CANCER

Immune cells targeted in cancer

In a small, early-stage clinical trial, an antibody seems to slow the growth of tumours by decreasing the number of cancer-boosting immune cells in and near the tumours.

Some immune cells known as macrophages promote tumour growth and are regulated by a protein, CSF-1, and its receptor. Carola Ries at Roche in Penzberg, Germany, and her colleagues produced an antibody that blocks this receptor and tested it in seven patients with a rare cancer of the joints. The researchers found that the antibody lowered the number of macrophages in one patient from whom a biopsy was taken, and shrank tumours in five of the patients. In people with other types of tumours, the antibody also depleted tumour-associated macrophages and shifted the ratio of another type of immune cell, T cells, towards those that fight tumours.

Targeting macrophages, in combination with other chemo- or immunotherapies, could improve treatment, but further testing in humans is needed, the authors say.
Cancer Cell **http://doi.org/s3m (2014)**

BIOCHEMISTRY

Easy monitoring of drug by camera

By adding a drug-sensing molecule to human blood samples, researchers can measure drug levels with a simple digital camera.

Monitoring drug amounts in patients can avoid side effects, but the process requires specialized resources. Now, Kai Johnsson at the Swiss Federal Institute of Technology in Lausanne and his colleagues have used a digital camera and software to quantify blood levels of a cancer drug bound to a specially designed bioluminescent sensor protein. The sensor, which changes from red to blue (**pictured**) with increasing drug levels, can be tailored to other drugs, and could allow easy, low-cost drug monitoring by physicians and patients, the authors say.
Nature Chem. Biol. **http://doi.org/s5b (2014)**

RUDOLF GRISS/EPFL

IMMUNOLOGY

Skin sensor soothes psoriasis

A protein in the skin that senses environmental signals could be enlisted to fight inflammation caused by the autoimmune skin disease psoriasis.

Brigitta Stockinger at the MRC National Institute for Medical Research, London, and her team found that altering the activity of the protein AhR in human skin affected the expression of 41 genes that are relevant to psoriasis.

Mice lacking AhR had a stronger response to imiquimod, a compound that causes psoriasis-like skin inflammation. However, stimulating AhR in normal mice reduced imiquimod's effects, suggesting that AhR activation may ease psoriasis.
Immunity **http://doi.org/s4m (2014)**

PHYSICS

Another source for static electricity

Physicists have debunked a three-decades-old explanation for how grains of the same material rub together to generate static electricity — an effect seen, for example, in volcanic ash clouds.

One theory posited that because larger grains hold more trapped, high-energy electrons, they redistribute the electrons to smaller grains when two touch, creating static electricity. Heinrich Jaeger from the University of Chicago, Illinois, and his colleagues measured the surface density of trapped electrons around different-sized grains of zirconium dioxide silicate, as well as the grains' charge. The authors found that there are far too few trapped electrons to account for the observed static build-up when the grains are mixed.

Instead, other charged particles, such as ions from water films or from the surrounding atmosphere, could accumulate on the grains' surface and be responsible for the effect, the team suggests.
Phys. Rev. Lett. 112, **218001 (2014)**

ANIMAL COGNITION

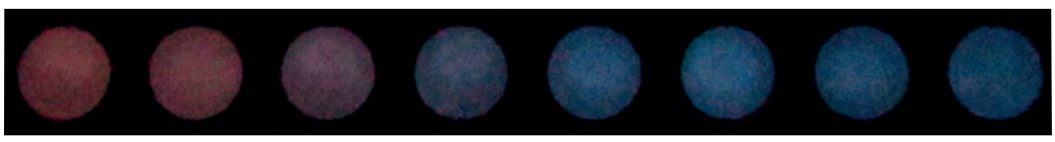
Crow brain recalls images

The exceptional cognitive abilities of crows could be partly due to a structure in their brain that can temporarily retain visual information.

To see whether crows have aspects of working memory — the ability to remember information for future tasks — Andreas Nieder and his team at the University of Tübingen, Germany, trained four carrion crows (*Corvus corone,* **pictured**) in a task that required them to recall images 1 second after first seeing them. During this task, the team recorded the activity of 662 individual neurons in a region of the brain called the nidopallium caudolaterale, which is thought to correspond to the mammalian prefrontal cortex — an area involved in higher-order thought.

The neurons seem to encode and maintain information about the image during this time delay, suggesting that this brain area is involved in the visual component of working memory.
J. Neurosci. 34, **7778–7786 (2014)**

LIFE ON WHITE/PHOTODISC/GETTY



SOCIAL SELECTION

Popular articles on social media

Papers predict future lab heads

Scientists at every point on the career spectrum are talking about a paper in *Current Biology* that takes a quantitative view of the mantra 'publish or perish'.

Using a sample of more than 25,000 researchers, Lucas Carey at Pompeu Fabra University in Barcelona, Spain, and his colleagues developed a statistical model that predicts who will eventually become principal investigators. The team found that first authors of papers in high-impact journals have the inside track, and everyone else is likely to lag behind. Verena Seufert, a geographer and PhD candidate at McGill University in Montreal, Canada, tweeted that it was a "sad story from a cool paper".
Van Dijk, D., Manor, O. & Carey, L. ***Curr. Biol.*** 24, **R516–R517 (2014)**

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