

Neuroscience Information Framework

<http://neuinfo.org>

The Neuroscience Information Framework (NIF), an initiative of the NIH Blueprint for Neuroscience Research, is a semantically-enhanced portal to web-based neuroscience resources: data, materials, and tools. NIF has developed search tools, which expose the contents of federated databases and deep or “hidden” web resources hidden from traditional search engines. NIF is designed to serve the neuroscience research community and is actively looking for resource providers to make their resources accessible through NIF.

NIF allows you to find information and data from hundreds of neuroscience sources...

The screenshot shows the NIF search interface. At the top, there's a navigation bar with 'ABOUT', 'RESOURCES', and 'DATA' tabs, with 'DATA' being the active tab. Below the navigation is a search bar containing the query "Purkinje Cell". To the right of the search bar are a magnifying glass icon and a purple 'Save this search' button. The main content area displays a search result summary: "SHOWING 45,792 RESULTS ACROSS 72 DATA SOURCE(S) WITH THE Query Expansion". Below this, a section titled "What are you searching for?" lists categories: Physical Resource or Software Tool (0), Data or Model (229), Funding (0), Information (0), Other (0), and a highlighted "Show me everything (45,792)" button. A large blue arrow points downwards from this section towards the bottom of the page. The next section, "Categories", contains a grid of links: Antibody (0), Cell (47), Cell Part (159), Clinical Trials (0), Connectivity (0); Disease (0), Expression (0), Function (194), Gene (0), Grants (0); Gross Anatomy (0), Images (0), Models (229), Molecule (141), Multimedia (0); Organism (0), Phenotype (0), Software (0), Training (0). Below these are links for CellML: Models, Integrated: Models, IonChannelGenealogy: Ion Channels, ModelDB: Models, ModelRun: Models, NeuroML database: Models, and Open Source Brain: Models. The bottom part of the page shows a table of search results with columns: Model Name, Model Concept, Software Type, Type, Neurons, Neurotransmitters, and Receptors. The results include entries like "Controlling KCa channels with different Ca²⁺-buffering models in Purkinje cell (Anwar et al. 2012)", "Parallel STEPS: Large scale stochastic spatial reaction-diffusion simulator (Chen & De Schutter 2017)", "Vestibulo-Ocular Reflex model in Matlab (Clopath et al. 2014)", "Effect of voltage sensitive fluorescent proteins on neuronal excitability (Akemann et al. 2009)", and "Stochastic calcium mechanisms cause dendritic calcium spike variability (Anwar et al. 2013)".

The screenshot shows the SciCrunch API Docs interface. At the top, there's a header with the NIF logo, the text "/swagger-docs/swagger.json", and an "Explore" button. Below the header is a section titled "SciCrunch API Docs" with a small "1" icon. It includes a note about the base URL: "[Base url: /api/v1] /swagger-docs/swagger.json". Below this is a section titled "Data services" which lists several API endpoints with their descriptions and URLs:

- GET /dataservices/federation/data/{viewid} search a single data view
- GET /dataservices/federation/search search all data views
- GET /dataservices/federation/facets/{viewid} get facets for a data view
- GET /dataservices/literature/search search the Pubmed literature
- GET /dataservices/literature/pmid retrieve by PMID

Access information or integrate information into your application or scripts via NIF provided services after registering for an API Key

Searching a diverse set of resources and making the search results intelligible are major challenges. NIF utilizes many advanced features for information retrieval and integration. Chief among these is the use of a shared vocabulary, InterLex (formerly NeuroLex) and the NIF Standard Ontology, for describing and querying resources. InterLex currently consists of thousands of concepts derived from community-built ontologies and vocabularies and enhanced through the input of neuroscience experts. Through intuitive query interfaces, users can make use of the InterLex 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 is releasing new terminology tools and services

Term View

Home / Term Dashboard / ILX:0101974

Cerebellum Purkinje cell 
http://uri.interlex.org/base/ilx_0101974



Log in to suggest term to community

 Back to search results
+ Add new term

PreferredId: ILX:0101974 Type: term OWL Equivalent: owl:Class

Principal neuron (projection neuron) of the cerebellar cortex; cell bodies arranged in a single layer; characterized by a pear-shaped cell body, 1 (rarely 2) primary dendrites and an elaborate dendritic tree heavily invested with dendritic spines.

