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Repair your own retina

If the retina of a fish is damaged, the organ can regenerate to its original state. Chick retinas can also repair themselves to a limited extent. In mammals, however, virtually no retinal regeneration occurs. A new study by Thomas Reh and colleagues (University of Washington, Seattle) shows that with some help, the mammalian retina can be coaxed into regeneration as well (*Proc. Natl. Acad. Sci. USA* **105**, 19507–19512; 2008).

All vertebrates seem to possess the same mechanism for regeneration: a group of retinal glial cells called Müller glia. Müller glia ordinarily function as normal glial cells, but if the retina is damaged, they are called into action. In coldblooded vertebrates, Müller glia re-enter the cell cycle, dedifferentiate into retinal progenitors and ultimately differentiate into neurons. In mammals, in contrast, Müller cells become reactive and grow, but few re-enter the cell cycle.

The researchers investigated mice whose retinas were damaged with N-methyl-D-aspartic acid. As expected, almost no retinal regeneration occurred naturally; however, Müller glia began to proliferate after mice were injected with epidermal growth factor, fibroblast growth factor 1 (FGF1), or FGF1 combined with insulin. Though most progenitor cells differentiated back into Müller glia, some differentiated into retinal neurons.

Marsupial genomics bounds along

Australian genomics has taken a big step forward with the completion of the genome map of the tammar wallaby. The wallaby (*Macropus eugenii*) is the first kangaroo species to have its genome mapped and sequenced. Researchers at the Australian Research Council Centre of Excellence for Kangaroo Genomics (KanGO), based in Canberra, constructed the genome map, which will be used to assemble the overlapping DNA sequences previously identified by another group of researchers at the Australian Genome Research Facility (based in Brisbane). The sequence assembly by KanGO scientists will produce the complete sequences of the wallaby's chromosomes and is expected to be completed early next year.

The genomes of both marsupials and monotremes are of great interest to scientists. Marsupials give birth to undeveloped young, which complete much of their development in a pouch rather than in utero, and monotremes lay eggs. Comparing the DNA of these species with that of humans may help to identify genes central to human reproduction and development. The first marsupial genome sequenced was that of the American opossum, and the platypus genome has also been sequenced. Scientists hope to procure funding to sequence the genomes of other marsupials, including the Tasmanian devil.

'Expert' ants are no better than dilettantes

Adam Smith, known as the father of modern economics, believed that division of labor made workers more productive. A new study in ants has economists intrigued, as it contradicts the assumption that an expert is more efficient than a 'Jack-of-all-trades'.

Anna Dornhaus of the University of Arizona (Tucson) investigated how ants of the species *Temnothorax albipennis* carried out tasks such as foraging for food and collecting nest material (*PLoS Biol*. **6**, e285; 2008). Using video footage to monitor ants individually, she determined each ant's degree of specialization according to the proportion of its time that it devoted to each task. She also evaluated the quality of each ant's performance by calculating how long it took the ant to perform a single task once.

Surprisingly, Dornhaus found that ants that specialized in a particular task did not necessarily carry out that job more efficiently than did non-specialized ants, and for one task (collecting nest material) specialization was detrimental to performance. Dornhaus also noted that the colony did not seem to take advantage of workers' skills: tasks were not necessarily allocated to the ants that carried them out most efficiently; instead, most of the work was done by specialists, regardless of skill level.