
NSA
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2011 CALENDAR
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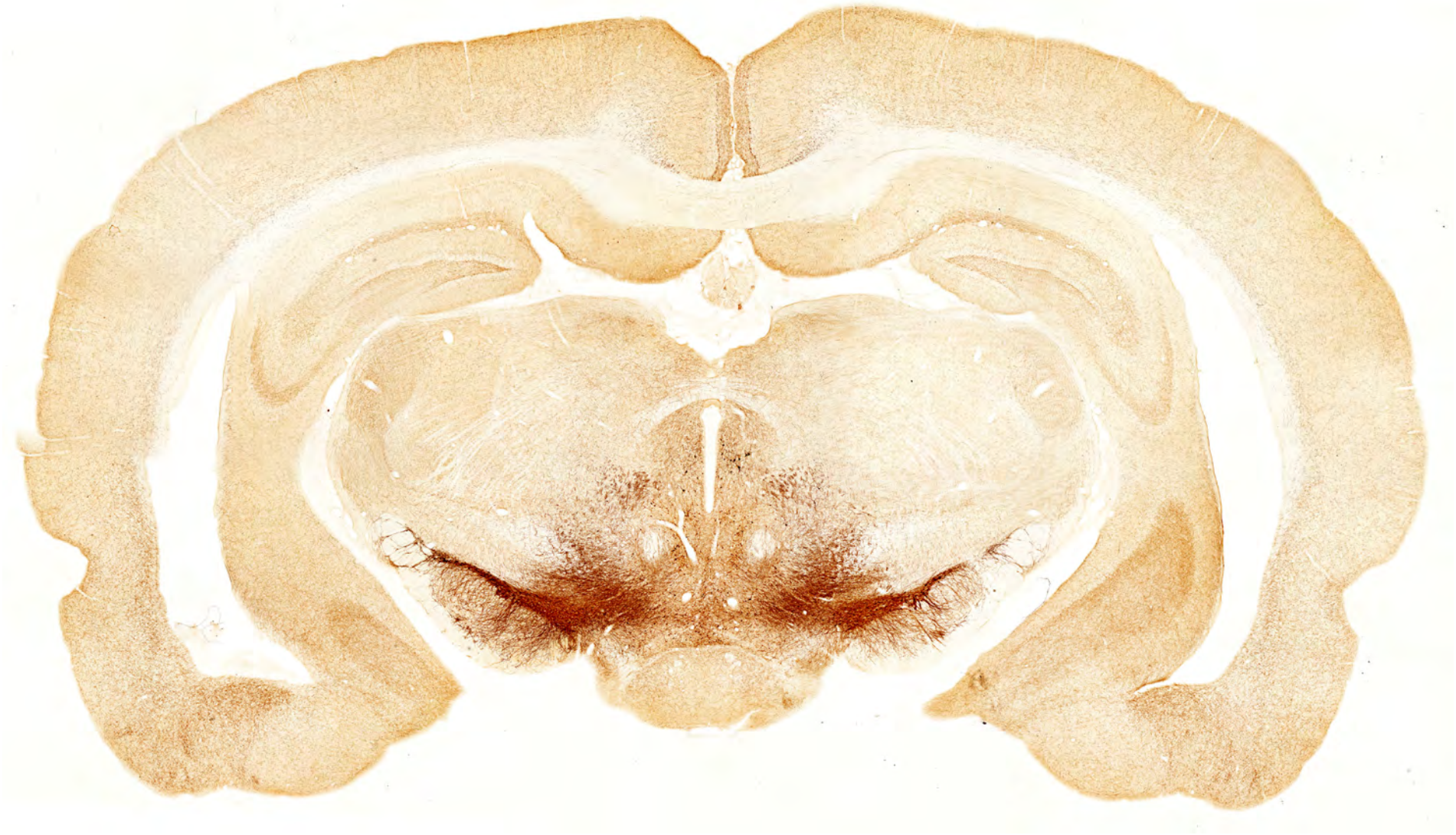
Tyrosine Hydroxylase in Rat Brain



Immunohistochemistry for tyrosine hydroxylase (antibody from Pelfreez) showing the dense packing of cells in substantia nigra and widespread axon distribution.

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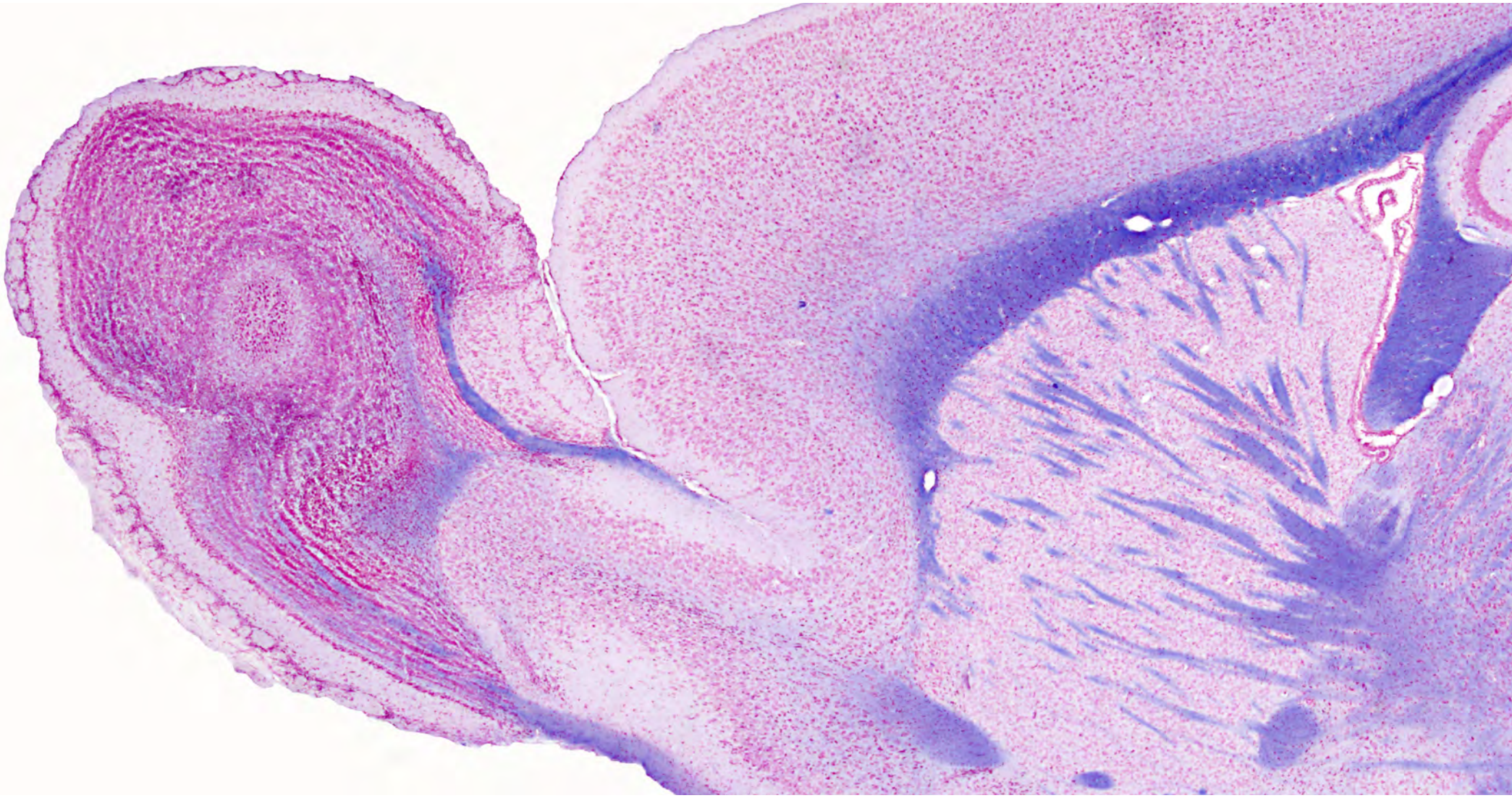
Solochrome Stain for Myelin in Mouse Forebrain



