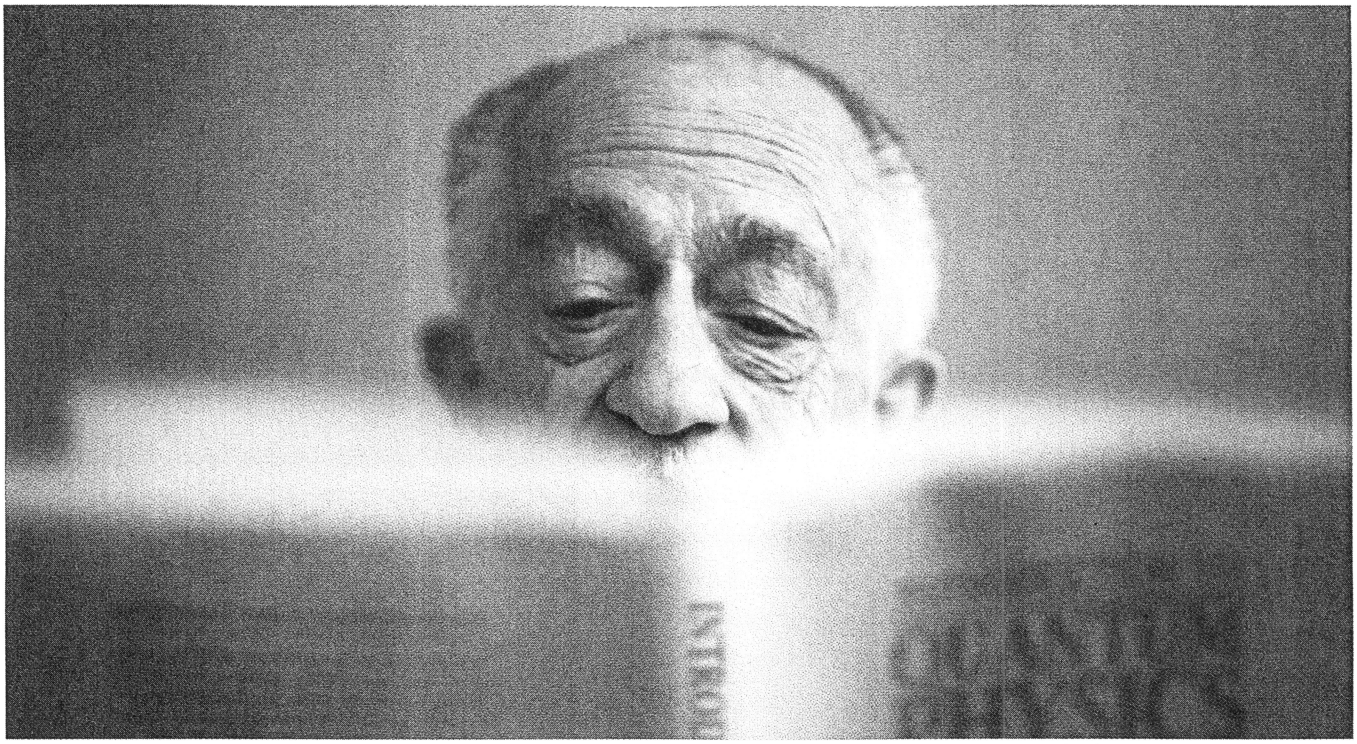

being developed, and the latter are likely to be some time off.

Suppose, for the moment, though, that having a ready supply of new neurons on tap does help to keep the human brain intellectually limber. Could neurogenesis, then, somehow be exploited for preventing or treating disorders that bring about cognitive decline?

Consider the case of Alzheimer's, in which degeneration of hippocampal neurons leads to a progressive loss of memory and of learning ability. People with Alzheimer's do continue to produce new neurons, but it seems that many of the cells do not survive to become fully mature. Perhaps the process of neurogenesis and neuronal maturation is impaired in these individuals. Or perhaps the new cells do not survive because the disease hampers the ability to learn.

Yet some findings offer hope, at least for those in the early stages of dementia. As mentioned earlier, studies in healthy animals and people suggest that simple actions such as aerobic exercise can boost the production of new neurons. In addition, antidepressants have been found to be powerful modulators of neurogenesis. And a study in 2007 found that chronic treatment with antidepressants increases daily living and global functioning in patients with Alzheimer's—a hint, at least, that such therapy might promote production and survival of new neurons in patients.

Anecdotal accounts suggest that effortful learning may also help some patients. I recently presented our animal data at a meeting about Alzheimer's and other forms of dementia. The clinicians in the audience were intrigued by our findings indicating that efforts to learn something difficult help to preserve freshly minted nerve cells. They report having seen benefits from such exertions in their patients. And they note that patients who can fully engage themselves in cognitively demanding activities may be able to delay the progression of this mind-robbing disease.

That said, it would be foolish to think that cognitive engagement combined with antidepressants or physical activity could completely reverse the damage done by a disease such as Alzheimer's, which kills many more brain cells than just new ones. It could be, though, that such activities might slow the rate of cognitive decline—in people grappling with degenerative diseases and, perhaps, in all our brains as we grow older.

They say you can't teach an old dog new tricks, and certainly as adults, many of us find it painful to learn something completely new. But if we want to keep our brains in shape, it probably would not hurt to learn a new language, take up tap dancing, or tackle some fast gaming after your Wii Fit workout—and it might even help. ■

THE MORE CHALLENGING a cognitive task is, the more new neurons it is likely to rescue, if findings from rodents hold true in humans.

MORE TO EXPLORE

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