Version: 1

Export:   

General

Children

Relationships

Annotations

Referenced By

Superclasses:

 Expand list

Cerebellum Purkinje cell

↓

Neuron

↓

Nervous system cell

↓

Cell

↓

Anatomical entity

Synonyms:

Synonym

Type

Purkinje neuron

Purkinje's corpuscles

Cerebellar Purkinje neuron

Purkinje Cell

Purkyne cell

Corpuscles of Purkinje

Existing IDs:

Preferred CURIE

IRI

NLXWIKI:sao471801888 <http://neurolex.org/wiki/sao471801888>

ILX:0101974 http://uri.interlex.org/base/ilx_0101974

InterLex is a dynamic lexicon of biomedical terms that is being constructed to help improve the way that biomedical scientists communicate about their data, so that information systems can find data more easily and provide more powerful means of integrating data across distributed resources. One of the big roadblocks to data integration is the inconsistent use of terminology in databases and other resources such as the literature. InterLex allows for the association of data values (i.e. the value of a field or text within a field) to terminologies enabling the crowdsourcing of data-terminology mappings within and across communities.

InterLex was built on the foundation of NeuroLex (see Larson and Martone 2013). The initial entries in NeuroLex were built from the NIF Standard ontologies which currently has about 60,000 concepts (includes both classes and synonyms) that span gross anatomy, cells, subcellular structures, diseases, functions and techniques. InterLex models terms using primitives of the Web Ontology Language (OWL) and can export directly to a variety of standard ontology formats.

Access the NIF ontology or integrate the NIF ontology into your application or scripts via NIF provided services after registering for an API Key

 SciGraph - REST Services

graph : Graph services

Show/Hide | List Operations | Expand Operations | Raw

refine : OpenRefine Reconciliation Services

Show/Hide | List Operations | Expand Operations | Raw

analyzer : Analysis services

Show/Hide | List Operations | Expand Operations | Raw

cypher : Cypher utility services

Show/Hide | List Operations | Expand Operations | Raw

annotations : Annotation services

Show/Hide | List Operations | Expand Operations | Raw

lexical : Lexical services

Show/Hide | List Operations | Expand Operations | Raw

vocabulary : Vocabulary services

Show/Hide | List Operations | Expand Operations | Raw

 /vocabulary/categories

Get all categories

 /vocabulary/search/{term}

Find a concept from a term fragment

 /vocabulary/prefixes

Get all CURIE prefixes

 /vocabulary/suggestions/{term}

Suggest terms

 /vocabulary/id/{id}

Find a concept by its ID

 /vocabulary/autocomplete/{term}

Find a concept by its prefix

 /vocabulary/term/{term}

Find a concept from a term

NIF assists users in finding scientific resources

The screenshot shows the NIF website interface. At the top, there's a navigation bar with links for ABOUT, RESOURCES (which is currently selected), DATA, LITERATURE, and MY ACCOUNT. Below the navigation is a search bar with the query "Simulation". A sidebar on the left contains links for Category Graph, Create New Collection, Add All On Page To A Collection, Filter by Last Modified Time, and See New Records. The main content area displays search results for "Simulation", showing two entries: "Multiscale Object Orientation Simulation Environment" and "Multi Simulation Coordinator". Each entry includes a brief description, a link to the source, and social sharing options (Facebook, Twitter, etc.). A large blue arrow points from the "Resource Details" section of the Multiscale Object Orientation Simulation Environment page to the right-hand literature page.

The resource registry within NIF holds the largest collection of scientific resources, such as simulation environments. Resources are manually curated to make sure the information is accurate. Using NLP techniques we also look for literature mentions of resources in full text articles we have access to. This allows the registry to provide information on related resources and suggest other interesting resources.