Myelin is revealed by the Solochrome method (iron hematoxylin-based protocol) and counter-stained with neutral red to reveal cell bodies. Note in the accessory olfactory formation (AOF) on the dorsal aspect of the olfactory bulb the position of the crescent-shaped band of myelin. In rodents, lagomorphs, primates, and bats, among others in related phyla, this dorsal component of the lateral olfactory tract runs between the output cells and the internal granule cells of the AOF, while in phyla that include carnivores and hoofed animals, this band runs below the internal granule cells. Switzer, R.C., Johnson, J.I. and Kirsch, J.A.W.: Phylogeny through brain traits... Brain, Behavior and Evolution 17: 339-363, 1980.

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A Mouse Model of Alzheimer's Disease

Campbell-Switzer Stain

In a section from a very old mouse, neuritic plaques stained with the Campbell-Switzer method are so numerous that they've coalesced into dense masses. The amber coloration of the white matter is normal.

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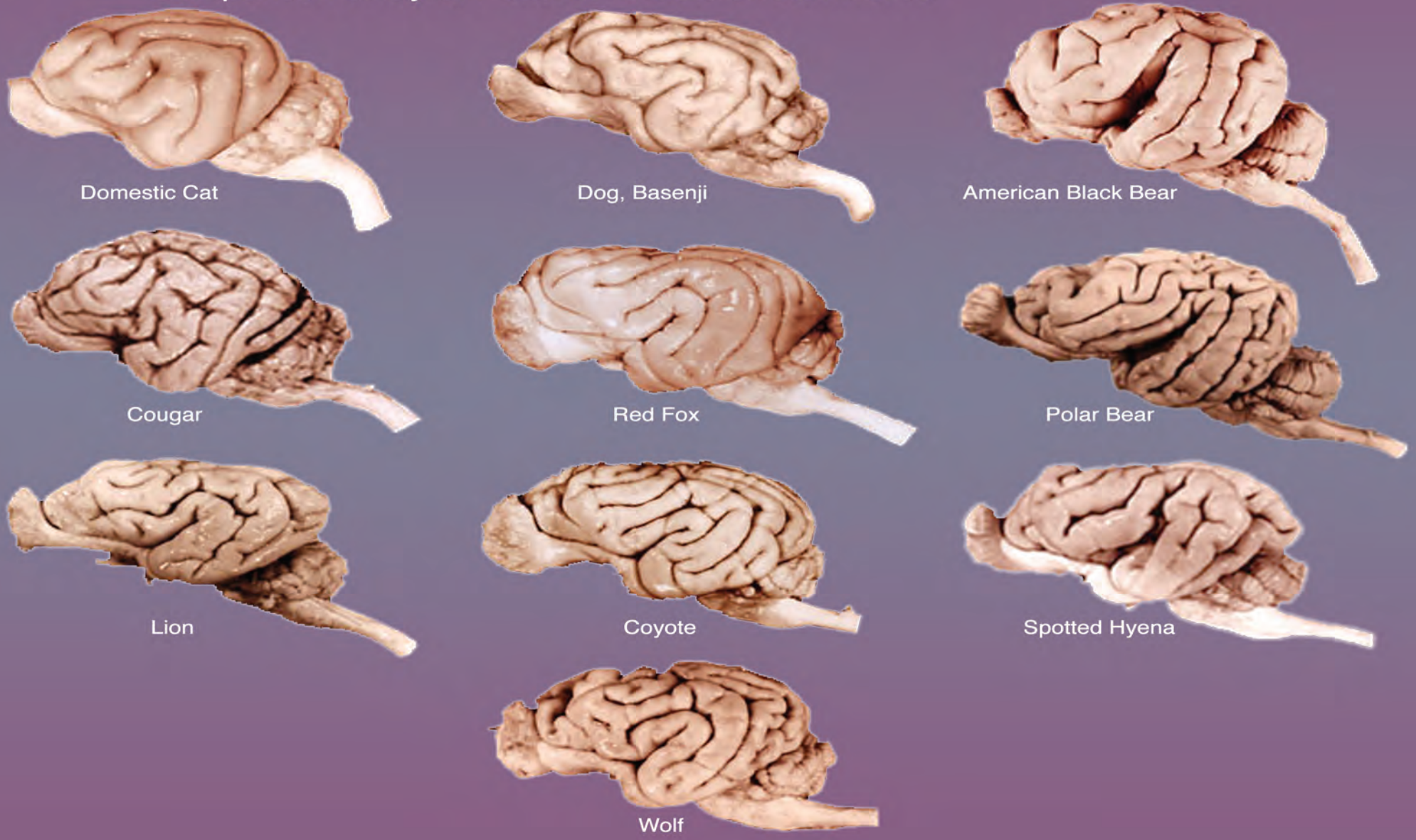
Comparative Brains

Comparison of Gyral Patterns in Sets of Carnivores



Notice in the bears and hyena the deep Sylvian fissure. Images of these carnivore brains were extracted from the brainmuseum.org website created by Dr. Wally Welker, University of Wisconsin. Permission to use the images was granted by Carol Dizack. Creation of the brainmuseum.org website was supported by the US National Science Foundation Division of Integrative Biology and Neuroscience. Please note: Brains are not to the same scale.

