# Resource Summary Report

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## Mouse Brain Architecture Project

RRID:SCR_004683
Type: Tool

### Proper Citation

Mouse Brain Architecture Project (RRID:SCR_004683)

### Resource Information

**URL:** http://www.brainarchitecture.org/mouse-home

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**Description:** An atlas project whose goal is to enerate brainwide maps of inter-regional neural connectivity that specify the inputs and outputs of every brain region, at a "mesoscopic" level of analysis. A 3D injection viewer is used to view the mouse brain. To determine the outputs of a brain region, anterograde tracers are used which are taken up by neurons locally ("the input"), then transported actively down the axons to the "output regions." The whole brain is then sliced thinly, and each slice is digitally imaged. These 2-D images are reconstructed in 3D. The majority of the resulting 3-D brain image is unlabeled. Only the injected region and its output regions have tracer in them, allowing for identification of this small fraction of the connectivity map. This procedure is repeated identically, to account for individual variability. To determine the inputs to the same brain region as above, a retrograde tracer is injected in the same stereotaxic location ("the input"), and the process is repeated. In order to accumulate data from different mice (each of whom has a slightly different brain shape and size), 3-D spatial normalization is performed using registration algorithms. These gigapixel images of whole-brain sections can be zoomed to show individual neurons and their processes, providing a "virtual microscope." Each sampled brain is represented in about 500 images, each image showing an optical section through a 20 micron-thick slice of brain tissue. A multi-resolution viewer permits users to journey through each brain, following the pathways taken through three-dimensional brain space by tracer-labeled neuronal pathways. A key point is that at the mid-range "mesoscopic" scale, the team expects to assemble a picture of connections that are stereotypical and probably genetically determined in a species-specific manner. By dividing the volume of a hemisphere of the mouse brain into 250 equidistant, predefined grid-points, and administering four different kinds of tracer injections at each grid point -- in different animals of the same sex and age a complete wiring diagram that will be stitched together in "shotgun" fashion from the full dataset.

**Synonyms:** MBA Project, Mouse Brain Architecture

**Resource Type:** atlas, d spatial image, data or information resource, reference atlas

**Keywords:** atlas, brain, brain architecture, connectivity, mouse brain architecture, neuroanatomy

**Funding:** NIH Office of the Director ;
NIMH RC1MH088659;
NIMH R01MH087988

**Availability:** Fully accessible to the neuroscience community as well as interested members of the general public, Acknowledgement requested

**Resource Name:** Mouse Brain Architecture Project

**Resource ID:** SCR_004683

**Alternate IDs:** nlx_146201

**Alternate URLs:** http://www.brainarchitecture.org

**Old URLs:** http://www.brainarchitecture.org/mouse/about



**Record Creation Time:** 20220129T080225+0000

**Record Last Update:** 20260803T040401+0000

## Ratings and Alerts

No rating or validation information has been found for Mouse Brain Architecture Project.

No alerts have been found for Mouse Brain Architecture Project.

## Data and Source Information

**Source:** SciCrunch Registry

## Usage and Citation Metrics

We found 5 mentions in open access literature.

**Listed below are recent publications.** The full list is available at ASWG .

Bjerke IE, et al. (2020) Database of literature derived cellular measurements from the murine basal ganglia. Scientific data, 7(1), 211.

Ghanem A, et al. (2016) G gene-deficient single-round rabies viruses for neuronal circuit analysis. Virus research, 216, 41.

Okano H, et al. (2015) Brain/MINDS: brain-mapping project in Japan. Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 370(1668).

Bota M, et al. (2014) BAMS2 workspace: a comprehensive and versatile neuroinformatic platform for collating and processing neuroanatomical connections. The Journal of comparative neurology, 522(14), 3160.

Tomassy GS, et al. (2014) How big is the myelinating orchestra? Cellular diversity within the oligodendrocyte lineage: facts and hypotheses. Frontiers in cellular neuroscience, 8, 201.