

CULTURE

Religion as cuckoldry defence

How can patriarchal societies be sure that the men who inherit their fathers' goods are actually their fathers' sons? Religions help men to be more confident in their paternity by setting standards for female sexual behaviour.

Beverly Strassmann at the University of Michigan in Ann Arbor and her team studied genetic data from 1,706 father-son pairs among the Dogon of Mali. Although many Dogon are Christian or Muslim, the adherents of their indigenous religion had the lowest rate of male births due to cuckoldry: 1.3% versus 2.9% for the other faiths. The researchers chalk this up to the traditional huts where menstruating women must spend their nights. In a society in which women are often pregnant or unable to conceive owing to intensive breast-feeding, a sojourn in the hut informs a woman's husband and his kin that she has become fertile again. The family can then increase their vigilance towards her.

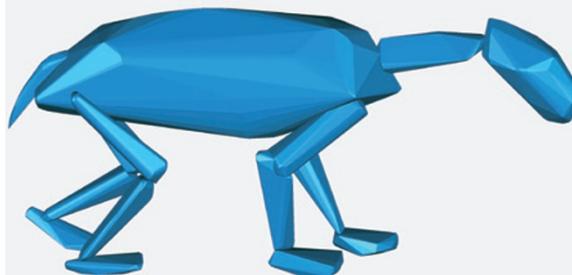
Proc. Natl Acad. Sci. USA
<http://dx.doi.org/10.1073/pnas.1110442109> (2012)

BIOMIMETICS

Synthetic silk inspired by insect

The green lacewing (*Mallada signata*), an insect used in biological pest control, has inspired the creation of an artificial silk.

To protect its progeny from predators, the female lacewing suspends its eggs from the underside of a leaf using a thin silk stalk of remarkable tensile strength. To forge a similar stalk, Thomas Scheibel and Felix Bauer at the University



DINOSAURS

Weighing extinct animals

Knowing an extinct animal's mass is crucial for estimating its physiological traits but the standard technique — in which a model of the animal is made and its mass then calculated from its density — has been criticized for being too subjective.

Bill Sellers at the University of Manchester, UK, and his team laser-scanned the skeletons of 14 large mammals, including the bison and the elephant. The researchers used the scans to mathematically derive 'convex hulls' of the bones — the minimum volume that encloses a set of points, akin to gift-wrapping a teapot — and converted these volumes into estimates of mass. These were then compared to the known values.

The method consistently underestimated true body mass by 21%. Thus, using this method and then adding 21% should provide more accurate predictions. When the team used the corrected technique on *Giraffatitan brancai*, one of the largest dinosaur skeletons in the world, the beast clocked in at 23,200 kilograms, similar to recent volumetric estimates.

Biol. Lett. <http://dx.doi.org/10.1098/rsbl.2012.0263> (2012)

of Bayreuth in Germany developed a synthetic protein based on a repeating amino-acid pattern found in one of the proteins in lacewing silk. The researchers introduced a synthetic gene that codes for the protein into *Escherichia coli* bacteria.

Filaments of the bacteria-produced silk proved to be almost as strong as natural lacewing silk, except at high humidity, and more elastic.

Angew. Chem. Int. Edn.
<http://dx.doi.org/10.1002/anie.201200591> (2012)

ZOOLOGY

Live birth without a placenta

Some sharks and rays give birth to live young but lack placentas or umbilical cords. So how do their embryos obtain oxygen?

Taketeru Tomita of the Hokkaido University Museum in Hakodate, Japan, and his team used ultrasound to study a pregnant manta ray (*Manta alfredi*) to find out. They found that the embryo rhythmically raises and lowers its jaw, pumping uterine fluid into its mouth and through holes behind its eyes called spiracles. After birth, the spiracles shrink as the animal becomes able to force water over its gills by swimming.

Biol. Lett. <http://dx.doi.org/10.1098/rsbl.2012.0288> (2012)

DRUG DISCOVERY

Melanoma pathway targeted

A drug that targets the RAS signalling cascade — which is thought to drive tumour growth in 20% of cancers — improves survival in some patients with advanced melanoma.