This screenshot shows the NIF Literature page for the publication "STEPS: Modeling and Simulating Complex Reaction-Diffusion Systems with Python". The page includes a summary of the publication, citation details (PubMed ID: 19623245), and social sharing options. Below the summary are sections for INFORMATION, TERMS OF USE, and TOOLS AND RESOURCES. The INFORMATION section lists research resources used in the publication (None found). The TOOLS AND RESOURCES section lists research tools detected (SourceForge, SBML, Multiscale Object Orientation Simulation Environment, CellML). The TERMS OF USE section lists data used in the publication (None found). The Associated grants section indicates None. A blue arrow points from the "Resource Details" section of the Multiscale Object Orientation Simulation Environment page on the left to this literature page.

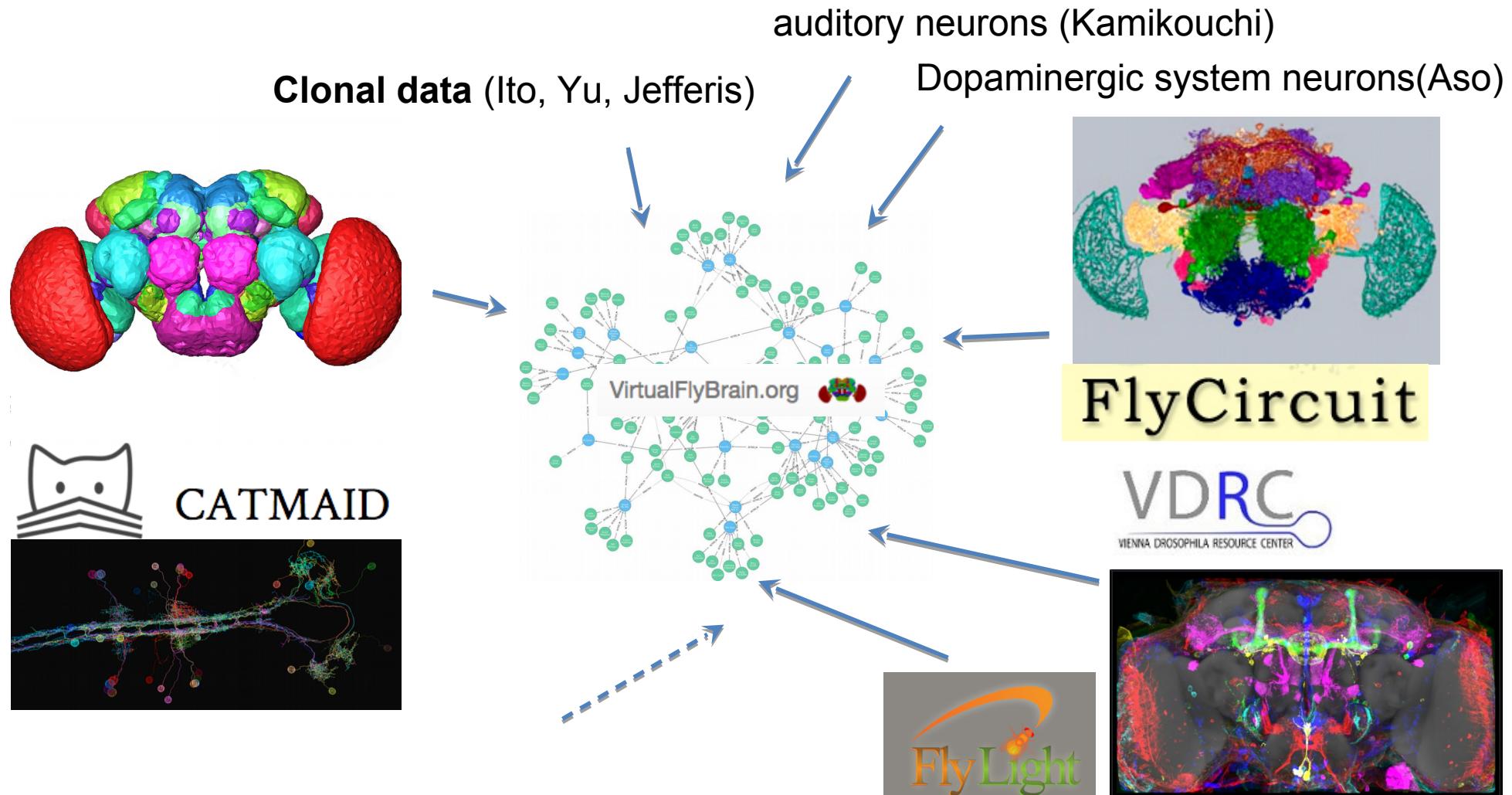
Access resource information or integrate resource information into your application or scripts via NIF provided services after registering for an API Key

