



What is it like to be a **Giant anteater**? Cytoarchitectonic analysis of open data with **MicroDraw**

Katja **Heuer**, Céline **Delettre**, Xiaoyun **Gui**, Roberto **Toro**

Histological data provides **unique information** on the fine structure of the brain, and has been collected for **more than a century**, for an incredible **number of species**.



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Comparative Mammalian Brain Collections



MAJOR NATIONAL RESOURCES FOR STUDY OF BRAIN ANATOMY
the University of Wisconsin, Michigan State University and The National Museum of Health and Medicine.

Wally Welker, John Irwin Johnson, Adrienne Noe

This web site provides browsers with images and information from one of the world's largest collection of well-preserved, sectioned and stained brains of mammals. Viewers can see and download photographs of brains of over 100 different species of mammals (including humans) representing over 20 Mammalian Orders.

Also available are examples of stained sections from a wide variety of brains of special interest, including Humans, Chimpanzees, Monkeys, various Rodents and Carnivores, California Sealion, Florida Manatee, Big Brown Bat, American Badger, American Raccoon, Yellow Mongoose, Zebra, Cow, and the Atlantic Bottlenose Dolphin. A complete list of all available specimens is available. How brain evolution has occurred is discussed.

Viewers will learn why these collections are important, why and how they were assembled, and why it is important to protect, preserve and maintain them. Moreover, a variety of issues in brain science are discussed.

For users who are interested in using any of our images for educational or research purposes, you have our permission to use them. But, they are not to be published and copyrighted since this would prohibit others from using the same images. At any rate, we request that you identify them as from the University of Wisconsin and Michigan State Comparative Mammalian Brain Collections, as well as from those at the National Museum of Health and Medicine. Also, we request that you refer to the Web Site where you obtained them, as well as the fact that preparation of all these images and specimens have been funded by the National Science Foundation, as well as by the National Institutes of Health.

