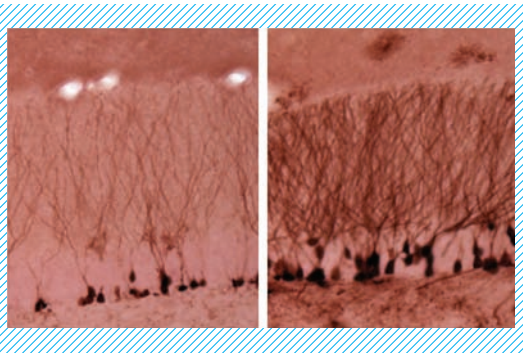
NEUROSCIENCE

How Brains Bounce Back

After a traumatic injury, neurons that govern memory can regenerate



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Growth spurt: A brain injury can spur the development of new neurons (*right*). At the left is an uninjured brain.

For most of the past century the scientific consensus held that the adult human brain did not produce any new neurons. Researchers overturned that theory in the 1990s, but what role new neurons played in the adult human brain remained a mystery. Recent work now suggests that one role may be to help the brain recover from traumatic brain injury.

Cory Blaiss, then at the University of Texas Southwestern Medical Center, and her colleagues genetically engineered mice such that the researchers could selectively turn neurogenesis on or off in a brain region called the hippocampus, a ribbon of tissue located under the neocortex that is important for learning and memory. They then administered blunt-force trauma to the brain and compared the performance of brain-injured mice that could produce new neurons to brain-injured mice that could not. They sent each mouse through a water maze that required it to find a platform obscured beneath the surface of murky water. The researchers found that after injury only mice with intact neurogenesis could develop an efficient strategy to find the hidden platform, a skill that is known to rely on spatial learning and memory. They concluded that without neurogenesis in the hippocampus, the recovery of cognitive functions after brain injury was significantly impaired.

The finding may lead to much needed therapeutic techniques. Deficits in learning and memory are nearly universal after a traumatic brain injury. The ability to stimulate more robust neurogenesis could lead to faster healing times or perhaps even more complete recovery of cognitive functions, a potentially life-changing prospect for the millions of people who suffer from traumatic brain injury every year. —*Tim Requarth and Meehan Crist*