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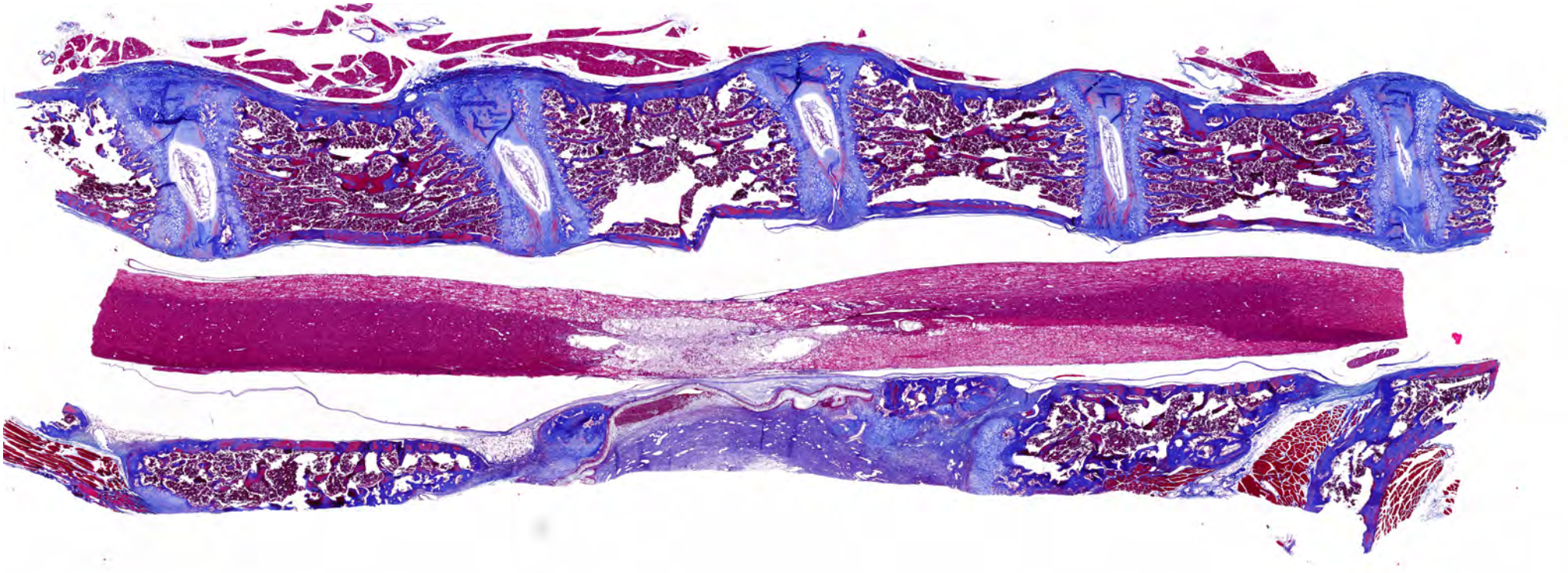
Mallory's Trichrome Stain on a Section Through the Spinal Column



Traumatic injury to rat spinal cord induced by the "weight drop" method. After decalcification in formic acid, the spinal column was processed for paraffin embedding and sectioning. Sections 7µ thick were mounted on slides and stained with the Mallory's Trichrome method.

Sectioning and staining courtesy of Jim Wesley.