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Wally Welker

MICHIGAN STATE UNIVERSITY
John Irwin Johnson

NATIONAL MUSEUM OF HEALTH AND MEDICINE
Adrienne Noe

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List of Specimens

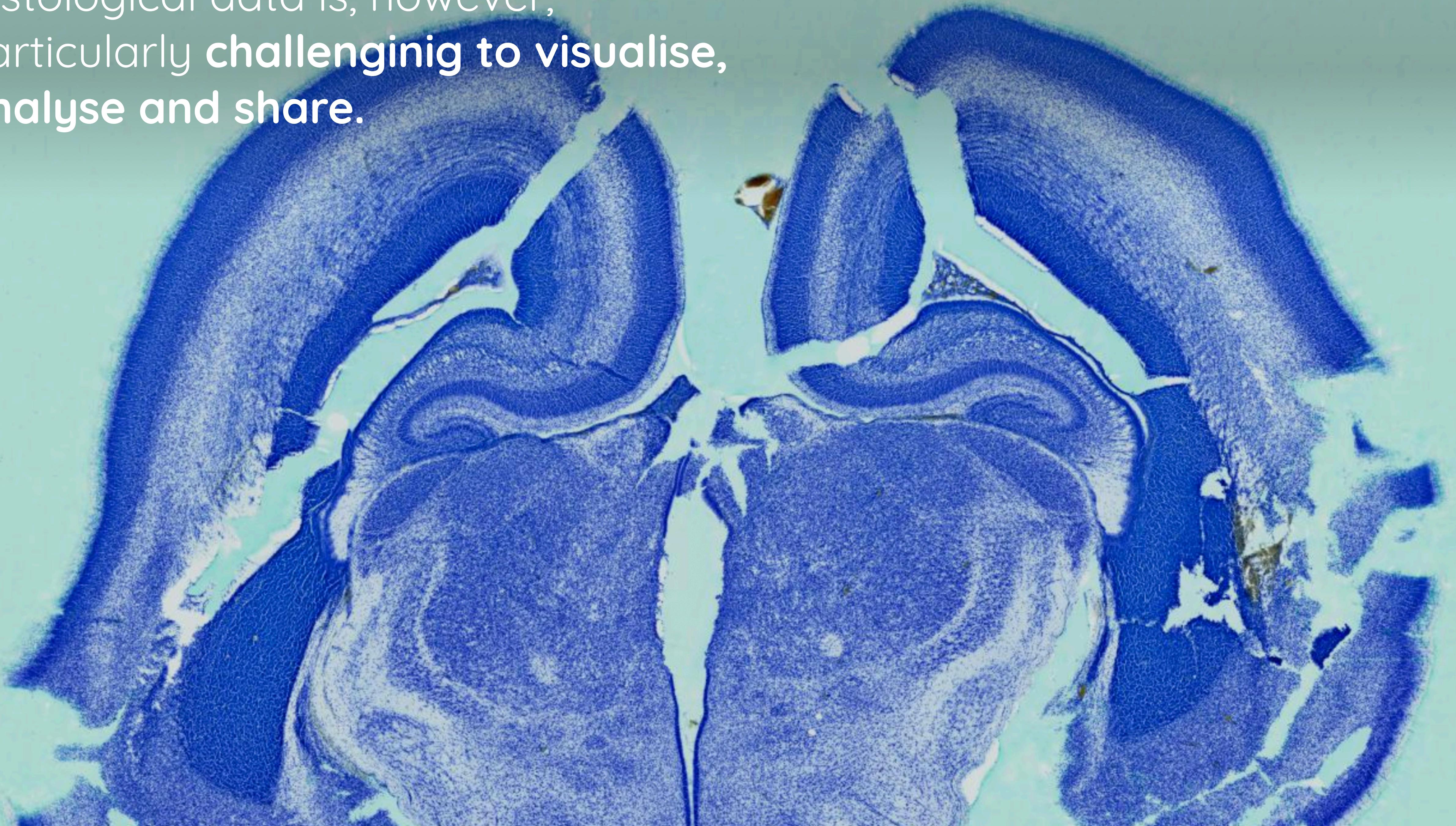


• [Simple Linear List](#)

COMMON NAME	SCIENTIFIC NAME
Platypus, Echidnas	Monotremata
Opossums	Didelphimorphia
Caenolestids	Paucituberculata
Monito del Monte	Microbiotheria
Marsupial Moles	Notoryctemorphia (not represented)
Quoll, Tasmanian Devil	Dasyuromorphia
Bandicoots	Peramelemorphia
Kangaroos, Gliders, Wallabies	Diprotodontia
Tenrecs	Afrosoricida
Elephant Shrews	Macroscelidea
Aardvark (not represented)	Tubulidentata (not represented)
Hyraxes	Hyracoidea
Elephants	Proboscidea
Manatees, Dugongs	Sirenia
Armadillos	Cingulata
Sloths, Anteaters	Pilosa
Treeshrews	Scandentia
Flying Lemurs	Dermoptera
Prosimians, Monkeys, Apes, Humans	Primates
Rabbits, Hares, Pikas	Lagomorpha
Hedgehogs	Erinaceomorpha
Moles, Shrews	Soricomorpha
Bats	Chiroptera
Pangolins, Scaly Anteater (not represented)	Pholidota (not represented)
Dogs, Bears, Raccoons, Cats, Weasels	Carnivora
Seals, Walrus, Sea Lions	(Formerly Pinnipedia, now in Carnivora)

10 mm

Histological data is, however,
particularly **challenginig** to visualise,
analyse and share.





MicroDraw

Collaborative atlas creation

MicroDraw is a web application to visualise and annotate collaboratively high resolution histology data. Annotations are vectorial, and you can use boolean operations to combine, subtract and split regions. Point MicroDraw to your own DeepZoom data, or try the sample datasets below.

