most of the ELIXIR **Communities** to help optimise the infrastructure and services of ELIXIR.

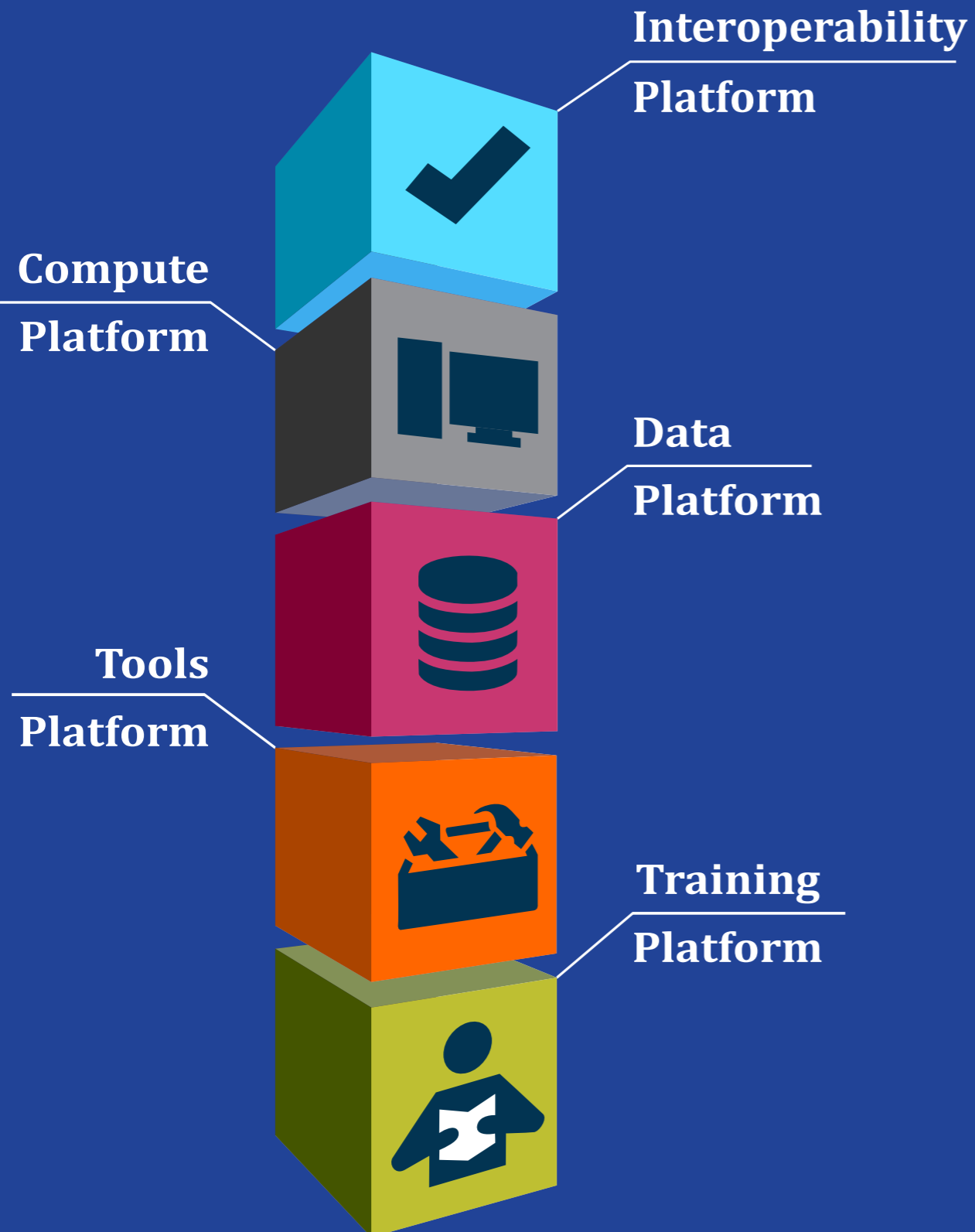


Dr. Vera Ortseifen
Node Coordinator ELIXIR-DE

"ELIXIR Germany is active in all Platforms and thereby a valuable and active member of ELIXIR Europe."

