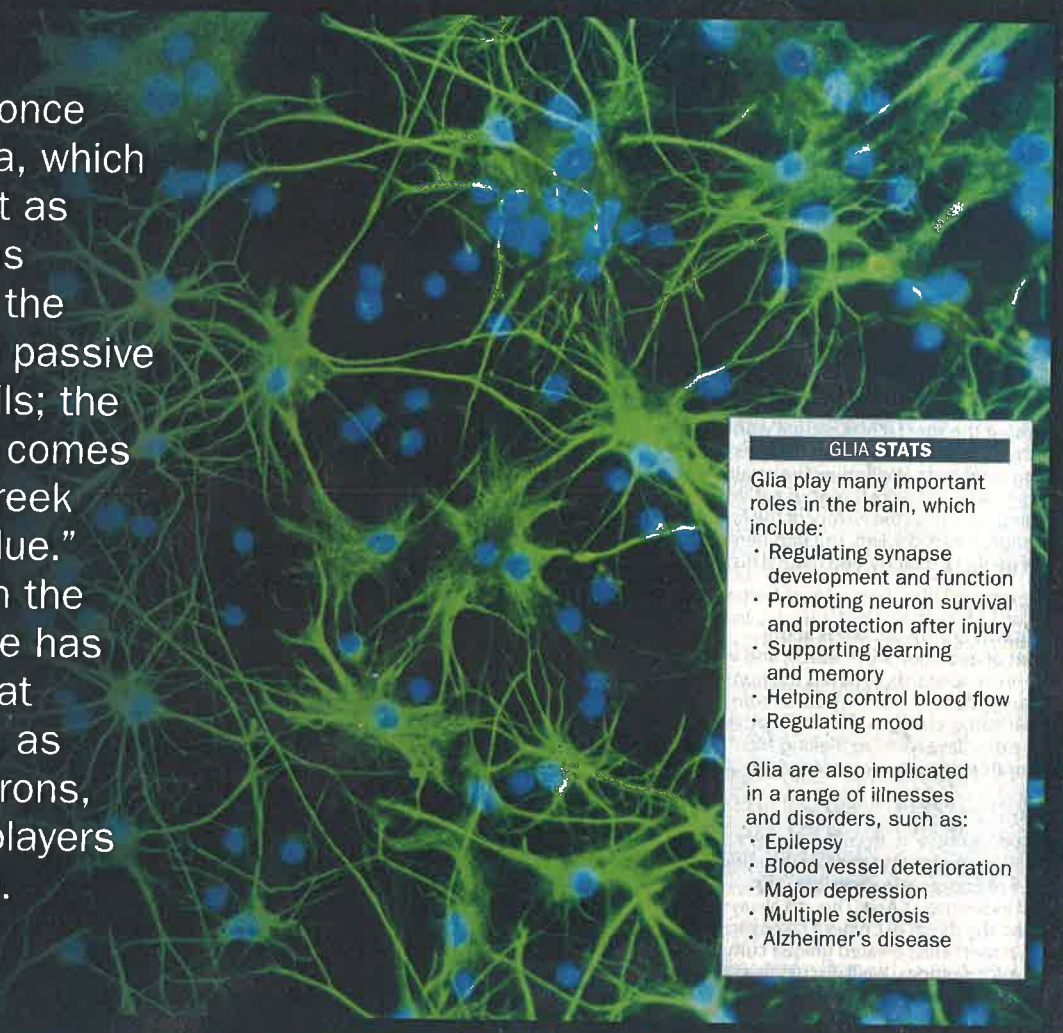
» Glia New roles for the "other" brain cells

Scientists once thought glia, which are at least as prevalent as neurons in the brain, were passive support cells; the word "glia" comes from the Greek word for "glue." Research in the past decade has revealed that these cells, as well as neurons, are active players in cognition.



GLIA STATS

Glia play many important roles in the brain, which include:

- Regulating synapse development and function
- Promoting neuron survival and protection after injury
- Supporting learning and memory
- Helping control blood flow
- Regulating mood

Glia are also implicated in a range of illnesses and disorders, such as:

- Epilepsy
- Blood vessel deterioration
- Major depression
- Multiple sclerosis
- Alzheimer's disease

Glia Spark Seizures

The brain's electrical storms may originate in nonelectrical cells

When neurons fire together uncontrollably, epileptic seizures ensue. Yet what sparks the cells to go haywire in the first place? In January scientists found an unexpected answer. When glial cells in the cortex of fruit flies cannot properly control their calcium levels, they leave neighboring neurons vulnerable to seizures.

Researchers at the Massachusetts Institute of Technology identified a genetic mutation that causes fruit flies to seize when they are exposed to heat or vibration. On studying the mutation, they found that it affects a gene called *zydeco* that controls calcium exchange inside glial cells—a surprise considering that most research about seizures has focused on neurons. And logically so: neurons fire electrical impulses, whereas most glial cells do not. "It threw us for a loop at first," explains lead author and M.I.T. graduate student Jan Melom.

The mutation identified in the study prevents tiny calcium fluctuations from occurring in glia, which Melom believes results in a buildup of calcium inside the cells. Because stress such as heat usually further boosts calcium levels, the combination could trigger "some sort of glial reaction that spirals into a seizure," she says. One major question is how the glia communicate with neurons, prodding them to overexcite. Because a version of *zydeco* exists in mammals, the answer could help explain the genesis of epileptic seizures in humans, too. —*Melinda Wenner Moyer*

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M Perch living in rivers contaminated by common antianxiety drugs, such as Xanax and Valium, were found to behave more boldly and