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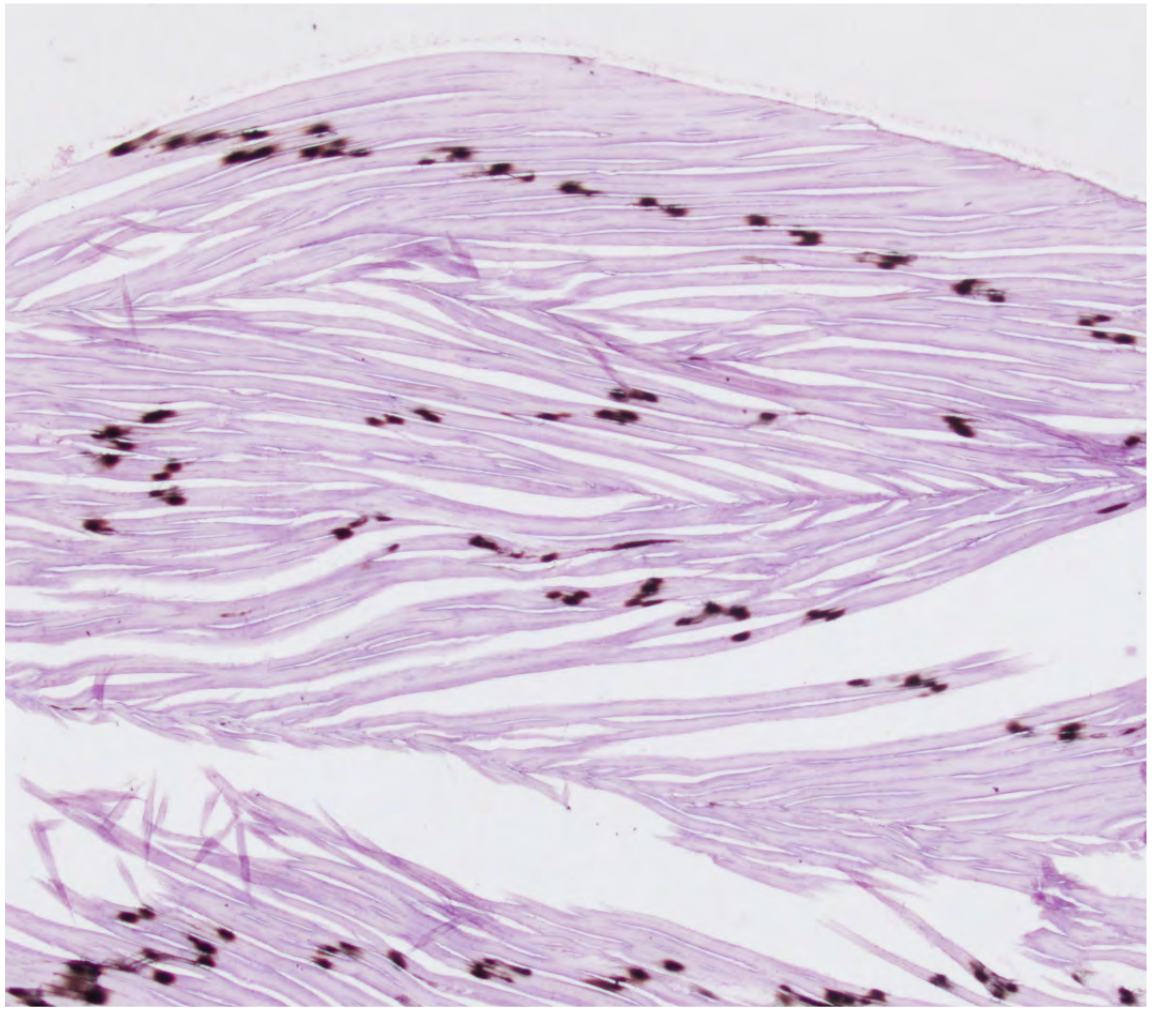
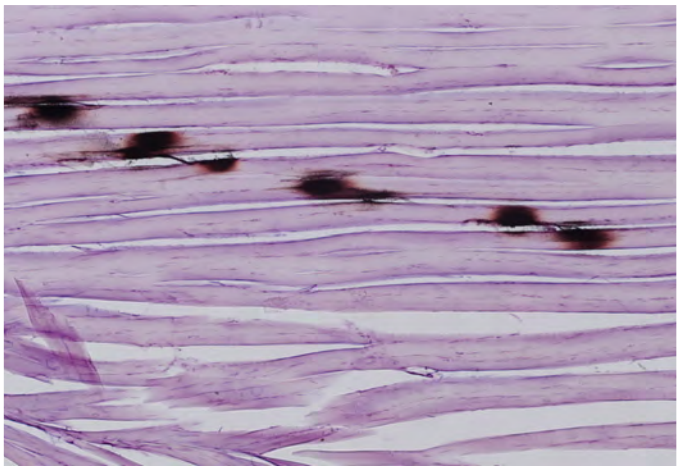
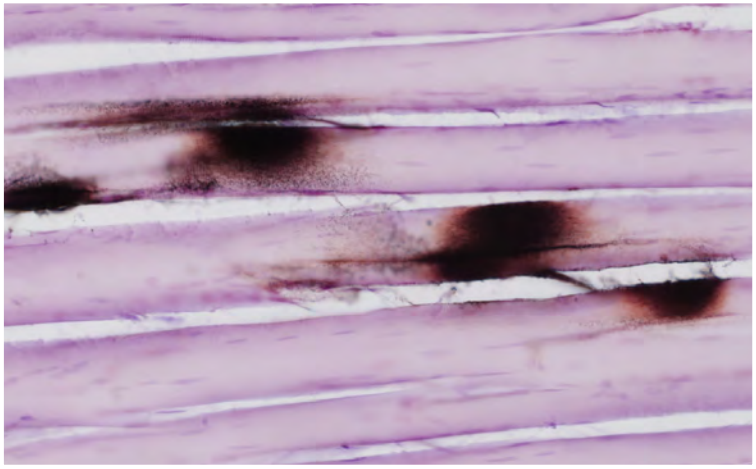
Acetylcholinesterase Stain Showing Neuromuscular Synaptic Junctions







Highly ordered, staggered staircase-like pattern of neuromuscular junctions. Acetylcholinesterase (AChE) staining on free floating sections using a modified Koelle method (Hardy et. al. Neuroscience Letters 3: 1-5, 1976) lightly counterstained with Thionine.

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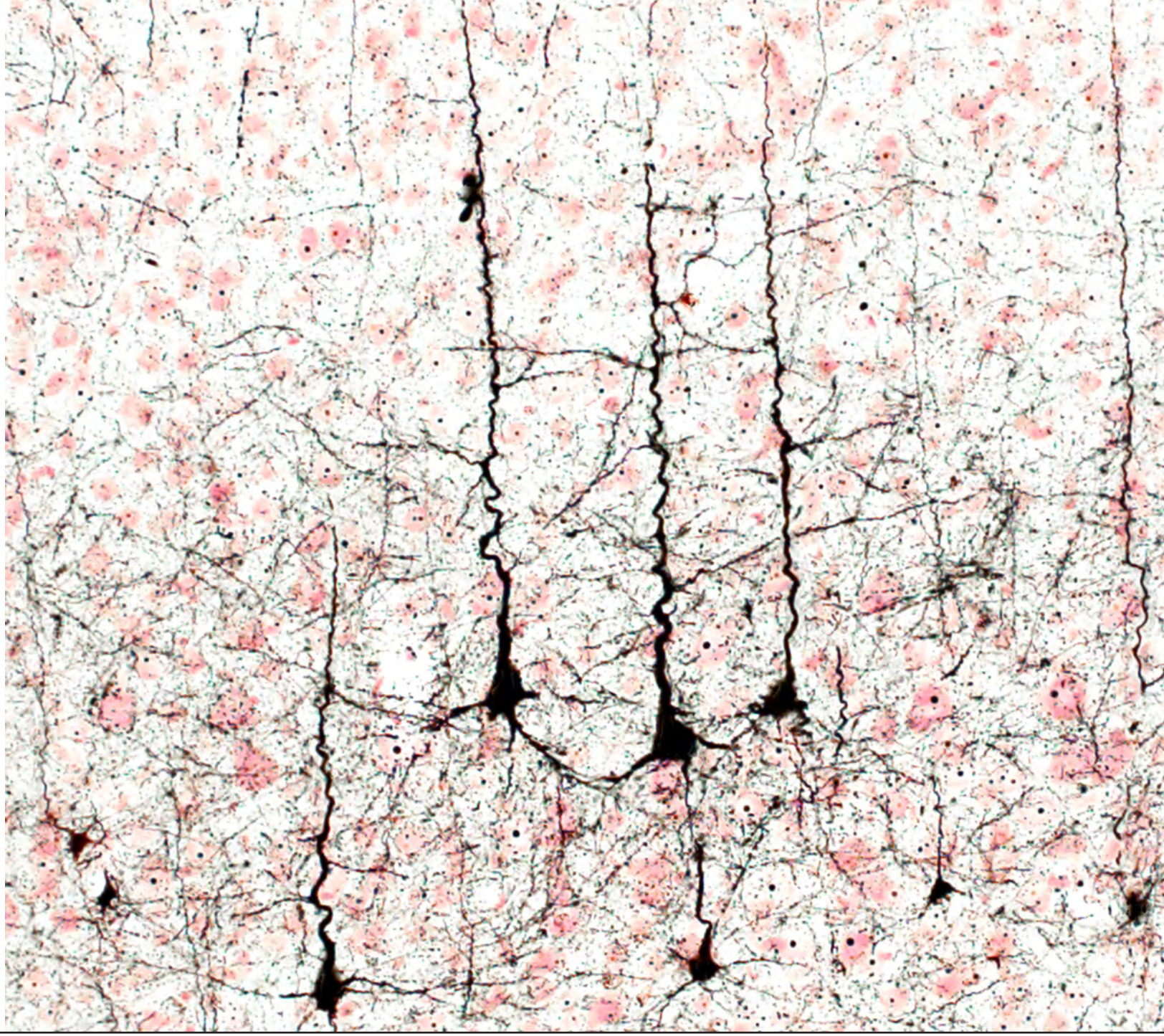
Kainic Acid-Induced Degeneration of Neurons in Rat