Enter a DeepZoom image URL and click Go

▼ A list of datasets to try

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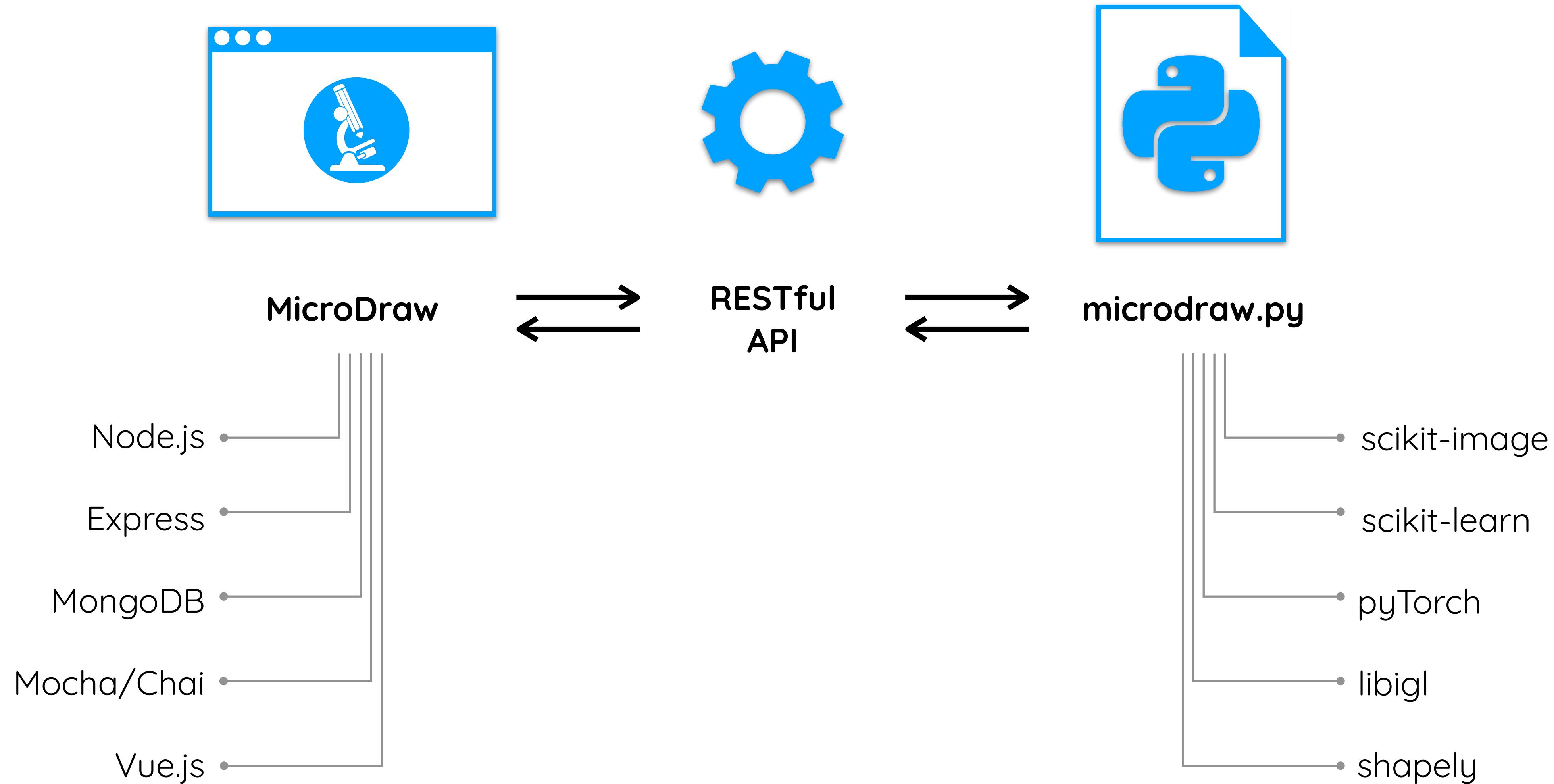
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Brain Atlas