

microglia more often displayed features that allow them to engulf synaptic elements, suggesting a role for these cells in trimming back synapses after new experiences.

PLoS Biol. 8, e1000527 (2010)

MATERIALS SCIENCE

Film bends with light

A polymer film that has been sandwiched between two Teflon sheets curls when hit with ultraviolet (UV) light, a result of the film's highly ordered three-dimensional (3D) molecular structure. Such 3D ordering over macroscopic length scales could aid in the design of advanced materials and devices.

Takuzo Aida and Takanori Fukushima at the RIKEN Advanced Science Institute in Saitama, Japan, and their colleagues designed a brush-shaped polymer bearing multiple photoresponsive azobenzene groups. They then hot pressed the polymer film between two Teflon sheets that were stretched along one axis. Spectroscopic measurements revealed that, during hot pressing, the Teflon sheets imposed a certain molecular order on the film, such that the concerted motion of the photoresponsive units caused the film to curl in response to UV only when the drawing directions of the Teflon sheets had been parallel to each other. *Science* 330, 808–811 (2010)

AGRICULTURE

Sterile moths fight resistance

Releasing sterile moths into cotton fields keeps levels of the dreaded pink bollworm moth (*Pectinophora gossypiella*) to a minimum — a strategy that could prevent the pest from becoming resistant to insecticide-producing crops.

Pink bollworms gradually evolve resistance to the Cry1Ac toxin made by genetically modified cotton, especially if farmers fail to

maintain nearby refuges of non-toxic crops.

Computer simulations developed by Bruce Tabashnik at the University of Arizona in Tucson and his colleagues suggested that releasing sterile bollworm moths would decrease the bollworm population and lessen the chance that two Cry1Ac-resistant moths would mate and propagate the trait. The model predicted that after more than 20 years, Cry1Ac resistance would not emerge, even in the absence of refuges.

A four-year field experiment on modified and conventional cotton across the state of Arizona backed up the computer model: between 2006 and 2009, pink bollworm infestation rates plummeted by 99.9%.

Nature Biotechnol. doi:10.1038/nbt.1704 (2010)

For a longer story on this research, see go.nature.com/gsurwm

ASTRONOMY

Wave patterns in Saturn's big ring

The structures in the outer edge of Saturn's most massive ring, the B ring, appear to be oscillating in at least three rotating wave patterns. This may be helping to create the complex variation seen in the ring's behaviour.

Until recently, researchers thought that the region was dominated solely by the gravitational influence of Saturn's moon Mimas. Joseph Spitale and Carolyn Porco of the Space Science Institute in Boulder, Colorado, pored over thousands of images of the B ring region (pictured) taken by NASA's Cassini spacecraft during its initial four-year exploration of the planet. The duo discovered the wave patterns, which arise spontaneously owing partly to the high density in the ring. They also found evidence for the existence of small moons trapped in the region.

The findings offer insight

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IMMUNOLOGY

It's not you. It's your organelles.

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Transplanted cells that contain their new host's nuclear DNA could still be rejected by the individual's immune system. This is because of slight differences between the cells and the host — in the genomes of the energy-producing organelles called mitochondria.

Jun-Ichi Hayashi at the University of Tsukuba in Japan, Noriko Toyama-Sorimachi at the National Center for Global Health and Medicine in Tokyo and their colleagues compared tumour cells containing nuclear DNA from one mouse strain and mitochondria from either the same or a different strain.

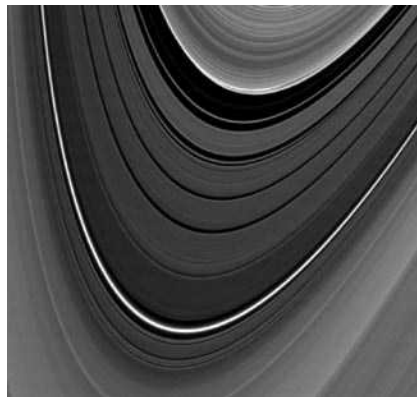
Despite just a 0.5% difference between the two mitochondrial genomes, cells containing the foreign organelles did not form tumours when transplanted into the strain of mice that the nuclear DNA came from. However, the hybrid cells grew at the same rate as normal tumour cells in mice lacking certain types of immune cell.

Tissues made from a person's stem cells could face rejection when transplanted back into him, the researchers say, because mitochondrial genomes tend to accumulate mutations.

J. Exp. Med. doi:10.1084/jem.20092296 (2010)

into similar oscillations in other astronomical systems, such as spiral galaxies, and protoplanetary disks orbiting nearby stars.

Astron. J. 140, 1747–1757 (2010)



ZOOLOGY

No sons for snake that shuns sex

For the most part, snakes reproduce sexually, with males carrying two Z sex chromosomes and females one Z and one W. Warren Booth of North Carolina State University in Raleigh and his

colleagues have identified an unprecedented natural occurrence of WW females born to a single female *Boa constrictor imperator*.

By analysing the DNA of the female and two of her broods that were all-female, the researchers ruled out sexual reproduction with cohabiting male boas. However, the offspring were not clones of their mother, and the authors suggest that they were the result of automictic parthenogenesis. In this form of reproduction, the egg's nucleus fuses with another cell structure in the egg that carries half of the mother's chromosomes.

This is the first evidence of multiple, viable and non-experimentally induced WW females in a vertebrate, the authors say.

Biol. Lett. doi:10.1098/rsbl.2010.0793 (2010)

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