The amino cupric silver method of deOlmos reveals disintegrative degeneration of neuron cell bodies, dendrites, axons, and synaptic terminals. Neurons in this image are in the early stages of degeneration (24-48 hours after insult by kainic acid) and fragmentation of neuron components has not yet taken place. A neutral red counterstain reveals normal neurons in the background.

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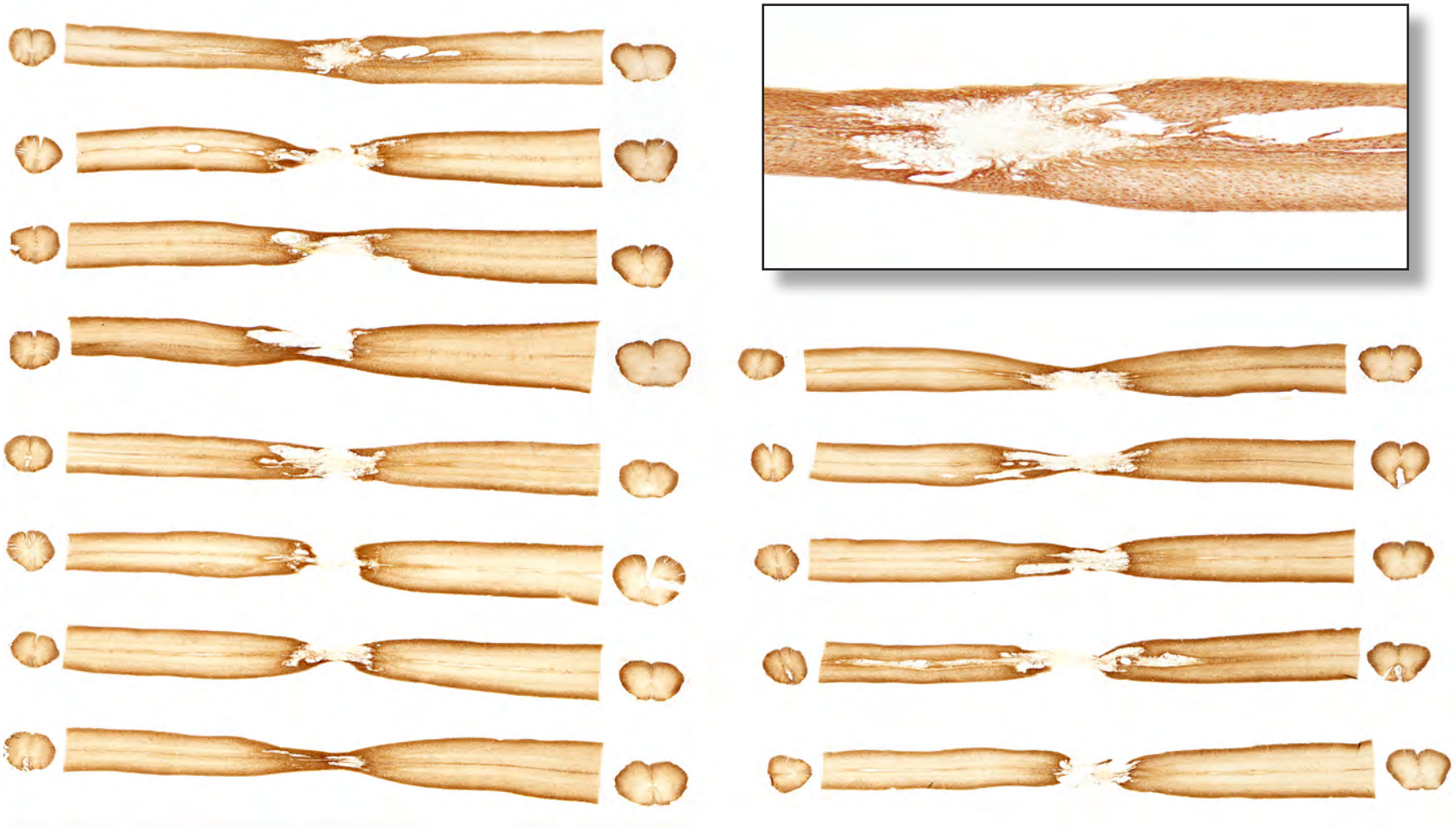
GFAP-Stained MultiCord® Section of a Set of Injured Rat Spinal Cords



A MultiCord® block of rat spinal cord segments from thoracic levels was created by cutting ~3 mm off the rostral and caudal ends of the segment and turning them on end to be embedded adjacent to the horizontally positioned remaining thoracic segment. Using this 'dot-dash-dot' pattern, thoracic segments from 16 rats were coembedded in one block. This image is from a section stained for the astrocyte specific GFAP (glia fibrillar acidic protein), a cytoskeletal protein. Spinal cords were injured by the weight drop method.