of the Giant Anteater (*Myrmecophaga tridactyla*) #67-29

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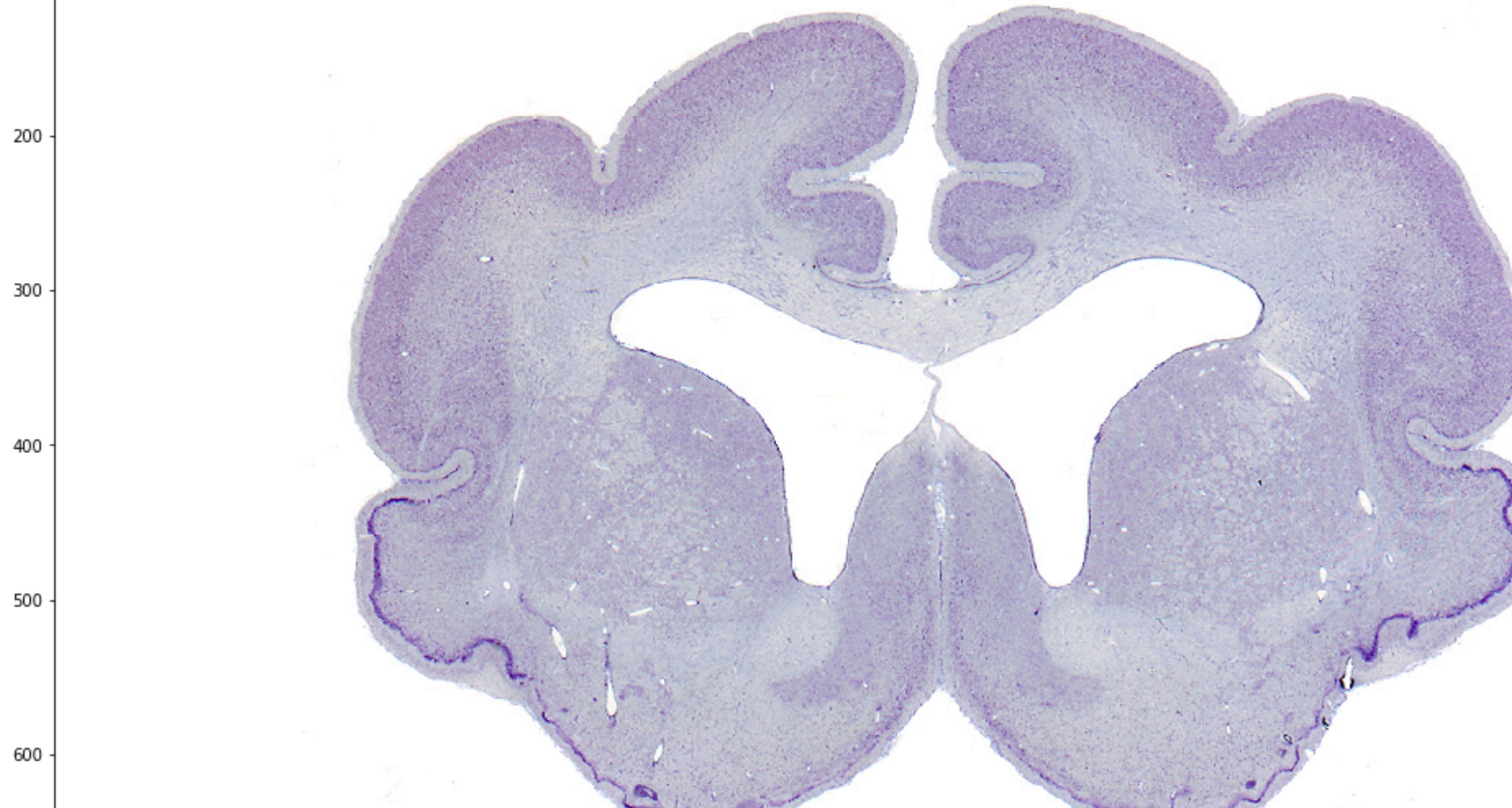
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Technology stack



