RESEARCH HIGHLIGHTS

Selections from the scientific literature

NEUROSCIENCE

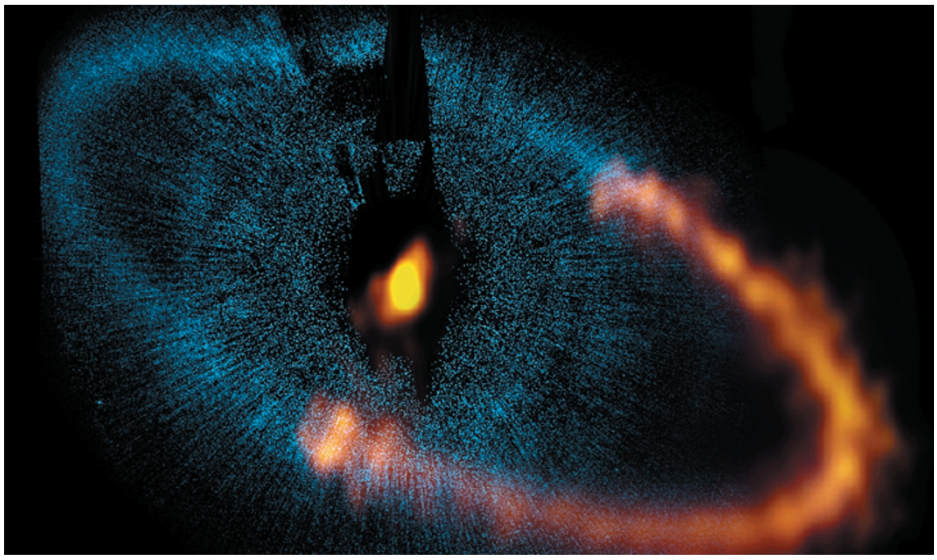
In vivo cell switch for brain repair

By reprogramming one type of brain cell into another *in vivo*, researchers have opened the door to new ways of repairing damaged brains.

Gong Chen and his colleagues at Pennsylvania State University in University Park converted reactive glial cells — the cells that flood sites of brain injury — into neurons in the brains of mice. They injected a retrovirus carrying the gene encoding a protein called NeuroD1 into the cortex of normal mice and those engineered to model Alzheimer's disease. The virus delivered the gene to two types of glial cell, resulting in the reprogramming of these cells into functional excitatory or inhibitory neurons.

NeuroD1 also turned human astrocytes, a type of glial cell, into functional neurons *in vitro*. The authors suggest that the approach could be used to replace neurons lost to injury or disease in humans.

Cell Stem Cell **http://doi.org/qq7 (2013)**



ALMA (ESO/NAOJ/NRAO); VISIBLE LIGHT IMAGE: NASA/ESA/HST

ASTROPHYSICS

Comets hint at cosmic encounter

Researchers have discovered a second comet belt in Fomalhaut, a bright, triple-star system that is already known to host an exoplanet and a bright comet belt around its primary star, Fomalhaut A (**pictured**).

Grant Kennedy at the University of Cambridge, UK, and his colleagues used data from the Herschel Space Observatory to find the second belt, which surrounds the system's least-massive star, Fomalhaut C. The discovery of two such bright comet belts around stars in the same system is rare, and suggests that the two stars had a close encounter that increased collision rates within each debris disk: colliding comets generate large amounts of dust and ice that would make the comet belts look brighter. Such a stellar interaction could also explain the elliptical orbits of Fomalhaut A's exoplanet and comet ring.

Mon. Not. R. Astron. Soc. 437, **2686–2701 (2014)**

MATERIALS

Extra-stretchy graphene gloves

Graphene-based sensors that measure strain, or deformation, can be stretched to twice their normal length. These could be useful for the development of wearable interactive electronics.

Previous such devices struggled to stretch by even 30%, making them too stiff to detect the full range of motion of human joints, for instance. Pooi See Lee and her colleagues at Nanyang Technological University in Singapore made their sensors out of nanopaper: crumpled graphene (atom-thick sheets of carbon) and tiny cellulose fibrils embedded in a stretchy material.

A glove developed by the researchers has strain sensors on each finger (**pictured**) for measuring the bending and stretching of separate digits. It could one day be used to perform surgery remotely and in other applications.

Adv. Mater. **http://doi.org/qrh (2013)**

IMMUNOLOGY

Dietary fibre dampens asthma

A high-fibre diet curbs allergic inflammation in mouse lungs by shifting the composition of microbes in the gut.

Benjamin Marsland at the University of Lausanne in Switzerland and his colleagues raised mice on diets containing different levels of fibre and exposed the animals to extracts of house-dust mite, a cause of asthma. The resulting lung inflammation was less in mice consuming high levels of fermentable fibre than in those on a low-fibre diet, and the animals also harboured a community of intestinal microbes that generated higher levels of short-chain fatty acids when metabolizing fibre. These fatty-acid molecules boosted

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