ELIXIR PLATFORMS

Support to the Scientific Communities



"The ELIXIR training platform aims to strengthen national training programmes, grow bioinformatics training capacity and competencies across Europe, and empower researchers to use ELIXIR's services and tools."



Dr. Daniel Wibberg
Training Coordinator ELIXIR-DE

THE STRENGTHS OF THE SCIENTIFIC COMMUNITIES

around the ELIXIR Platforms

ELIXIR coordinates activities through at least one of the five **Platforms** that deal with topics related to **Training, Tools, Data, Compute** and **Interoperability**. The German node is actively involved in all platforms, and thereby strengthens the collaboration between the national Node and ELIXIR.



ELIXIR Communities

Working Together with Experts across Europe

ELIXIR Communities cover research areas of common interest and bring together experts from various ELIXIR Nodes to develop standards, services, and implementation studies in life science domains. Moreover, they enable the development of ELIXIR Platforms. In summer 2021, in total eleven ELIXIR Communities are implemented. Moreover, various Focus Groups are currently under consideration to become a mature community. ELIXIR Germany is represented in almost all communities and actively participates in a number of Focus Groups.



"ELIXIR Communities bring together experts across Europe to develop standards, services and training within specific life science domains."

Dr. Sebastian Beier
Co-lead of the ELIXIR
Plant Sciences Community

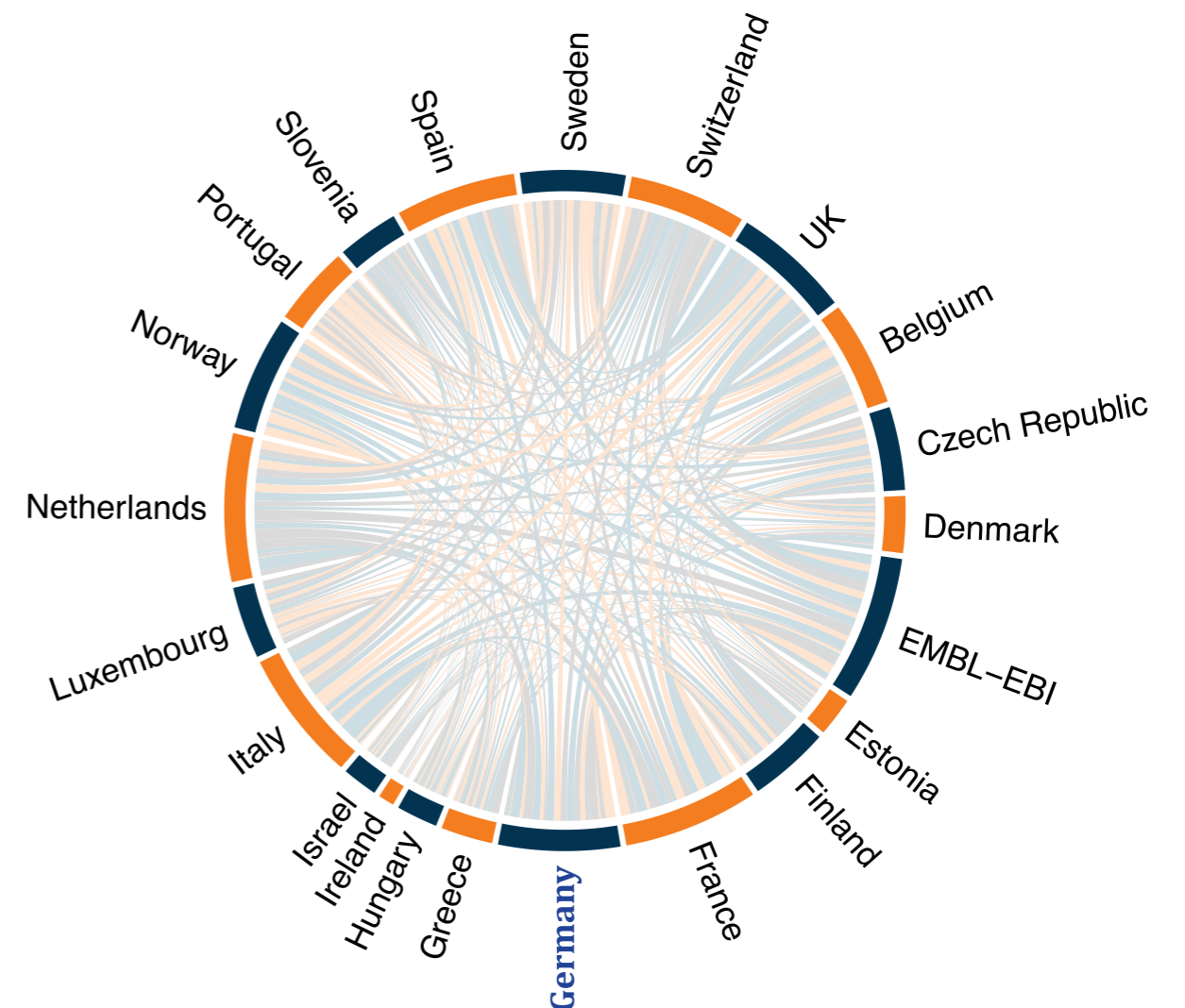


 **ELIXIR-DE leadership function**

 **ELIXIR-DE participation**

COMMISSIONED SERVICES of ELIXIR Germany

ELIXIR Commissioned Services are technical projects that guide future services or scientific developments, drive standards adoption or widening Node participation and connections. Funded through the budget of the ELIXIR Hub, they form part of ELIXIR's ongoing activities in Platforms and Communities. They are proposed by Platforms, agreed with the ELIXIR Heads of Nodes committee and approved by the ELIXIR Board. Since 2016, ELIXIR-DE has directed and/or participated in over 30 Commissioned Services.



Germany's activities are closely linked to those of many other national Nodes.

ELIXIR PLATFORMS INTEROPERABILITY AND COMPUTE

The German Role

The goal of the **Interoperability Platform** is to help scientists and machines to discover, access, integrate and analyse biological data across Europe. It encourages the life science community to adopt standardised file formats, metadata, vocabularies and identifiers and works internationally following the **FAIR principles** to achieve its goals.

"The possibilities of cloud computing open up new perspectives for data processing and analysis in the life sciences."



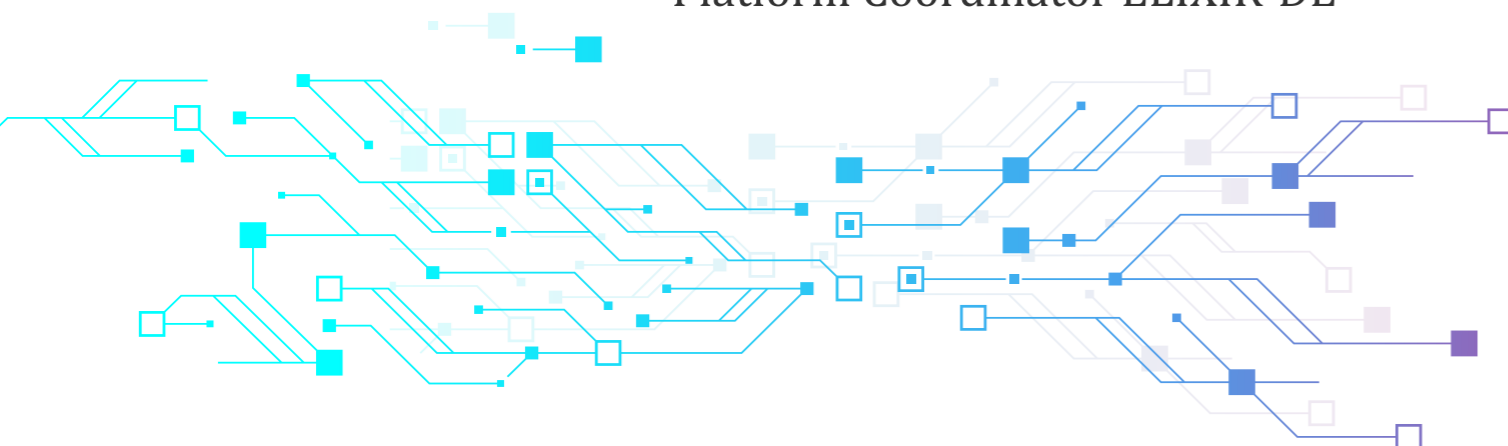
Dr. Nils Hoffmann
Compute and Interoperability
Platform Coordinator ELIXIR-DE

