

CANCER

Tumour reined in by its neighbours

Two groups have found that certain non-cancerous cells that surround a tumour in the pancreas keep it in check, even though these cells seem to boost other types of cancer.

Raghu Kalluri at the University of Texas MD Anderson Cancer Center in Houston and his colleagues deleted fibroblast cells, which are found in connective tissue, in a mouse model of pancreatic cancer. These animals had more aggressive tumours and died sooner than those with fibroblasts. These cells seem to help the immune system to fight the tumour. In human pancreatic tissue samples, those with fewer fibroblasts were associated with lower patient survival rates.

Kenneth Olive at Columbia University in New York, Ben Stanger at the University of Pennsylvania in Philadelphia and their colleagues also found that in animals that had fewer connective tissue cells in their pancreatic tumours, the tumours grew faster and had more blood vessels than in control mice.

The results could help to explain why certain drugs that target a tumour's neighbouring cells have failed in pancreatic cancer clinical trials, the authors say.

Cancer Cell <http://doi.org/szgj>; <http://doi.org/szh> (2014)

IMMUNOLOGY

Fetal cells have a good memory

Immune cells that 'remember' past encounters with foreign molecules have been found in human umbilical cord blood, even though the fetal environment



PALAEONTOLOGY

Nectar feast in fossil belly

A 47-million-year-old fossil bird with pollen grains in its belly is the first direct evidence of nectar-feeding in birds.

Gerald Mayr and Volker Wilde at the Senckenberg Research Institute in Frankfurt, Germany, analysed the fossil of a small bird, *Pumiliornis tessellatus* (pictured), which is similar to cuckoos or parrots. Its thin, long beak resembles those of other nectar-slurping birds, such as hummingbirds. Electron microscopy revealed pollen grains in the bird's stomach (boxed).

P. tessellatus is not closely related to present-day nectar-feeding birds, suggesting that interactions between birds and flowers predate those species, the authors say.

Biol. Lett. <http://doi.org/szj> (2014)

is presumed to be sterile.

Human T cells begin to form when the fetus is about ten weeks old, but the cells were thought to remain unexposed

to foreign antigens until after

birth. However, Richard Lo-Man of the Pasteur Institute in Paris and his team found a subset of fetal T cells known as

memory cells, which remember foreign molecules and respond more rapidly to them during a second exposure. These memory cells make up 1–6% of CD4, or helper, T cells in healthy neonatal cord blood. The identities of the antigens they react with are unknown. *Sci. Transl. Med.* 6, 238ra72 (2014)

GERALD MAYR/SENCKENBERG RES. INST.

PARTICLE PHYSICS

Antimatter passes charge test

Physicists have tightened the limits on the possible charge of an atom of antihydrogen.

The neutral charge on many atoms and molecules has been measured with extremely high precision. The standard model of physics says that hydrogen's antimatter counterpart should have an opposite charge and so be neutral to a similar level. Any differences between the two could help to explain why the Universe contains more matter than antimatter.

Joel Fajans at the University of California, Berkeley, and his colleagues used data from previous experiments to analyse the influence of electric fields on antihydrogen atoms released from a magnetic trap. They found that the atom was charge-neutral, with a limit 1 million times lower than the best previous figure.

Nature Commun. <http://dx.doi.org/10.1038/ncomms4955> (2014)

BIOGEOGRAPHY

Ancient coral reefs protected fish

As the climate fluctuated over the past 3 million years, stable coral reefs provided a safe haven for tropical fish species, leading to the vast diversity of reef fishes seen today.