NIF
Neuroscience Information Framework

http://nif.nih.gov/ *Innovation through Integration*

The Neuroscience Information Framework

The Neuroscience Information Framework (NIF; http://nif.nih.gov) is a dynamic inventory of web-based neuroscience data, resources, and tools that anyone can easily access via any computer connected to the Internet. An initiative of the NIH Blueprint for Neuroscience Research, the NIF will advance neuroscience research by enabling discovery and access to public research data and tools worldwide through an open source, networked environment.

The NIF project is designed as a community resource. The more participation from the community, the better the resource. We welcome all feedback and suggestions and are actively looking for resource providers to make their resources accessible through the NIF. Register your resource at www.neuinfo.org, or send us an e-mail at curation@neuinfo.org.

Discover Resources and Data Through NIF

Searching a diverse set of resources and making the search results intelligible are major challenges. The NIF utilizes many advanced features for information retrieval and integration. Chief among these is the use of a shared vocabulary, NeuroLex, for describing and querying resources. NeuroLex currently consist of thousands of concepts derived from community-built ontologies and vocabularies and enhanced through the input of neuroscience experts. Through advanced query interfaces, users can make use of the NeuroLex vocabularies to expand or refine their search and to perform so-called “concept-based queries.” Through a single interface, users can search across multiple information sources:

▶ ***NIF Web:*** A customized web index for the neurosciences built from relevant sites registered to the NIF.

▶ ***NIF Registry:*** A curated index of resources categorized according to resource type, resource host and resource description. Links to a more detailed description and to the resource on the web are provided.

▶ ***Literature Archive:*** A searchable index of neuroscience literature created through Textpresso, a full-text text-mining system for scientific literature. Access to the article is provided through PubMed or Google Scholar and may require a subscription. Links are also provided to the Textpresso for Neuroscience, where users can employ additional searching and clustering strategies to explore the literature.

▶ ***Neuroscience Databases:*** The NIF provides the ability to directly query databases containing neuroscience-related data that are independently created and maintained. This type of search accesses the content of the databases directly, providing access to data not normally available to search engines. In order to be accessed by this search, database providers must register their database to the NIF data federation.

NIF in Neuroinformatics

A series of articles describing the NIF is featured in Neuroinformatics [ISSN: 1539-2791 (Print) 1559-0089 (Online)], published by Humana Press, Inc., in its Online First™ edition.

NIF at SfN 2008 (Booth #3324)

Sunday, November 16, 2008 - 6:30 pm - 8:30 pm
Neuroinformatics Social
Location: Renaissance Washington: Renaissance East

Monday, November 17, 2008 - 6:30 pm - 8:30 pm
Sharing and Discovering Data and Neuroscience Resources Through The Neuroscience Information Framework
Location: Washington Convention Center, Room 148

Monday, November 17, 2008 - 8:00 am - 12:00 pm

Presentation 396.4/UU62: S. POLAVARAM, et al., Neuro-Morpho.Org implementation of digital neuroanatomy: public distribution of 3D reconstructions and deep registration with the Neuroscience Information Framework

Presentation 396.10/UU68: W. J. BUG, et al., The NIFSTD vocabulary: empowering concept-driven queries against diverse, online neuroscience resources

Presentation 396.12/UU70: A. GUPTA, et al., Finding neuroscience information from heterogeneous information sources with NIF (Neuroscience Information Framework)

Presentation 396.15/UU73: D. GARDNER, et al., BrainML08: Investigator-derived semantics of a data-description language for neuroinformatics

Presentation 396.18/UU76: M. HALAVI, et al., Dense coverage of digitally reconstructed dendrites and axons in NeuroMorpho.Org through extensive literature mining

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NIF Resources and Levels of Access

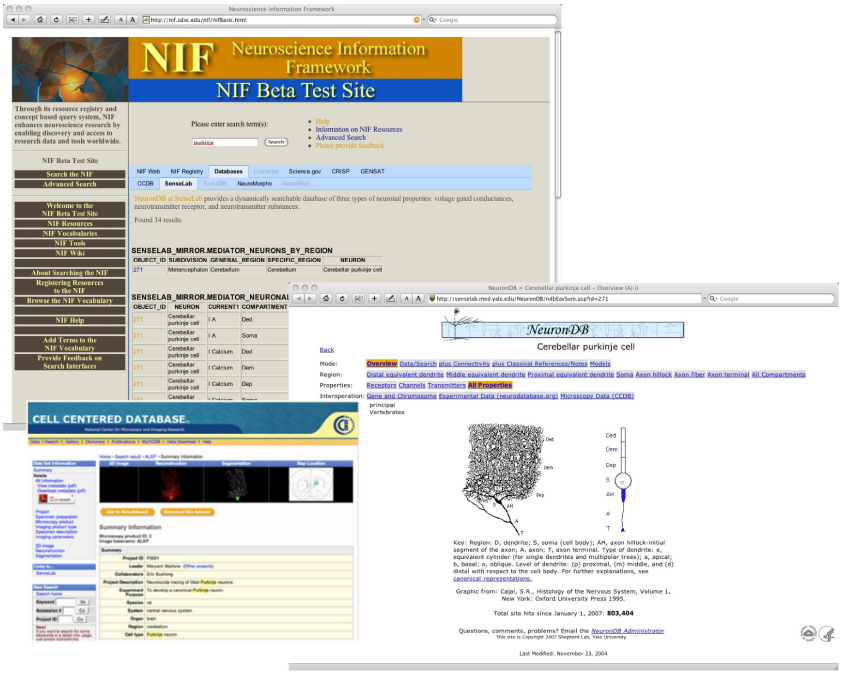
The NIF provides multiple levels of access to neuroscience resources and is actively seeking resource providers to make their resources available through the NIF. The goal of NIF is to bring people to your site as we do not maintain any resources locally. The NIF has a full time curator and a technical support person to assist with the registration process.

Once registered, the NIF provides the ability to issue queries across all registered resources through a single interface. The NIF provides different levels of access to individual resources, depending upon the type of resource and the willingness of the resource provider to register the resource and its content to the NIF.

NIF Level 1 provides access to the high level description of a resource and its general content through the NIF registry. Each of these resources has been annotated with a controlled vocabulary by a human curator. This type of access is useful for looking for different types of resources, e.g., software tools and cell lines, but generally does not provide detailed information on the specific content of the resource. For example, a resource like NeuroMorpho.org that contains reconstructions of dozens of types of neurons would be annotated at the level of "neuron" but not the individual types of neurons contained within it.

NIF Level 2 provides access to additional content of the resource, although the underlying data structure of the resource is not explicitly mapped. For example, the different types of neurons in NeuroMorpho.org would be accessible to search, although the database would not be queried directly. In the current version of the NIF, level 2 access is achieved through the creation of the NIF Web index, where content contained in web pages associated with neuroscience resources in the NIF registry and linked to these sites is indexed. For resources that include an existing web query interface (e.g., web-searchable databases using an HTTP GET or HTTP PUT mechanism), the fields and/or results in this interface can be mapped into the NeuroLex ontology to improve searchability.

NIF Level 3 provides access to the content and data structure of the resource through the NIF data federation. For level 3, resource providers expose their database to the NIF so that it can receive a direct query. They also map the content of their database to the NIF NeuroLex vocabularies so that each concept in the database is identified through a unique NIF identifier. This mapping forms the basis of concept-based queries that are available through one of the advanced search interfaces. A resource registered at level 3 can be queried like any database.



Bring Your Resource to NIF

and

Let NIF Bring People to You

Register your resource at

www.neuinfo.org

or send us an e-mail at

curation@neuinfo.org.