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Supporting the Life Sciences: The Role of the German Network for Bioinformatics Infrastructure and ELIXIR Germany

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Modern life science research increasingly relies on complex data analysis, demanding robust bioinformatics tools, substantial computational resources, and specialised expertise. The German Network for Bioinformatics Infrastructure (de.NBI) addresses these challenges as a national, academic research infrastructure funded by the German Federal Ministry of Education and Research (BMBF) and coordinated by Forschungszentrum Jülich, within the Helmholtz Society. de.NBI offers a wide range of comprehensive bioinformatics services spanning nearly the full spectrum of life sciences, along with training and cloud resources. While these services are primarily aimed at researchers in Germany and Europe, many are also accessible globally. Comprising eight interconnected service centres and a coordination unit with 24 institutional partners at public universities and research institutes, de.NBI fosters collaboration within the German bioinformatics community and facilitates knowledge transfer between academia and industry via its Industrial Forum.

Since 2016, de.NBI constitutes the German node of ELIXIR, the European life science infrastructure for biological information. Connecting life science resources from 22 countries and EMBL, ELIXIR Europe brings together bioinformatics expertise and tools to support data-driven discovery. By streamlining access to research data and best practices, it empowers scientists to collaborate, share knowledge, and accelerate research across disciplines. ELIXIR Germany integrates national bioinformatics resources into the broader European landscape, actively contributing to ELIXIR's scientific program and working groups. Key achievements include the designation of de.NBI data resources –BRENDA, BacDive and SILVA –as ELIXIR Core Data Resources and as Global Core Biodata Resources, the implementation of the Life Science Authentication and Authorization Infrastructure (AAI) with the de.NBI Cloud and affiliated services, and leadership in ELIXIR Platforms (Compute, Tools and Data) and Communities (Proteomics, Metabolomics, Galaxy and Plants). Since 2019, ELIXIR Germany's engagement is demonstrated by contributions to over 68 technological and scientific implementation studies and related publications.

Recognising the critical need for advanced data management and processing capabilities, ELIXIR Germany also hosts the German Competence Center Cloud Technologies (de.KCD). de.KCD focuses on building expertise and providing cloud infrastructure for efficient data handling, standardised analysis, and skill development, fostering a collaborative data space for national and international research.

Overall, de.NBI & ELIXIR Germany forms a vital infrastructure supporting cutting-edge life science research, promoting innovation, and ensuring a strong foundation for bioinformatics excellence.

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