

de.NBI- SysBio

Support for FAIR Data and Model Management and Data Curation

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Short description of the project

Systems biology projects involve frequently several collaboration partners and the collection of heterogeneous data and models in diverse formats. The goal of our de.NBI Systems Biology Service Center (de.NBI-SysBio) is to support such projects by offering a data management platform (FAIRDOMHub) together with the software (SEEK) to facilitate interlinking, enriching and sharing all kinds of data, models and standard operating procedures (SOPs). In addition we offer published kinetic data in a structured way for direct use in modeling (SABIO-RK).

de.NBI services

SABIO-RK: a database for reaction kinetics

SABIO-RK is a curated database that contains information about biochemical reactions, their kinetic rate equations with parameters and experimental conditions. Data are mainly manually extracted from literature and made available through web-based search interface and web services. SABIO-RK access within the last 12 months: web interface 67117 hits, 7.178 visits.

<http://sabiork.h-its.org>



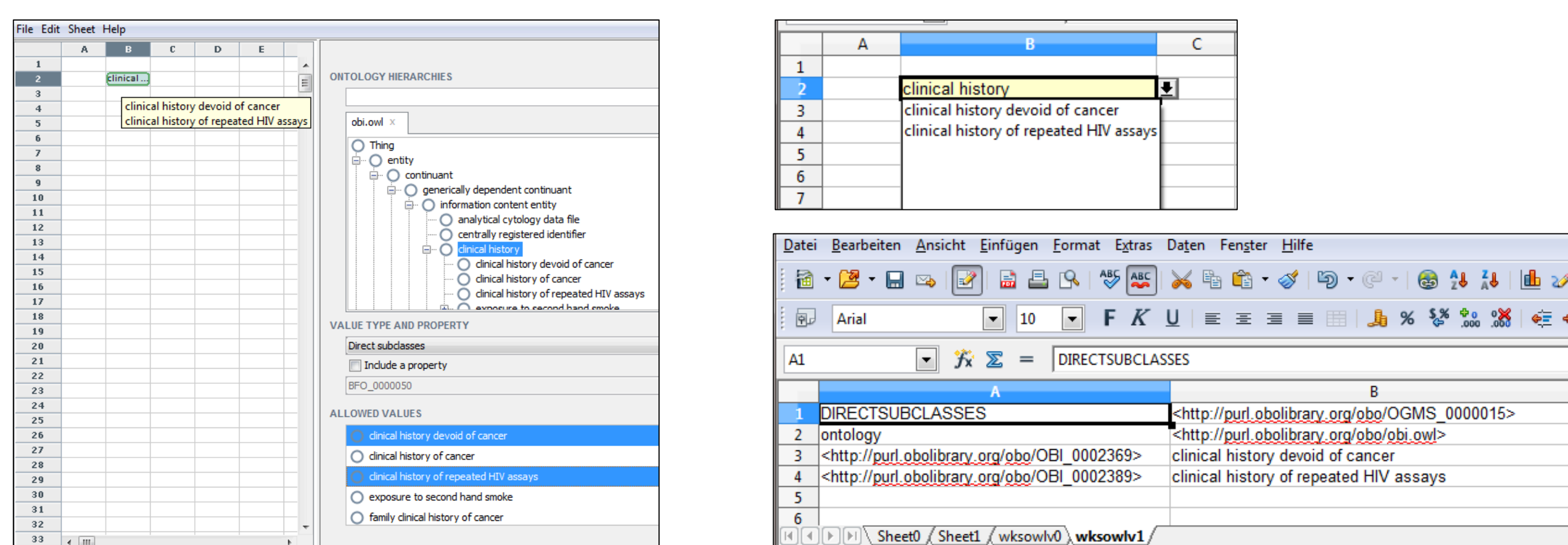
SEEK: data management for Systems Biology

SEEK is a software platform for collaborative projects to support the data storage and exchange between project partners. SEEK contains yellow pages including information about people, projects, institutes, and skills. Users are able to search, store or download data about experiments, models, SOPs, investigations, studies, assays, samples, etc. Different levels of data security and privacy allow controlled access of data and secure data sharing. SEEK has a web interface and API for programmatic access. SEEK web access within the last 12 months: 19600 visits. <http://seek4science.org>



Progress report - RightField

The spreadsheet annotation tool RightField was modified to meet user requests (<https://rightfield.org.uk>). Data collectors use RightField to generate Excel spreadsheet templates embedded with ontologies to share and exchange their annotated data in SEEK. This work was performed in collaboration with BioInfra.Prot and the University of Manchester.



General information on the project

2 FTE of staff paid from de.NBI

Progress report

de.NBI-SysBio is the German partner in the ELIXIR CONVERGE project starting February 2020. The project focusses on the standardisation of life science data management across Europe and the development of a data management toolkit for life scientists.



Collaboration with Galaxy and KNIME on the integration of workflows in SEEK/FAIRDOMHub. A common demo of ongoing work was presented at GCB 2019 in Heidelberg. The demo includes reading data from SEEK, transforming the data with Galaxy or KNIME and writing it back to SEEK.

de.NBI-SysBio is active in the standardisation initiatives COMBINE, STRENDa, and EU-STANDS4PM to foster the standardisation in Systems Biology, Enzymology and Personal Medicine. We contribute to the ELIXIR Interoperability Platform for interoperation between tools and data management, and to the ELIXIR Data Platform for data curation and interlinkage between data and literature.

de.NBI training and education

- COMBINE & de.NBI Tutorial: Modelling and Simulation Tools in Systems Biology – ICSB 2020, 09.10.2020, Farmington, USA
- Tools for Systems biology modeling and data exchange: COPASI, CellNetAnalyzer, SABIO-RK, FAIRDOMHub/SEEK 2020, 27.-29.04.20, Magdeburg, Germany
- ERNEST Training school: Computational tools to study GPCR signaling: From the genomic to the systems level, 26.-27.03.2020, Istanbul, Turkey
- Workshop “Introduction to Data Management” – MPI for Evolutionary Biology, 05.03.2020, Plön, Germany
- SEEK/FAIRDOM Introduction & Training – MIX-UP Kick-off meeting, 07.02.2020, Brussels, Belgium
- COMBINE & de.NBI Tutorial: Modelling and Simulation Tools in Systems Biology – ICSB 2019, 31.10.2019, Okinawa, Japan
- Combining Workflows, Tools and Data Management - GCB 2019, 16.09.19, Heidelberg, Germany
- de.NBI Summer School 2019 - (Bio)Data Science, 02.-06.09.2019, Braunschweig, Germany
- Tools for Systems biology modeling and data exchange: COPASI, CellNetAnalyzer, SABIO-RK, FAIRDOMHub/SEEK, 18.-20.03.2019, Heidelberg, Germany

Publications

- Daniel Wibberg et al. (2019) The de.NBI / ELIXIR-DE training platform – Bioinformatics training in Germany and across Europe within ELIXIR. F1000Research 8(ELIXIR):1877. doi: 10.12688/f1000research.20244.1
- Natalie J. Stanford et al. (2019) Data Management in Computational Systems Biology: Exploring Standards, Tools, Databases, and Packaging Best Practices. Yeast Systems Biology 2049:285-314, Springer New York. 2019. doi: 10.1007/978-1-4939-9736-7_17