67-29

#1020

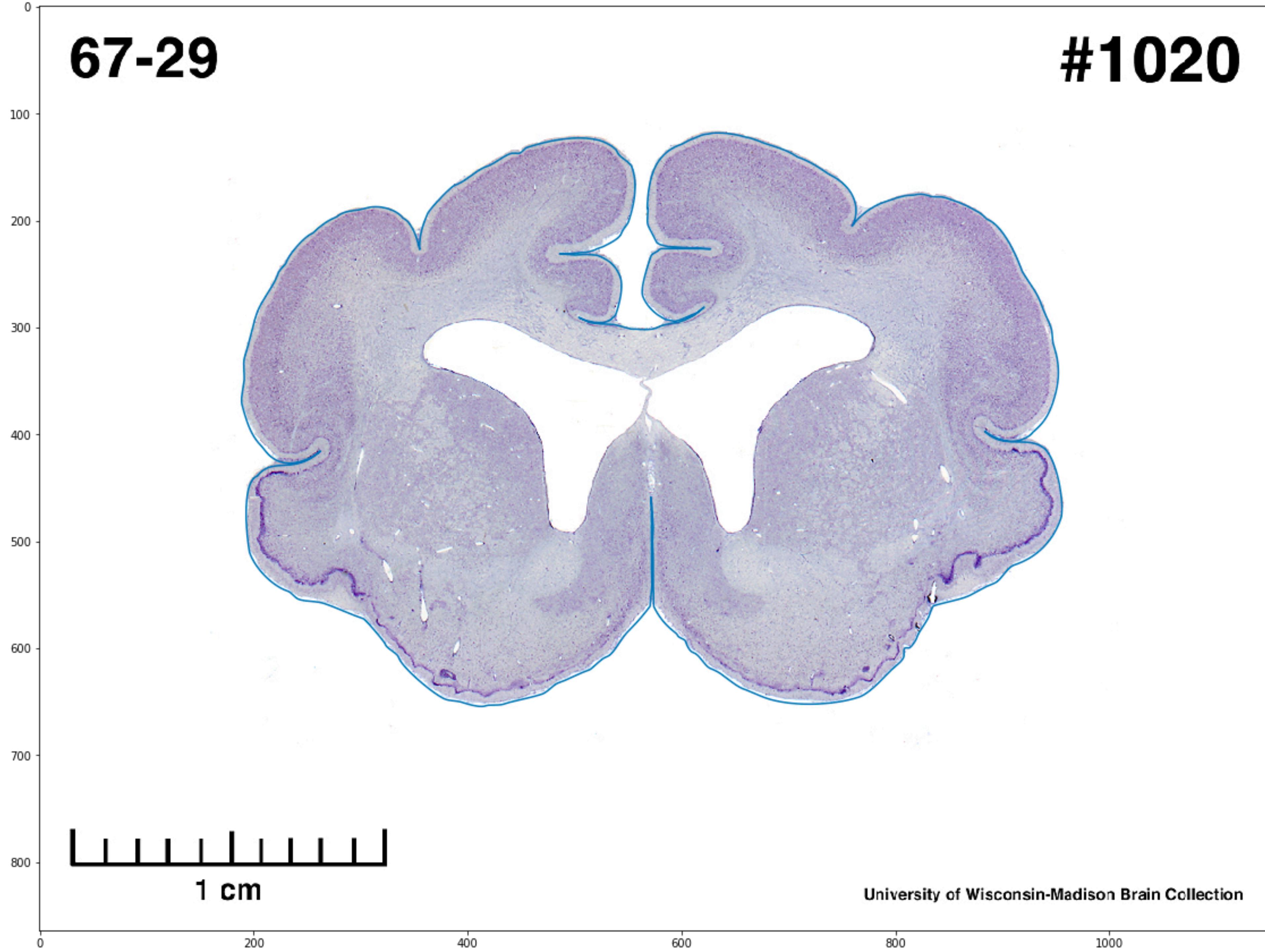


1 cm

University of Wisconsin-Madison Brain Collection

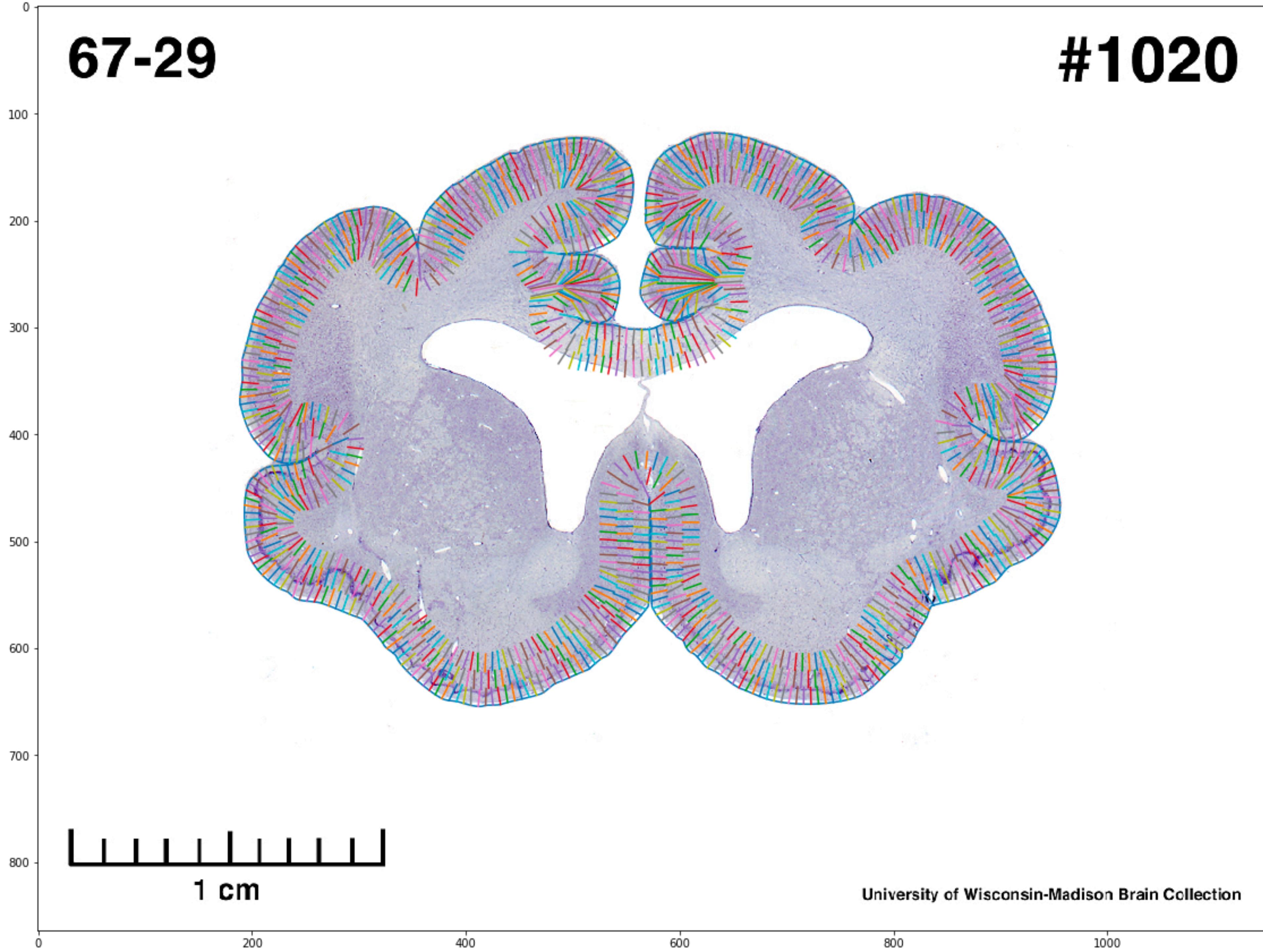
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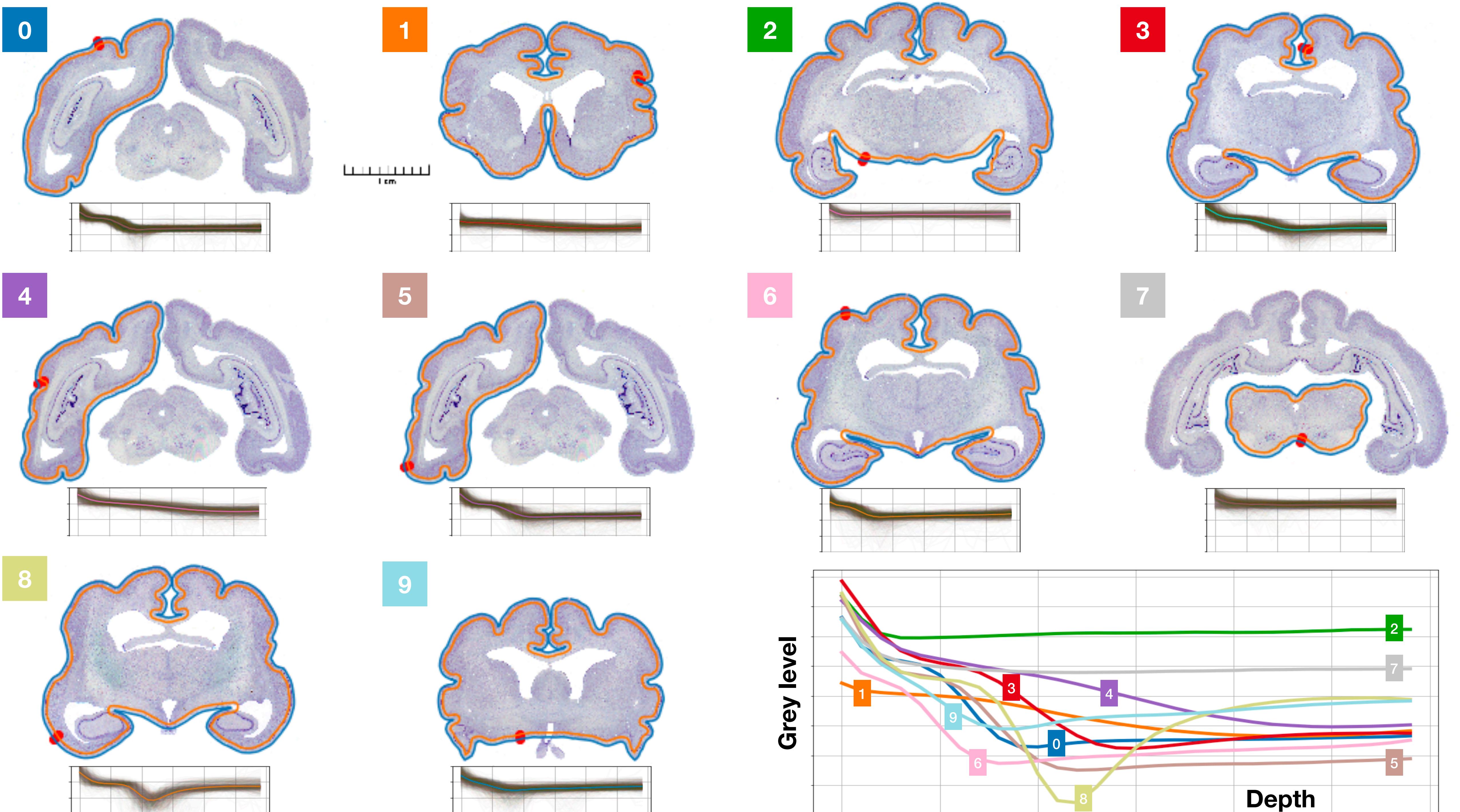
