Proc. Natl Acad. Sci. USA http://doi.org/xwr (2014); http://doi.org/xwq (2014)

DEVELOPMENTAL BIOLOGY

Cells stop dividing to heal wounds

Researchers have worked out why cells that stop dividing often release inflammatory signals that are linked to various age-related disorders.

Cells enter this 'senescent' state as tissues age, but it is not clear why they secrete numerous molecules, some of which cause inflammation. Judith Campisi at the Buck Institute for Research on Aging in Novato, California, and her team developed a mouse model in which they could isolate and study senescent cells. They found that blood-vessel and skin cells enter a senescent state at the site of a skin injury, where they promote healing by secreting a growth factor.

This could explain why senescent cells evolved the ability to secrete molecules, the team says.

Dev. Cell 31, **722–733 (2014)**

NEUROSCIENCE

Direct route from gut to brain

Cells in the intestine can directly communicate with nerves, suggesting a way in which food and gut bacteria might affect the brain.

Intestinal cells called enteroendocrine cells regulate feeding behaviour, affecting the brain indirectly by secreting hormones. But these cells also have a protrusion called a neuropod. To find out whether this makes direct, physical contact with nerves in the intestine, Diego Bohórquez and his colleagues at Duke University in Durham, North Carolina, delivered a rabies virus (which typically infects neurons) to the colon of a mouse. They found that the virus first infected the intestinal cells and then passed into the animal's nervous system.

The neuropod might carry chemical signals from gut bacteria to the brain, and could allow viruses to spread from the intestine to the nervous system, the researchers suggest.

J. Clin. Invest. **http://doi.org/x2x (2015)**

IMMUNOLOGY

Fat cells fight bacterial infection

When a pathogenic bacterium invades the skin, fat cells are enlisted to help to kill the microbe, finds a study in mice.

Richard Gallo at the University of California, San Diego, and his team studied fat cells beneath the skin of mice that had been infected with *Staphylococcus aureus*. They found that fat cells increased in size and number in the early stages of infection and near the infection site. They also observed an increased amount of an antimicrobial compound, cathelicidin, when precursor mouse and human fat cells that had not been exposed to the bacterium developed into mature cells. The microbe enhanced the production of this molecule, which in turn slowed its growth.

Mice that could not generate fat cells were more susceptible to *S. aureus* infection.

Science 347, **67–71 (2015)**

STEM CELLS

Diabetes reversed after transplant

Therapies that block part of the immune response in diabetic mice can prevent rejection of transplanted cells made from stem cells.

Some people with severe type 1 diabetes receive transplants of insulin-producing cells from healthy donors, but must take drugs that suppress much of the immune response, making them susceptible to cancer and infection. Jeffrey Bluestone at the University of California, San Francisco, and his colleagues suppressed immune responses in a more targeted way by treating diabetic mice with molecules that block T-cell stimulation. This prevented the immune system from rejecting transplanted pancreatic cells made from human embryonic stem cells, allowing the transplants to develop into insulin-secreting cells and reversing diabetes.

Targeting specific groups of immune cells could help to avoid the side effects associated with current immune-suppressing drugs, the authors say.

Cell Stem Cell **http://doi.org/xwg (2014)**

POPULATION GENETICS

Small numbers led to lemur demise

The number of giant lemurs in Madagascar may have been low even before humans pushed them to extinction.

Living lemur populations are found only in Madagascar, with the heaviest species weighing at most 7 kilograms. Giant species weighed up to 160 kg and vanished from the island after humans arrived around 2,000 years ago. A team led by George Perry at Pennsylvania State University in University Park sequenced mitochondrial genomes from five extinct giant lemur species, including multiple samples from two species, *Megaladapis edwardsi* and *Palaeopropithecus ingens* (**pictured**). The authors found that both species had low genetic diversity — a sign of small population size.

The authors suggest that low population numbers, rather than large body size, made giant lemurs especially susceptible to extinction.

J. Hum. Evol. **http://doi.org/xwh (2014)**

STEPHEN D. NASH/IUCN/SSC PRIMATE SPECIALIST GROUP

SOCIAL SELECTION

Popular articles on social media

Word-processing war ignites

Scientists generally welcome scrutiny of their data, but question their approach to word processing and sparks fly. A study suggesting that Microsoft Word is superior to the typesetting program LaTeX when it comes to efficiently creating academic documents has generated uproar online. "Def going to be the most controversial paper of the decade," tweeted Ben Lillie, a particle physicist who now directs The Story Collider, a series of science-storytelling podcasts and live shows. Indeed, many disagreed with the paper's finding. Steven Gibbons, a geophysicist at NORSAR, a geosciences research foundation in Kjeller, Norway, tweeted: "As a reviewer of scientific papers, I can confirm that ones produced in LaTeX are 500% better than those in Word for correct labelling of equations, figures, tables and including all references in the right order."

PLoS ONE 9, **e115069 (2014)**

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