The goal of the ELIXIR Compute Platform is to build and integrate cloud, compute, storage and access services for the life-science research community. The Platform infrastructure enables life scientists to easily access, share and analyse data from different sources across Europe.



ELIXIR-DE participation via de.NBI Cloud include:

ELIXIR AAI:	A centralised identity and access management system
Data Integration for Compute:	Development for inter cloud transfer services for large datasets
ELIXIR Hybrid Cloud Ecosystem:	Coordination of operational and financial aspects of data and compute services in ELIXIR Europe
Container Orchestration Platform:	Operation and provision of containerised software tools for public and private data across cloud environment in ELIXIR Europe



TOOLS

within the ELIXIR-DE Portfolio

The **ELIXIR Tools Platform** supports scientific communities to find, register and benchmark software tools. It helps researchers to access, analyse and integrate biological data, and so, to drive scientific discovery across the life sciences. Currently, **104 German Services** are offered in ELIXIR.

ELIXIR Services offered:

bio.tools: Search the registry of software tools and data resources for life sciences

BioContainers: Browse the list of software you can run on any operating system

OpenEBench: Browse tools for benchmarking and monitoring software

UseGalaxy.eu: Analyse your data with more than 2500 tools, visualisations and 200 reference genomes

Workflowhub.eu: A new registry for life science workflows

ELIXIR-DE TRAINING

Bioinformatics Training and Competence Building

The major challenges of the Training Platform are boosting training capacity, extending the scope and geographical reach of training, identifying gaps and providing training in relevant, newly-emerging life science areas, and securing adequate funding to safeguard the sustainability of the established training infrastructure. The ELIXIR Training Toolkit and e-learning units are findable in TeSS.



Helena Schnitzer
Training Platform Coordinator ELIXIR-DE

"The life science research has become increasingly data-intensive leading to the demand for training in various bioinformatics tools, e.g. for data management. ELIXIR is increasing their efforts to enlarge the community of trainers and quench the global thirst for bioinformatics training."

ELIXIR DATA PLATFORM

Germany Core Data Resources

A notable contribution is the designation of the two databases, SILVA and BRENDA, as **Core Data Resources** in the ELIXIR Data Platform.



SILVA is a comprehensive online resource for quality checked and aligned ribosomal RNA sequence data.



BRENDA provides reliable data, continuous curation and updates of classified enzymes, and the integration of newly discovered enzymes.

EUROPEAN GALAXY SERVER

and the German Contributions



The European Galaxy server hosts a collection of pages/tutorials for training and education detailing Next-Generation Sequencing (NGS), proteomics, genome assembly/annotation and RNA analysis as well as useful literature and Galaxy use guides.

