RESEARCH HIGHLIGHTS

Skink or swim?

Science **325,** 314–318 (2009)

The sandfish skink (*Scincus scincus*) spends much of its day below the desert surface, shimmying through the sand to escape predators, avoid overheating and sneak up on prey.

Daniel Goldman at the Georgia Institute of Technology in Atlanta and his colleagues used high-speed X-ray imaging to scrutinize the skink's movements as it zipped through sand-grain-sized glass beads. They discovered that the sandfish does not use its limbs to push itself along, but instead tucks them against its body and undulates like a sine wave.

The team then modelled the thrust and drag involved in swimming through the grains. The model correctly predicted that a given frequency of body waves generates the same speed regardless of whether the grains are loose or packed.

For movies, see http://tinyurl.com/ne9ozh

C. MATTISON/FLPA

ASTRONOMY

Reionizers spotted

Astrophys. J. **700,** 20–48 (2009)

The details of reionization — in which radiation from the Universe's first stars and galaxies ripped apart atomic hydrogen left over from the Big Bang — matter greatly to astronomers. One class of galaxy, comprising those enshrouded in glowing hydrogen gas, is thought to have been important in reionization. But the earliest examples of these are hard to detect because they are so distant.

Using the 10-metre Keck telescopes in Hawaii, Brian Lemaux of the University of California, Davis, and his colleagues found a surprising number of gas-blanketed galaxies in a small patch of sky from a time when the Universe was 1.2 billion to 1.8 billion years old. Even the dimmer galaxies had significant rates of star formation, suggesting that this class plays a crucial part in reionization.

CELL BIOLOGY

Spindle sandwich

Curr. Biol. **19,** 1086–1095 (2009)

By squishing cells, researchers hope to better understand the dynamics of their division. Several competing models have been proposed for the mechanics of the cell's spindle — an assembly of microtubules and other structures that stretches across dividing cells and splits chromosomes between them.

Timothy Mitchison and Sophie Dumont of Harvard Medical School placed dividing cells in an apparatus that gently clamps down on them. The spindles in squashed cells got longer and wider, returning to their normal dimensions after the force was released.

On the basis of their observations, the authors propose that a mechanochemical switch exists at the spindle poles that regulates microtubule length in response to forces within the spindle.

PHYSICS

Scattered showers

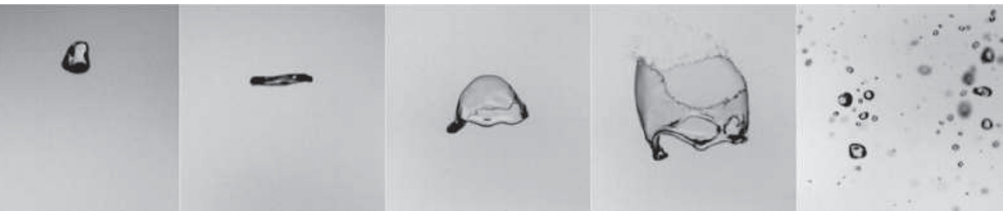
Nature Phys. doi:10.1038/nphys1340 (2009)

Scientists had assumed that the scattered size distribution of raindrops hitting the ground resulted from collisions with their neighbours, just like those in clouds. But Emmanuel Villermaux and Benjamin Bossa at the Aix-Marseille University in France determined that the key to this phenomenon is the dynamics of individual drops.

A high-speed camera captured the moment when a single drop fell through the air, flattening like a pancake as it neared terminal velocity. It then inflated into a bag-like shape before splitting into stringy filaments and, finally, bursting into a shower of different-sized droplets (pictured below).

The complete metamorphosis from drop to droplets occurred more quickly than the typical collision time between drops in clouds.

For a longer story on this research see http://tinyurl.com/kop4ww



CANCER BIOLOGY

Doing more with less

J. Am. Med. Assoc. **302,** 276–289 (2009)

Shedding a copy of chromosome 10 helps lethal brain tumours called glioblastomas to thrive by reducing expression of the tumour-suppressor gene *ANXA7*.

Glioblastomas often have only a single copy of chromosome 10, and extra copies of a region of chromosome 7 that contains the cancer-promoting *EGFR* gene. Markus Bredel of the Northwestern University Feinberg School of Medicine in Chicago, Illinois, and his colleagues found that expression of *ANXA7*, which is located on chromosome 10, is also reduced in these cells.

In cell cultures, when ANXA7 protein levels dropped, EGFR levels rose and the tumour-generating potential of these cells increased.

NEUROSCIENCE

Knowledge rewards

Neuron **63,** 119–126 (2009)

Monkeys like to know the size of rewards coming their way, and, in the brain, this desire is signalled by the same dopamine neurons that signal primitive rewards like sex and food.

Ethan Bromberg-Martin and Okihide Hikosaka of the National Eye Institute in Bethesda, Maryland, trained two monkeys to glance at one of two targets on a computer screen in order to receive a drink reward, which was randomly large or small. When one target included information about