



nature publishing group



► **COVER:** Nanovision, by Vicky Askew inspired by the review on p65



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The start of the new year sees the launch of a fresh, new look for *Nature Reviews Neuroscience*. This accompanies the redesign of the online version that you might already have seen last month. All the regular elements remain on the web site, but it is now easier to navigate, more attractive and there are several new features, including more up-to-date articles ahead of publication of the print journal.

Among the articles in this issue, Carol Barnes and Sara Burke present, on page 30, a timely and insightful evaluation of current knowledge on cellular and molecular mechanisms that underlie cognitive decline during the course of normal ageing. As the average lifespan of humans is steadily increasing, there is an ever-growing number of people suffering from age-related cognitive difficulties in the absence of neurodegeneration.

The traditional view was that significant cell loss explains these cognitive deficits. However, Barnes and Burke highlight major developments that led to a shift in perspective, and it is now clear that age-related cognitive decline can be attributed to subtle, but important, alterations in neuronal morphology, cell–cell interactions and gene expression that trigger changes in functional plasticity. The hippocampus and prefrontal cortex are especially vulnerable to these processes, which disrupt network dynamics, and, ultimately, lead to selective deficits in learning, memory and executive functions.

The study of the neurobiological basis of normal ageing has emerged as a major area of interest in neuroscience, and it is hoped that future developments in this field will yield new and effective treatments to halt or reverse the alterations in plasticity and delay cognitive decline.

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