Virtual Fly Brain

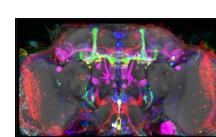
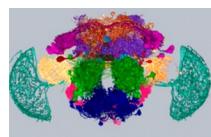
<https://www.virtualflybrain.org>

A data integration hub for *Drosophila* neurobiology, integrating disparate, large-scale datasets and linking them to curated literature and other resources. VFB provides the data to generate circuit hypotheses and identify research tools to test them.

Combining 3D Anatomy, Light & EM Image Data



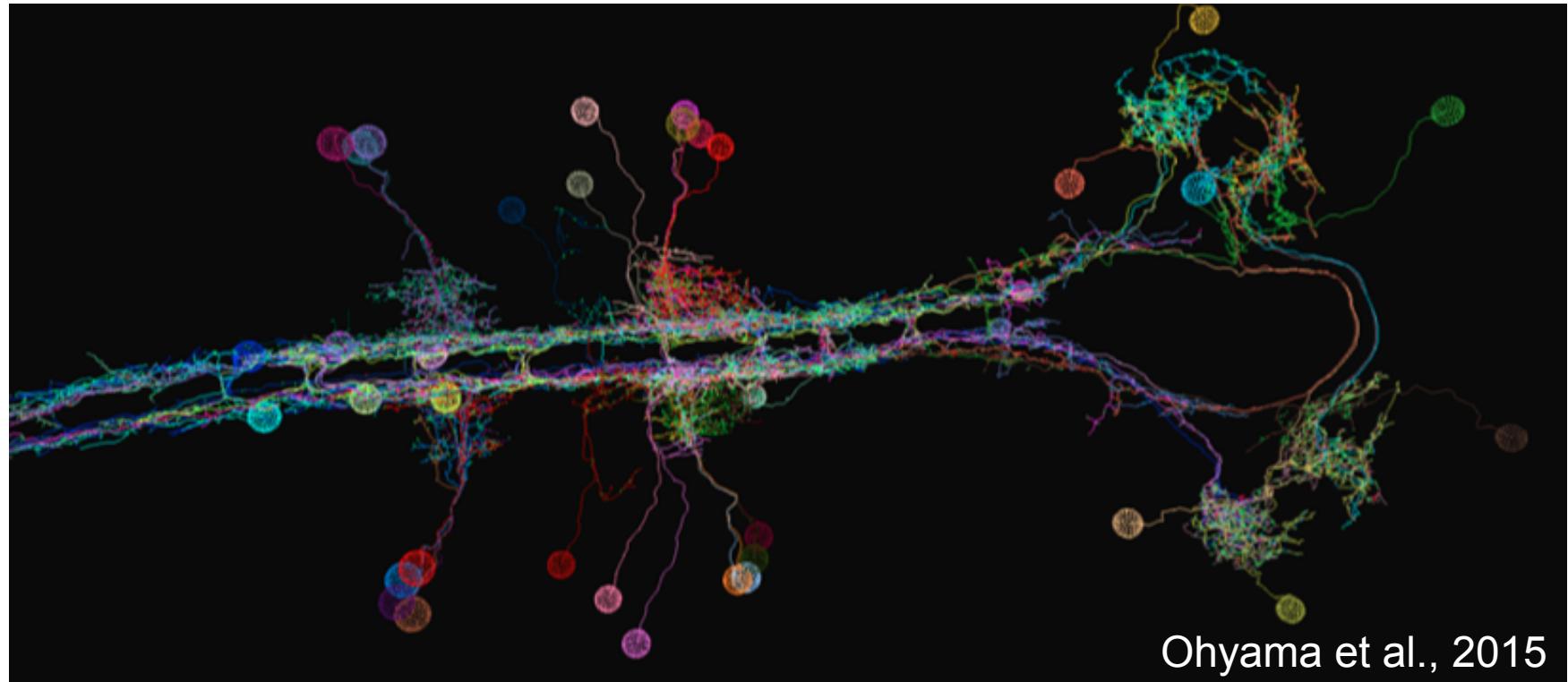
with semantic integration: image annotation