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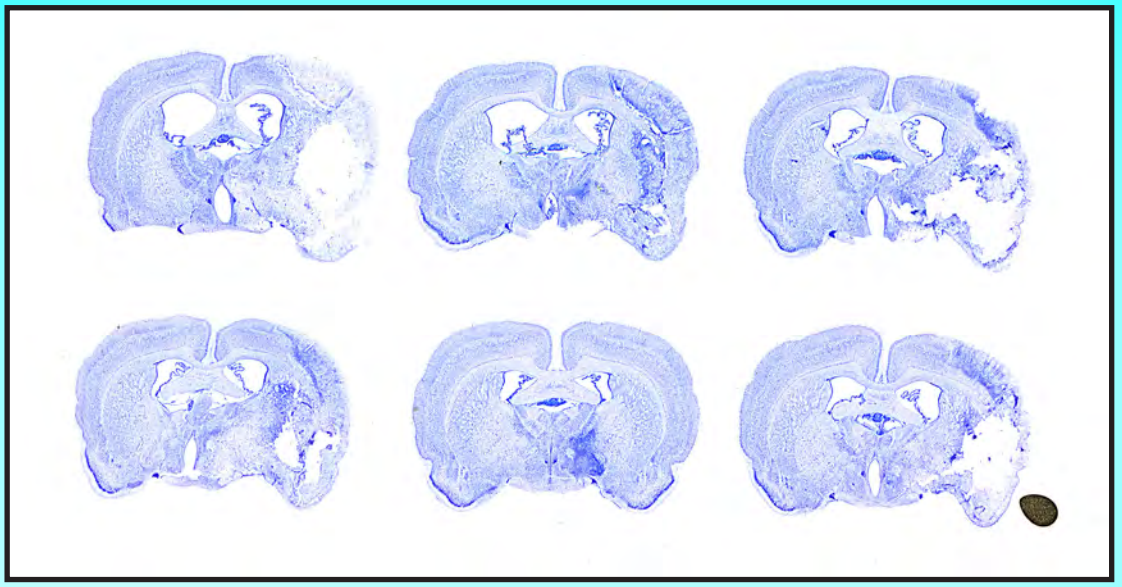
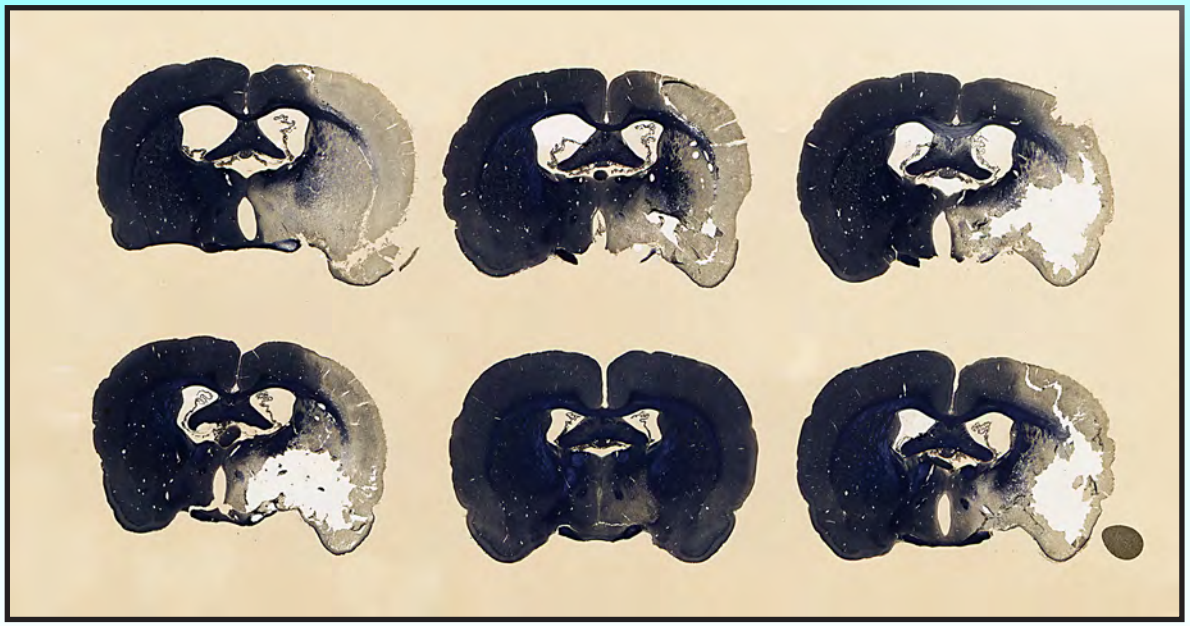
Ischemic Stroke in Rat Brains

Different histologic stains can be used to evaluate the volume affected within animal brains of experimental models of stroke. Blockage of the right middle cerebral artery for 90 minutes causes cell death to varying degrees, sometimes resulting in frank necrosis. The blue stain to the right is thionine and reveals the Nissl substance (RNA and DNA) of cells.





The black stain to the left is a modified iron hematoxylin method of Weil (NSA's ischemia contrast stain) that provides high-contrast images amenable to image analysis to determine stroke volume.

