



The Open Brain Institute is a non-profit organization whose mission is to accelerate neuroscience research through the creation and dissemination of advanced digital brain models.

The Institute's core objective is to build a comprehensive repository of high-fidelity digital brain models, encompassing the complexity and diversity of brain tissue across species. These models will serve as an invaluable resource for researchers globally, enabling unprecedented exploration of brain structure and function. This repository is not merely a data archive or brain atlas; it is a dynamic, evolving resource constantly updated with new data, software and model refinements.

Central to the Institute's mission is the creation and maintenance of a collaborative virtual laboratory infrastructure. This collaborative environment provides researchers with seamless access to advanced computational resources, including cloud compute clusters, specialized brain modeling and simulation software, comprehensive data analysis and visualization tools, and interactive chat capabilities, allowing them to perform neuroscience "at the speed of thought".

Virtual labs are accessible through the Open Brain Platform and provide the following functionalities:

Explore

Researchers have the ability to conduct atlas-driven exploration of existing experimental data, model data, digital brain models, and simulations. This structured and systematic exploration is further enhanced by powerful literature mining tools ensuring that their investigations are grounded in the most current and relevant scientific information.

Build

The virtual lab provides the tools and resources for researchers to build their own custom brain models, either from scratch or by modifying and extending existing models. This empowers researchers to test their hypotheses and develop novel approaches to understanding the brain.

Simulate

The environment supports cutting-edge simulations, allowing researchers to run experiments, test hypothesis, and model complex brain processes in a controlled and reproducible manner. This avoids the limitations inherent in traditional experimentation.



Collaborate

The virtual lab fosters seamless collaboration among researchers worldwide. It facilitates real-time interaction, shared data analysis, and joint model development. Features such as integrated communication tools, version control systems, and collaborative annotation capabilities enhance teamwork and accelerate scientific progress. Access control and data security are paramount, ensuring the integrity and confidentiality of research data.

Through this integrated approach to digital brain modeling and collaborative virtual laboratories, the Open Brain Institute aims to accelerate scientific discovery, democratize access to advanced research tools, and ultimately, lead to transformative breakthroughs in understanding and treating neurological disorders, advancing cognitive science, and pushing the boundaries of artificial intelligence.