ATLAS METHODS

The following paragraphs describe the methods that were used on the different version(s) of the Mouse Minimum Deformation Atlas.

Mouse Minimum Deformation Atlas

MRM

Mice were anesthetized initially with ketamine/xylzaine and then maintained on isofluorane for the duration of the imaging experiment. Magnetic resonance imaging was done at 37° C using an 89 mm vertical bore 11.7 T Bruker Avance imaging spectrometer with a micro-imaging gradient insert and 30 mm birdcage RF coil (Bruker Instruments). Typical imaging parameters were as follows: T2-weighted RARE 3D imaging protocol (8 echoes), matrix dimensions = 256 x 256 x 256; FOV = 3 cm x 1.5 cm x 1.5; repetition time (TR) = 1500 ms; effective time (TE) = 10 ms; number of averages = 4. The images were padded with zeros to double the number of time domain points in each dimension, the Fourier transformed to yield a matrix of 512 x 256 x 256. This procedure is commonly called "zero-filling" and is a well known interpolation method (Farrar and Becker, 1971; Fukushima and Roeder, 1981). Typical spat Nomenclature and Delineations
Neural structures (including cell groups, fiber tracts and gross anatomical features such as the ventricles) were determined under the microscope from the histologically stained sections.
3D label volumes were "painted" onto coregistered MRM, Nissl-, myelin-, and acetylcholine esterase-stained volumes using BrainSuite (Shattuck and Leahy, 2002). The delineations depict asymmetries present in the sections, making them more immediately useful than if they were stylized. Delineation of brain nuclei requires an expert neuroanatomist to draw on high-level knowledge, accumulated over a lifetime of careful study of disparate materials (Swanson, 1998). Consequently, manual input was necessary for even approximate parcellation of brain in its fine details. In the development of a comprehensive, standardized, and mutually exclusive nomenclature (Bowden and Martin, 1995; Bard et al., 1998) and anatomic delineation, our primary references were the mouse brain atlas of Paxinos and Franklin (Paxinos and Franklin, 2001) and the rat brain atlas of Swanson (Swanson, 2004).

Usage

This atlas volume can be viewed using the Mouse BIRN Atlasing Tool (MBAT) or SHIVA. See the respective manuals for these programs.

For more information about SHIVA, see http://www.loni.usc.edu/Software/SHIVA

Download

Data are compressed and combined into a single tar for download. Unzip these before viewing. Mac users can automatically unzip these files, or a program may be used such as winzip (http://www.winzip.com/index.htm) for Windows or gzip (http://www.gzip.org/) for Unix. To view volumes in MBAT, select "Open Data" and select the file in the Open dialogue. To view .atlas or .keg files in MBAT select the "Open Atlas" option and select the file in the Open dialogue.

Contributors/Authors
Allan MacKenzie-Graham1, Matthew R. Tinsley 2, Kaanan P. Shah1, Cynthia Aguilar1, Lauren V. Strickland1, Jyl Boline1, Melanie Martin3, Laurie Morales4 , David W. Shattuck1, Russell E. Jacobs5, Rhonda R. Voskuhl4, and Arthur W. Toga1

1 Laboratory of Neuro Imaging, Department of Neurology, University of California, Los Angeles.
2 Department of Psychology, University of California, Los Angeles.
3 Department of Physics, University of Winnipeg.
4 Multiple Sclerosis Program, Department of Neurology, University of California, Los Angeles.
5 Beckman Institute, California Institute of Technology.

Citations
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Technical Contacts
Allan MacKenzie-Graham amg *AT* ucla.edu

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