OWL individual
annotation

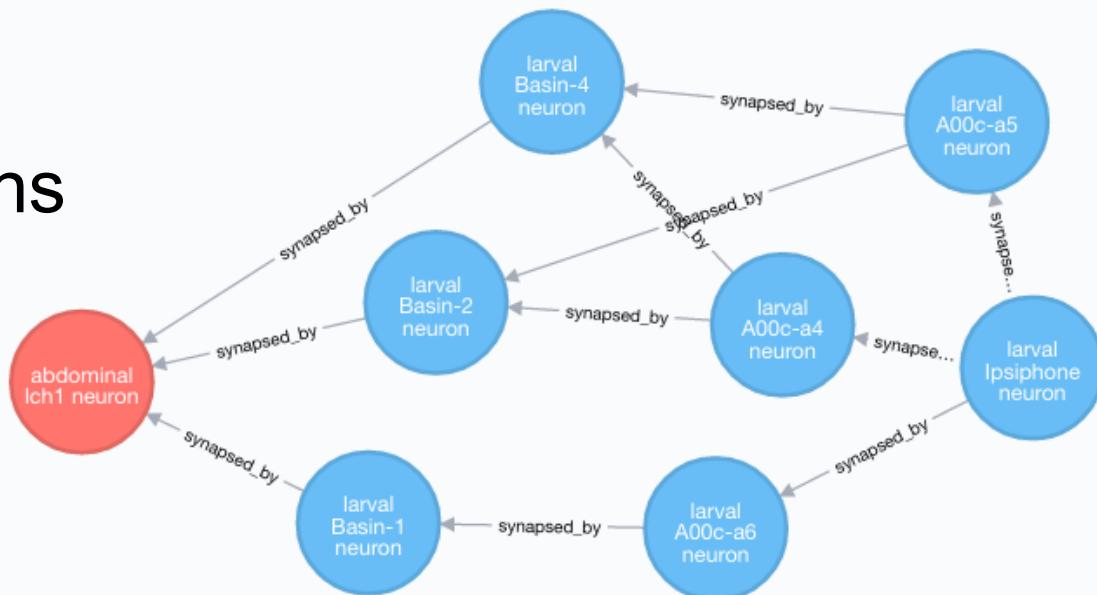
OWL2
W3C®
neo4j

VFB 2 – interactive 3D circuit reconstructions



Context graphs: Exploring circuit paths

Query: circuit paths from
'abdominal vch1 neuron' to
'larval Ipsiphone neuron'



Value added by VFB

OWL-based approach

- scalable, queryable integration of knowledge and data about *Drosophila* neuroanatomy

Knowledge curated from the literature

- context and queryability to bulk data

Tight integration with FlyBase

- Expression
- Phenotypes

Planned collaboration with EBI

- integration transcriptomic data

Nblast

- find morphologically similar neurons
- find potential driver lines for a specific neuron

Direct API's to query data.

HBP Collaboratory

<http://collab.humanbrainproject.eu>

The HBP Collaboratory collects tools from the HBP Platforms in one place and allows you to organize them into your own collaborative workspace or *collab*.

The HBP Collaboratory is your virtual lab bench

Explore, Work, Collaborate, Organize

- **Explore** the HBP Platform ecosystem
- **Work** with integrated web accessible scientific tools to analyze, visualize and share data.
- **Collaborate** by adding team members to your collab to gain insights outside your areas of expertise
- **Organize** your work with tools from the HBP Platforms integrated in the Collaboratory

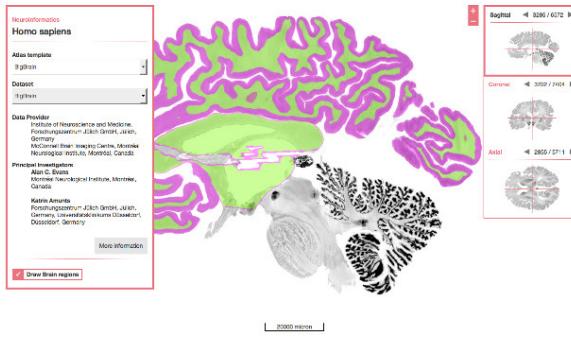
The screenshot displays the HBP Collaboratory interface across three main sections:

- Software Catalog:** A sidebar navigation menu on the left includes "Getting Started", "Software Catalog" (which is highlighted), "Create a Collab", "Platform Collaboratories", "HBP Websites", "App Development", "Roadmap", "Co-design Projects", "Storage", "Team", and "Platform Summary". The main workspace shows a search bar for "category:library" and a list of software libraries:
 - Deflect Client Library (C++ library)
 - AnaRM (Analog Readout Module) v2108859 (2016 Feb 25)
 - Basic software libraries for the I
 - Logging Framework for UHEI Sc
 - Low-level Interface for (USB-ba
 - 3DSynapsesSA (R package)
 - SynapseGenerator (Python package)
 - Neuromorphic Platform Python
 - PyNN (Python package)
 - 3DSomaMS (R package)
 - NeuroM (Python-based toolkit)
- Workspace:** A central workspace area featuring a "Circuit Building Pipeline" notebook. The notebook contains code for requirements installation and circuit viewer notebook extension, with error messages indicating issues with finding .egg-info directories. It also shows code for initializing a CellCollection object.
- Collaboratory Home:** A right-hand sidebar showing user profiles and links for "Product", "Alternative workspace", "Storage", "Team" (which is highlighted), "Archives", "New UI Proposal", "HBP Roles", "Software Catalog Admin", "Meetings", "Events", "Settings", and "Stats".

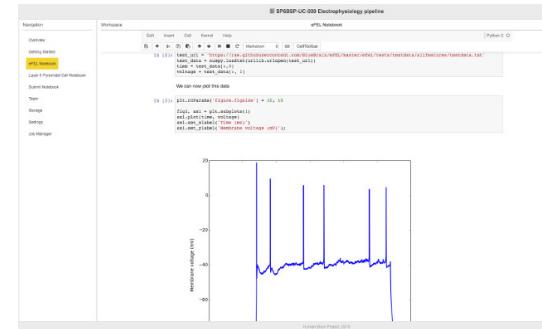
Explore and *Use* the HBP Platform Ecosystem

Federated across Europe, the HBP Platforms provide strategic tools in:

Neuroinformatics



Brain Simulation



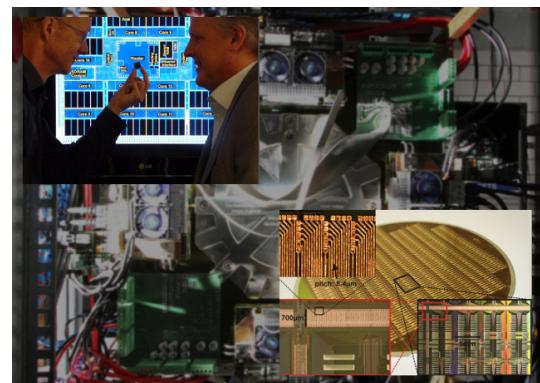
Medical Informatics



High Performance Analytics and Computing (HPAC)



Neuromorphic Computing



Neurorobotics



Getting Access

To access the HBP Collaboratory you need an **HBP Identity account**.

Information on how to request an account can be found here:

<https://www.humanbrainproject.eu/en/hbp-platforms/getting-access/>

With a basic HBP Identity Account you can access:

- HBP Collaboratory:
- Browse Platform collabs
- Browse HBP Collaboratory public collabs
- Add files to public collabs where the user is a member
- **Create public collabs** and populate them with content
- Create public **Jupyter notebooks** and edit them
- Can be added to private collabs by collab owners

platform@humanbrainproject.eu

NITRC

<https://www.nitrc.org>

Neuroimaging Informatics Tools and Resources Clearinghouse (NITRC) is a free one-stop-shop collaboratory for science researchers that need resources such as neuroimaging analysis software, publicly available data sets, or computing power.

