

## FAIRDOMHub: a repository and collaboration environment for sharing systems biology research

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The systems biology approach has an iterative cycle of experimental and modeling analyses. Experimental results inform mathematical model design and refinement, and modeling simulations direct further laboratory experiments. Data are highly heterogeneous and the relationships between multiple different data sets and mathematical models must be clearly maintained. The interlinking of the experimental data, standard operating procedures (SOPs) and models is essential for interpreting and understanding results.

The FAIRDOMHub is a repository for publishing FAIR (Findable, Accessible, Interoperable and Reusable) Data, Operating procedures and Models (<https://fairdomhub.org/>) for the Systems Biology community. It is a web-accessible repository for storing and sharing systems biology research assets. There are several well established databases for mathematical models or types of experimental data (e. g. omics data and kinetics), but FAIRDOMHub combines data and models and provides services that enable the integration, interlinking and publishing of experimental and modeling results in the context of the overall systems biology experiment, from a project perspective. It enables researchers to organize, share and publish data, models and protocols, interlink them in the context of the systems biology investigations that produced them, and to interrogate them via API inter-faces. By using the FAIRDOMHub, researchers can achieve more effective exchange with geographically distributed collaborators during projects, ensure results are sustained and preserved and generate re-producible publications that adhere to the FAIR guiding principles of data stewardship.

The FAIRDOMHub (<https://fairdomhub.org/>) has been developed as a joint action between ERA-Net ERASysAPP (<https://www.erasysapp.eu/>), an EU-wide consortium of applied systems biology, the European Research Infrastructure and Infrastructure for Systems Biology in Europe (ISBE) (<http://project.isbe.eu/>).