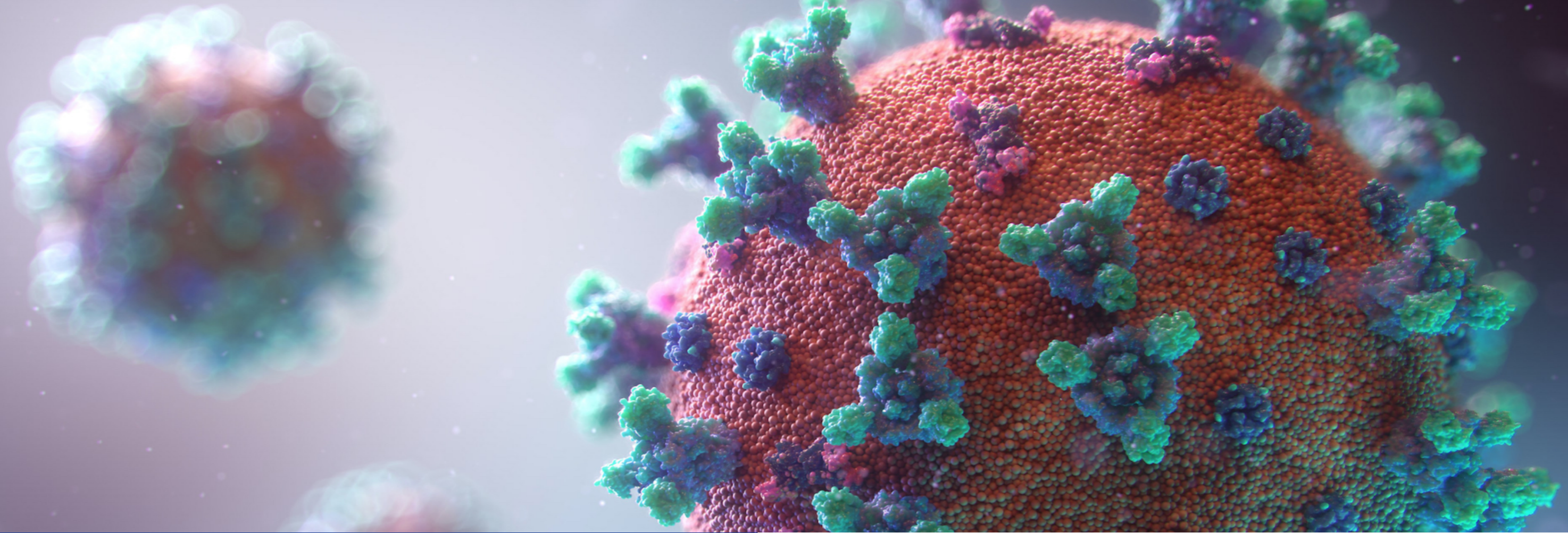
The GALAXY infrastructure is characterised by:

- 36.000 registered users
- 2700 bioinformatics tools
- 8K cores, 50 TB RAM
- published workflows, histories and data libraries



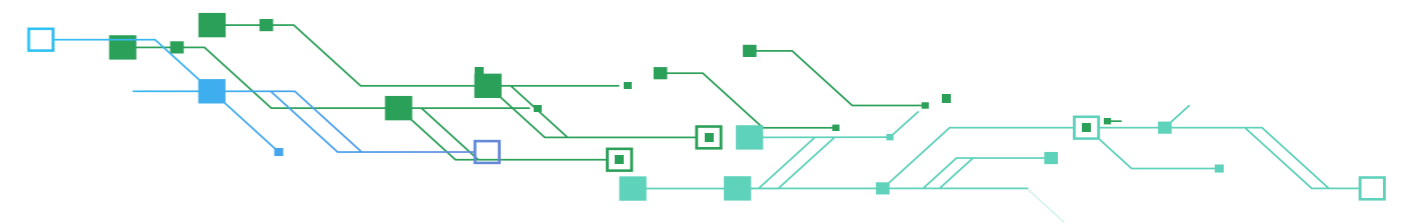
"Galaxy contributes significantly to making data available to all life science researchers according to FAIR principles."

Dr. Björn Grüning
Technical Coordinator ELIXIR-DE



ELIXIR-DE SUPPORT to COVID-19 Research

For over a year now, the COVID-19 pandemic has kept the world in its grip. Researchers from all over the world have been trying since the beginning of the crisis to gather information about SARS-CoV-2. Here, ELIXIR Germany supports all life scientists by providing bioinformatics tools and trainings. Moreover, German members participate in developing the COVID-19 disease map, mobilised resources for the virtual COVID-19 BioHackathon, and support COVID-19 activities using the European Galaxy server.



"The COVID-19 pandemic has caused immense time pressure to analyse data related to the new coronavirus. ELIXIR-DE members have demonstrated their strengths to tackle this challenge with bioinformatics tools, online training and a powerful cloud infrastructure."

Dr. Irena Maus
de.NBI /ELIXIR-DE
Communication & Outreach

IMPRINT

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Crop Plant Research - IPK)




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