**Browse** by domain **Browse** by software **Browse** by data resources **Browse** by diagnosis **Find neuroimaging tools here:**

Examples: • modeling OR simulation
• morphology AND animation
• segmentation NOT Linux
• "region of interest"

SEARCH Search Builder

Featured tool/resource:
Ultra-high field atlas for DBS planning
7T T1-w and T2-w average atlas (ANTS) from 12 healthy controls, with manual labelling of deep and mid brain structures.

← 3 of 3 →

Latest News

[SPHARM-PDM Toolbox • Jul 3 • no comments]

SPHARM-PDM Update

Dear SPHARM-PDM users: I am very glad to announce we have updated the SPHARM-PDM Slicer extension. The new tutorial for this new and improved version can be found here: <https://github.com/bpaniagua/SPHARM-PDM...> SPHARM-PDM...

[CONN : functional connectivity toolbox • Jun 27 • no comments]

New CONN release and tutorials

We are happy to announce the latest release of CONN (17f). If you have not had the chance to update CONN recently this is a great time to do so and see what is all the fuzz about the new Quality Assurance plots and measures, increasing BIDS-compatibility...

[NITRC Community • Jun 25 • no comments]

Join NITRC in Booth 18 at OHBM and for poster 1665

Please swing by the NITRC Booth #18 at OHBM from June 25-29, 2017 and let us know how things are going! We will also be presenting Poster #1665 Tuesday, June 27, 2017: 12:45 PM-2:45 PM <https://ww5.aievolution.com/hbm1701/inde...>

[NITRC Community • Jun 22 • no comments]

Join NITRC at OHBM Hackathon June 22-24, 2017

NITRC will have a project at the OHBM 2017 Hackathon in Vancouver, CANADA. Check out the OHBM Hackathon wiki list of projects here: <https://github.com/ohbm/hackathon2017/wiki>

Community

- + General community forum
 - + Funding opportunities
 - + Sustaining NITRC
 - + Submit community news
 - + Submit tool/resource
 - + Publications
 - + Conferences and workshops
 - + Career opportunities
- [20,620 registered users]

Recently active forums

more forums

NITRC Community: open-discussion

how to compare different sessions?
[2131 posts, last post 32 minutes ago]

MRcron: help

Best workaround for MNI dimension mismatch?
[77 posts, last post 40 minutes ago]

CONN : functional connectivity toolbox: help

Confusing sample ROI-to-ROI results
[5938 posts, last post 3 hours ago]

Recently updated files

more updates

MASIMatlab

masimatiab: Abmusclefat_release
Latest file: 9 hours ago

MPI-Leipzig Mind-Brain-Body Dataset

MPILMBB MRI Data: MPILMBB MRI Data 1.0
Latest file: 16 hours ago

Longitudinal neuroimaging hippocampal markers for diagnosing Alzheimer's disease

longhippsegn: Matlab (mex in win64)
Latest file: Jul 7

Recently registered

more tools/resources



Tools/Resources

Related Web Pages

[Search NIF](#)

Narrow your results:

▼ Domain

[Computational Neuroscience \(20\)](#)
[EEG/MEG/ECOG \(6\)](#)
[MR \(5\)](#)
[see all >>](#)

▼ Functionality

[Modeling \(5\)](#)
[Visualization \(2\)](#)
[Quantification \(2\)](#)
[Time Domain Analysis \(1\)](#)
[Connectivity Analysis \(1\)](#)
[Statistical Operation \(1\)](#)
[Tractography \(1\)](#)
[Surface Analysis \(1\)](#)
[Segmentation \(1\)](#)
[Neuronal Characterization \(1\)](#)
[Spatial Transformation \(1\)](#)
[Information Theory \(1\)](#)
[Shape Analysis \(1\)](#)
[Experimental Control \(1\)](#)
[Atlas Application \(1\)](#)

▼ Diagnosis

[Brain Injuries \(1\)](#)

► License

► Development Status

► Programming Language

You searched for: "neuron"

Search within results:

 Search Builder

Select All / Unselect All

Sort by:

Results per page:

Showing 1-20 of 31 results

1 | 2

▼ NEURON

NEURON is a simulation environment for modeling individual neurons and networks of neurons. It provides tools for conveniently building, managing, and using models in a way that is numerically sound and computationally efficient. It is particularly well-suited to problems that are closely linked to experimental data, especially those that involve cells with complex anatomical and biophysical properties. For a more detailed description see http://www.neuron.yale.edu/neuron/what_i...