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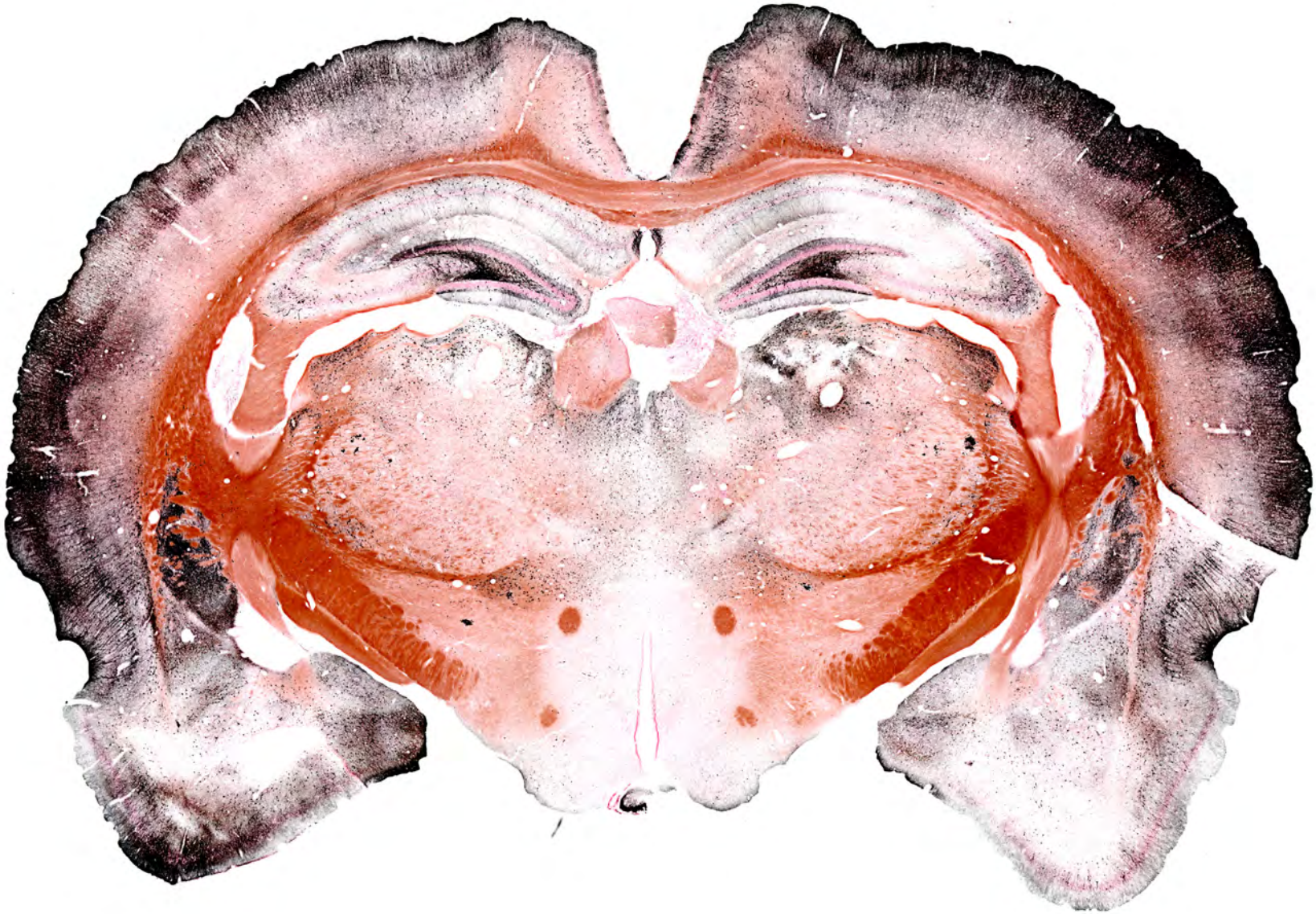
Diisopropylfluorophosphate (DFP)-Induced Degeneration in Rat Brain



The amino cupric silver stain of deOlmos reveals widespread disintegrative degeneration as shown in black. The white matter orange is due to a combination of the neutral red counterstain and an amber tincture imparted by the amino cupric silver stain.

Image taken from sections produced for Drs. Pedro Ferchmin and Antonio Martins, Universidad Central Del Caribe, Puerto Rico.

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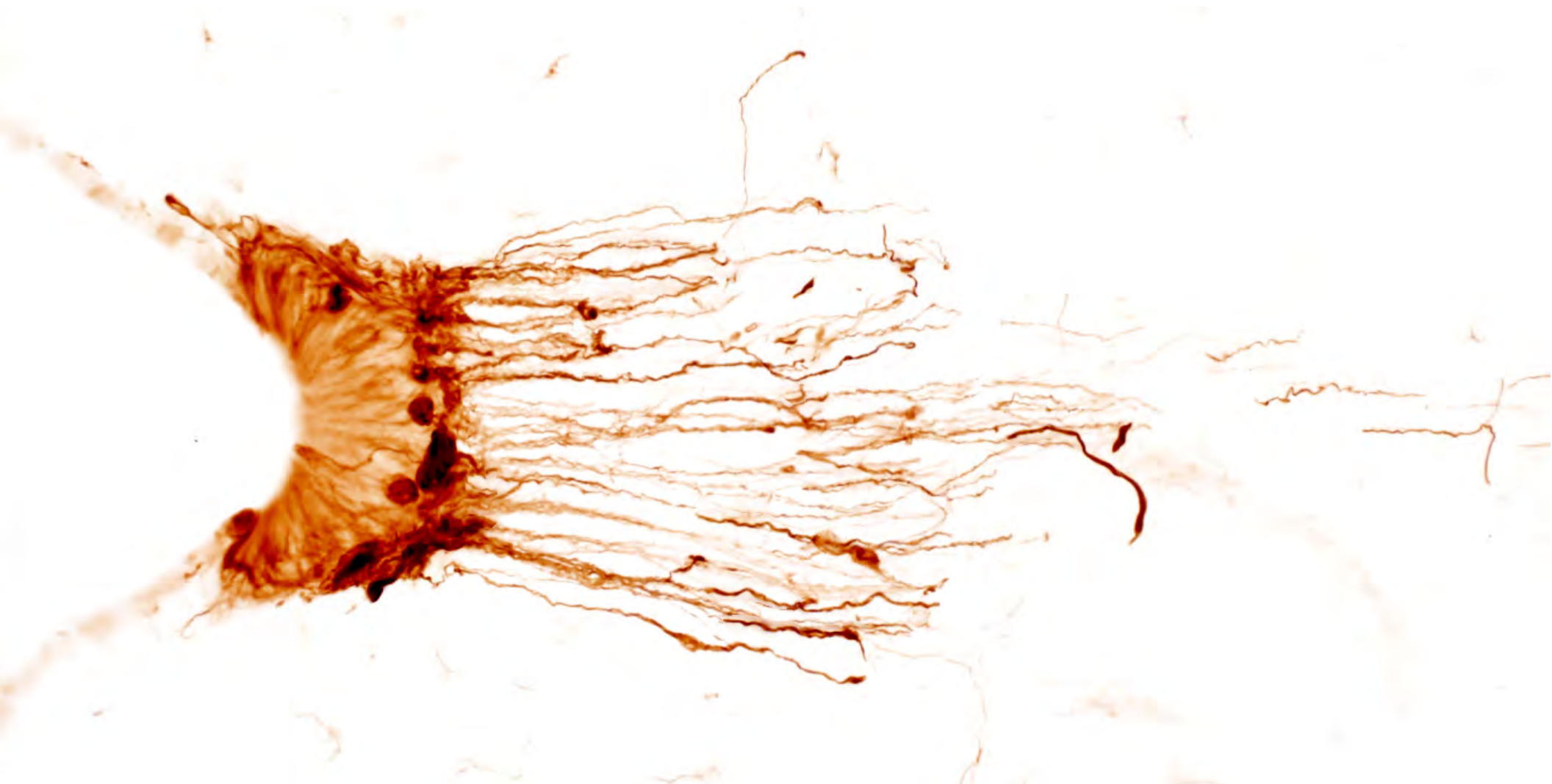
Nestin-Positive Subcommissural Organ



Immunohistochemical staining for nestin in rat subcommissural organ. Nestin immunoreactivity is usually thought of as a marker for newly born neurons, but nestin is also found in reactive astrocytes in the adult brain as well as in the dentate subranular zone and in the subventricular, rostral migratory stream. In the adult animal, tanycytes and the subcommissural organ are nestin-immunoreactive. Orientation of image: dorsal to the left, ventral to the right.

