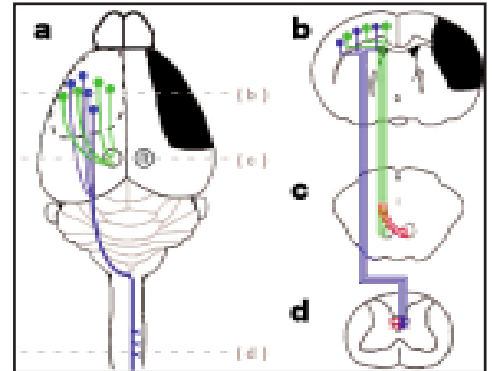




## **STROKE MODELS**

NDI scientists are among the world's most active researchers in the stroke field, employing several animal models with an emphasis on behavioral recovery. We offer expertise in the following models.

- **MCAO**
  - **Intraluminal insertion**
  - **Electro-coagulation**
  - **Clip**
- **Devascularization (pial stripping)**
- **Embolic**
- **Four-Vessel and Two-Vessel Occlusion**
- **Photochemical**



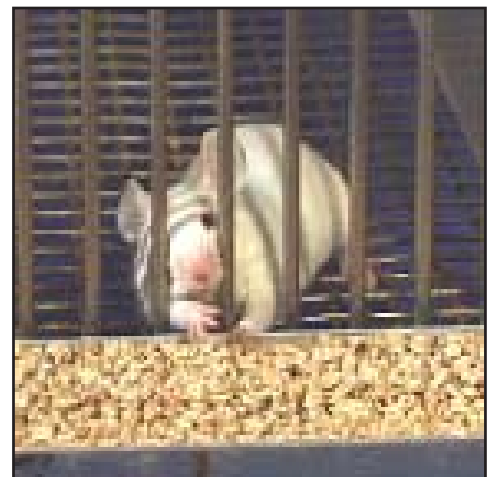
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## **Behavior Testing**

A key element of testing potential therapeutics in stroke is the ability to assess functional recovery, in addition to the more common assessment of infarct size. Moreover, in rodent models some behaviors initially impaired by the stroke recover naturally. Thus it is especially important to be able to distinguish between a test compound's ability to speed normal recovery, vs. its ability to produce recovery of functions otherwise lost.

Below is a listing of the behavioral tests offered:

1. **Reaching**
2. **Forelimb Asymmetry**
3. **Tactile Placing**
4. **Forepaw Inhibition**
5. **Tongue Protrusion**



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## **Morphological Analysis**

**Infarct size** The area of the lesion in the cortex is determined from tissue sections by measuring remaining cortical volume, and expressing the result as a percentage of the opposite (intact) side.

**Axonal sprouting** As an option, sprouting by cortical axons from the intact cortex into the hemiparetic side of the brain can be analyzed by injecting an anterograde tracer (e.g. BDA beads).

**Dendritic sprouting** As an option, sprouting by dendrites of surviving neurons on the lesioned side can be analyzed using Golgi-Cox staining. This technique also allows analysis of changes in the synapse number.

## **Selected references from NDI stroke scientists**

DeBow SB, Davies ML, Clarke HL, Colbourne F.  
Constraint-induced movement therapy and rehabilitation exercises lessen motor deficits and volume of brain injury after striatal hemorrhagic stroke in rats.  
Stroke, 2003, 34(4): 1021-6.

MacLellan C, Shuaib A, Colbourne F.  
Failure of delayed and prolonged hypothermia to favorably affect hemorrhagic stroke in rats.  
Brain Res, 2002, 958(1): 192-200.

Li, X., Blizzard, K, Zeng, Z DeVries, AC, Hurn, PD, & McCullough, LD. Chronic behavioral testing after focal ischemia in the mouse: functional recovery and the effects of gender. Experimental Neurol. 2004, 187: 94-104.

Craft TK, DeVries AC. Role of IL-1 in poststroke depressive-like behavior in mice. Biol. Psychiatry, 2006

Hattori K, Lee H, Hurn PD, Crain BJ, Traystman RJ, DeVries AC. Cognitive deficits after focal cerebral ischemia in mice. Stroke, 2000, 31(8):1939-44.

Gonzalez CL, Kolb B. A comparison of different models of stroke on behaviour and brain morphology. Eur J Neurosci. 2003, 18:1950-62.

Chen P, Goldberg DE, Kolb B, Lanser M, Benowitz LI. Inosine induces axonal rewiring and improves behavioral outcome after stroke. Proc Natl Acad Sci U S A. 2002, 99(13):9031-6.

Auer RN, Jensen ML, Whishaw IQ. Neurobehavioral deficit due to ischemic brain damage limited to half the CA1 sector of the hippocampus. J. Neurosci. 1989, 9: 1641-1647.

Zhu CZ, Auer RN. Intraventricular administration of insulin and IGF-1 in transient forebrain ischemia. J. Cerebral Blood Flow and Metabolism, 1994, 14: 237-242.

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