Avg. overall: No Votes

(Show all specifications)

▼ Neuron-C

Neuron-C is a simulation language for modeling biophysically realistic neural circuits.

Avg. overall: No Votes

(Show all specifications)

▼ L-Neuron

The L-Neuron program creates anatomically realistic virtual neurons using the formalism of the Lindenmayer systems to implement sets of neuroanatomical rules discovered by several research groups (and in particular, Hillman's, Tamori's, and Burke's). These rules are local and recursive. The L-Neuron algorithms read in experimental data to generate virtual structures. The experimental data are in the form of statistical distributions (for example, bifurcation angles in Purkinje cells can be represented with a Gaussian distribution, with a certain average and standard deviation). L-Neuron samples the values of the parameters within these statistical distributions in a stochastic (random) fashion during dendritic growth. Therefore, with the same set of parameter distributions, the program can generate an unlimited number of virtual neurons.

Avg. overall: No Votes

Funding: NIH R01 NS ...

Category: Neuronal Modeling, Simulation (Show all specifications)

▼ DONE: Detection of Outlier NEurons

This tool was used by Zawadzki et al. (2012), who reported on a morphology-based approach for the automatic identification of outlier neurons and its application to the NeuroMorpho database. For the analysis, each neuron is represented by a feature vector composed of 20 measurements, which are projected into lower dimensional space with PCA. Bivariate kernel density estimation is then used to obtain a probability distribution for cells. Cells with high probabilities are understood as archetypes, while those with the small probabilities are classified as outliers. Further details about the method and its application in other domains can be found in Costa et al. (2009) and Echtermeyer et al. (2011). References: * Costa, Rodrigues, Hilgetag, and Kaiser. Europhysics Letters, 87, 1 (2009) * Echtermeyer, Costa, Rodrigues, Kaiser. PLoS

Avg. overall: No Votes



NITRC Community

[Community Forums](#)

Recently Active Forums

[Events](#)[News](#)[Funding](#)[Career Opportunities](#)[Documents](#)[Wiki](#)

Recently Active Forums

Here is the most recent forum post for each tool/resource on NITRC.

Showing 1-15 of 211

Sort by: 1 | 2 | ... | 15

Latest Post Date	Forum Name	Latest Post Title	Total Posts
Jul 14, 2017	NITRC Community: open-discussion	how to compare different sessions?	2131 posts
Jul 14, 2017	MRIcron: help	Best workaround for MNI dimension mismatch?	77 posts
Jul 14, 2017	CONN : functional connectivity toolbox: help	Confusing sample ROI-to-ROI results	5938 posts
Jul 13, 2017	Signed Differential Mapping: sdm-help-list	homogeneity test	382 posts
Jul 13, 2017	BrainNet Viewer: help	RE: Get Connectivity maps above cortical surf	372 posts
Jul 13, 2017	1000 Functional Connectomes Project: open-discussion	RE: Freesurfer segmentation of CoRR data	296 posts
Jul 13, 2017	MRIcroGL: help	RE: Flip L/R (left / right)	24 posts
Jul 13, 2017	dcm2nii: questions	RE: error message upon opening dcm2nii	231 posts
Jul 13, 2017	PANDA: a pipeline tool for diffusion MRI: open-discussion	Problem in installing centos fsl on Ubuntu	297 posts
Jul 11, 2017	CBS High-Res Brain Processing Tools: help	RE: memory with run-cbstools-mac	3 posts
Jul 11, 2017	SPM for fNIRS toolbox: help	how to merge 2 blocks in spm_fnirs	69 posts
Jul 10, 2017	Graph Theory GLM (GTG) MATLAB Toolbox: help	Creating .mat files for input	93 posts
Jul 10, 2017	Surf Ice: help	RE: access violation windows	18 posts
Jul 9, 2017	Vaa3D and Vaa3D-Neuron: help	RE: matlab plugins	1903 posts
Jul 7, 2017	PESTICA & SLOMOCO: physio and motion correction tools: open-discussion	RE: trouble applying to3d after genSMStimeshi	146 posts

Sort by: 1 | 2 | ... | 15