

PRESS RELEASE

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HOW OLDER MINDS STAY YOUNG

Why is it that some people's minds stay in better shape than others as we age? This has puzzled scientists for decades, but a USA team has discovered a whole set of molecular and cellular changes that help maintain a healthy brain.

Professor Michela Gallagher from Johns Hopkins University in Baltimore said, "Problems with memory become more commonplace as we age. As we get older, we get frustrated by little things like losing the car keys." This kind of age-related memory problem can be normal and not linked to disease.

For about 15 years, Professor Gallagher has been studying ageing in rats that are biologically diverse but raised in similar conditions. Some lose their cognitive skills, others don't and continue to behave and respond like young rats. "Our findings parallel human studies of aging, in which a wide spectrum of outcomes also occurs," she said.

Professor Gallagher presented new results of her research today (Sunday 13 July) at the Forum of European Neurosciences in Geneva which offers an entirely new perspective on the ageing brain. They recently found that the brains of old rats that hold on well to memory compared to young rats with a good memory, are not the same. There are some functional features that distinguish the two, yet both ways of functioning yield equally good memory.

"We were very surprised to find that that the brain is programmed to allow for successful ageing by a series of adaptations in cells and molecules, which is not 'preserving' the same existing function. It's the changes that take place as we age normally that allow the brain to perform optimally at older ages," she explained.

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The other unexpected finding was that in rats that did not retain their cognitive abilities so well, cells in the hippocampus (the region of the brain that is central to memory and learning) are more active. “This is counter intuitive as you might assume that if you are forgetful, it would be due to diminished activity,” said Professor Gallagher. Her studies in old rats have further shown that it is not that the brain is trying to compensate for forgetfulness: the hyperactivity occurs when they are not doing tasks that might require them to compensate for memory loss.

“What is really exciting to discover is that this over-activity seems to be interfering with normal brain processes, not compensating for deficits,” she said.

This new approach to understanding the normal ageing process will help in the search for ways to maintain good cognitive function. The next phase of research will focus on why these beneficial changes in the brain occur in some rats and people, but not others. That understanding could lead to better ways to promote successful aging.

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Notes to Editors

FENS 2008 is hosted by the Swiss Society for Neuroscience and will attract over 5,000 international delegates. The Federation of European Neuroscience Societies, founded in 1998, aims to advance research and education in neuroscience, representing neuroscience research in the European Commission and other granting bodies. FENS is the European partner of the American Society for Neuroscience. FENS represents a large number of national European neuroscience societies and has around 16000 members. <http://fens2008.neurosciences.asso.fr/>