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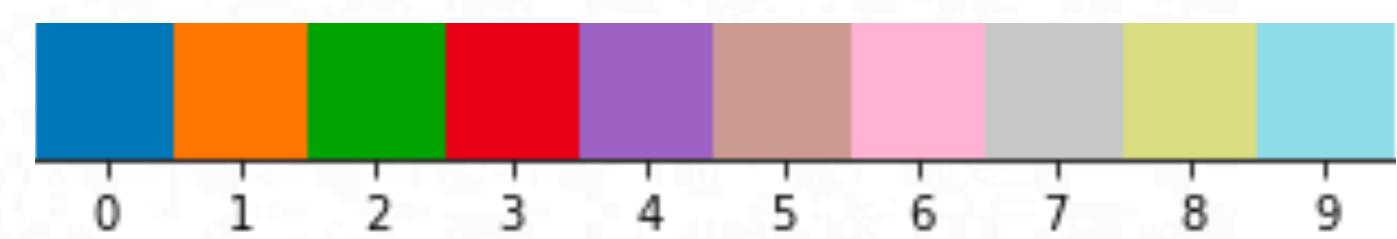
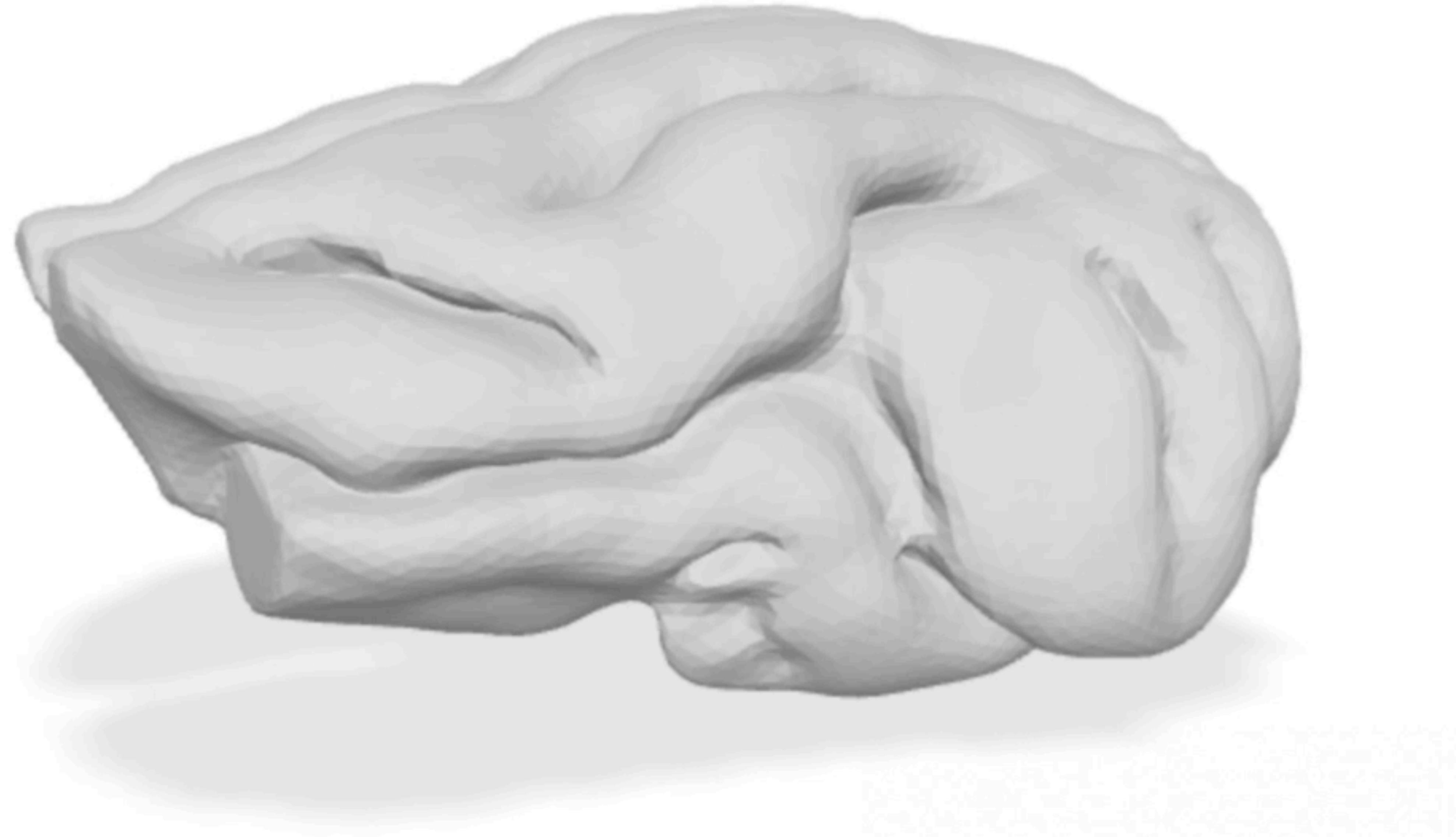
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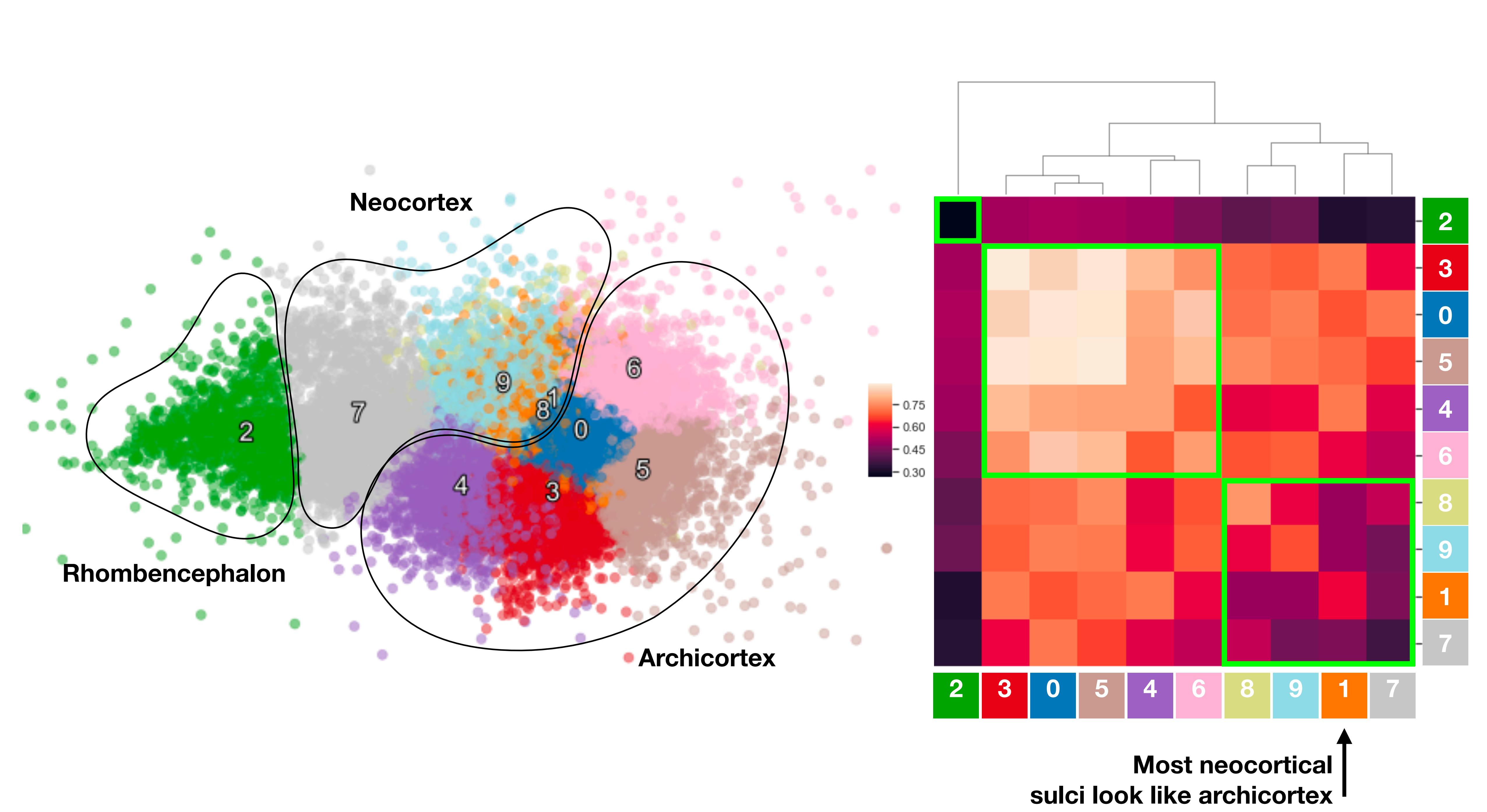


1 cm

University of Wisconsin-Madison Brain Collection







MicroDraw allowed us to perform a **complete** quantitative cytoarchitectonic analysis.

MicroDraw is fast and lightweight, runs on desktop computers and mobile devices, its code is open, and its development adheres to open science and software engineering **best practices**.

MicroDraw could provide a platform for data-sharing in our community, facilitating distributed scientific **collaboration** and citizen science.