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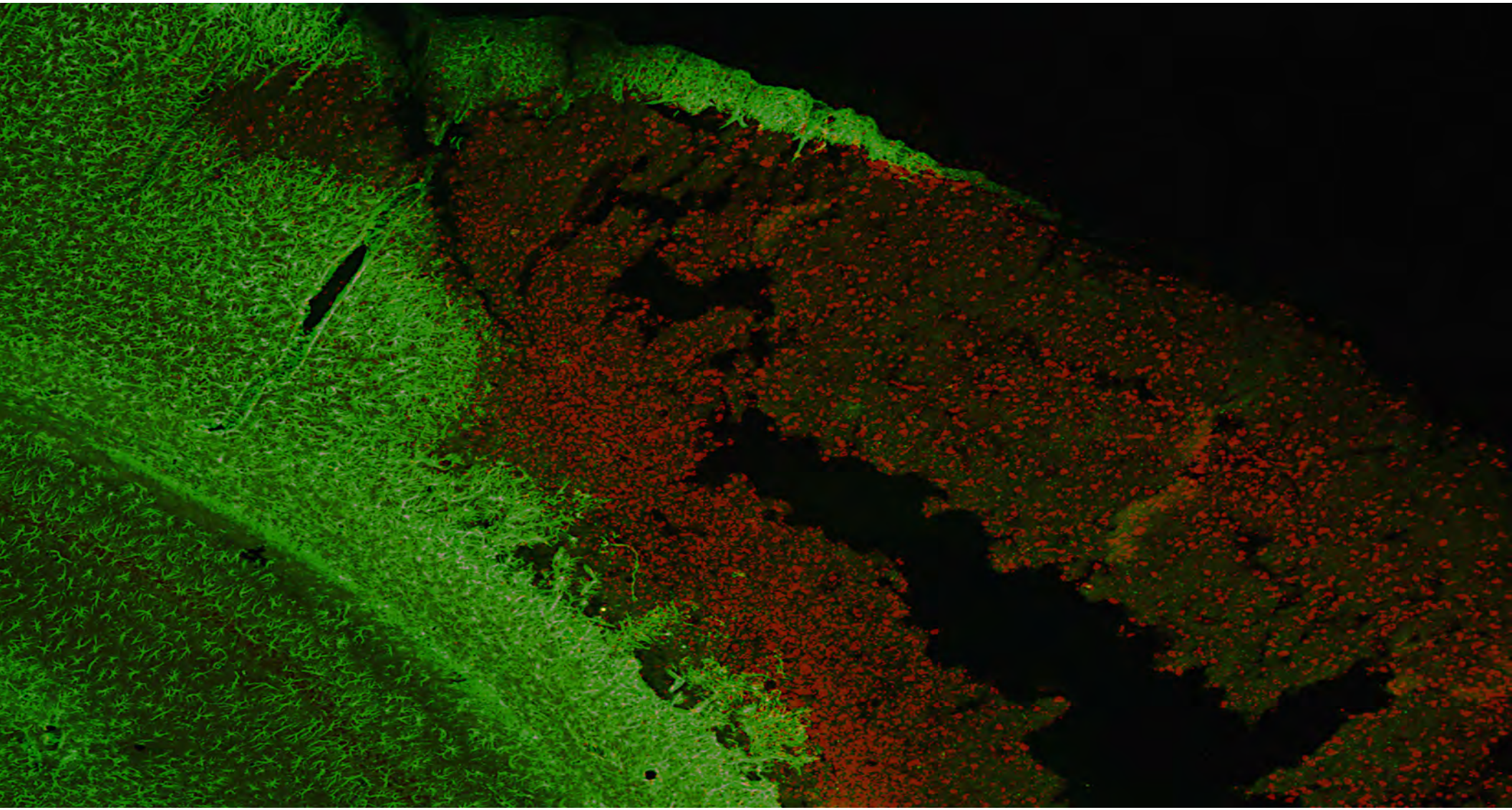
Ischemia in Rat Cortex-Astrocytes and Reactive Microglia



Sprague-Dawley rats underwent two hours of middle cerebral artery occlusion and were sacrificed on day seven. Glial fibrillary acidic protein (GFAP)-positive reactive astrocytes (green) outline the lesion territory. Inside the zone of infarcted cortex, there is a massive positive staining for CD68 (clone ED-1) in microglia and/or macrophage infiltration. Permission to use images granted by Dr. Ludmila Belayev, LSU School of Medicine, New Orleans, LA.

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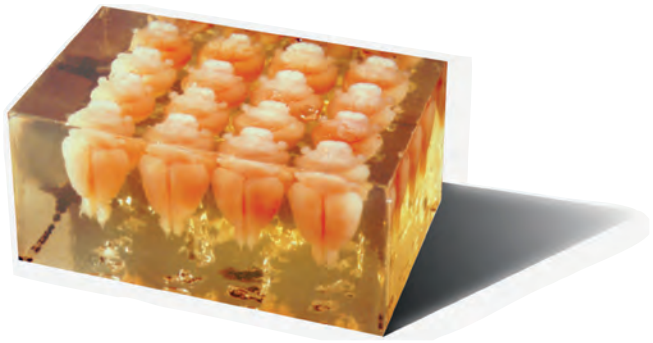
About NeuroScience Associates

NeuroScience Associates was founded in 1989 by Dr. Bob Switzer to provide high-quality, high-throughput neurohistology outsourcing through MultiBrain® Technology. The proliferation of the use of MultiBrain® and the scale of NSA's volume and success have far exceeded the vision of over twenty years ago. During these years, NSA has processed hundreds of thousands of brains, stained millions of sections, and worked for hundreds of academic researchers and pharmaceutical companies, including eight of the top ten pharmaceutical companies in the world.

It has been a rewarding experience - both personally and professionally - to assist in the studies of so many dedicated and visionary researchers. We appreciate the loyalty of our many satisfied clients and look forward to continued opportunities to assist in your neurohistologic needs.



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