RESEARCH HIGHLIGHTS

Selections from the scientific literature

ASTRONOMY

Missing Galactic baryons spotted

More than half of the expected number of baryons — subatomic particles that make up our everyday world, such as protons and neutrons — in the Milky Way are unaccounted for, but Anjali Gupta of Ohio State University in Columbus and her colleagues seem to have spotted the missing matter. They analysed X-ray satellite data and found evidence of a hot gas halo around the Galaxy extending for 100 kiloparsecs. The authors estimate the mass of the halo to be between 10 billion and 60 billion times the mass of the Sun. The cloud could account for the missing particles, they conclude.

Astrophys. J. Lett. 756, **L8 (2012)**

ZOOLOGY

Mother's stress slows learning

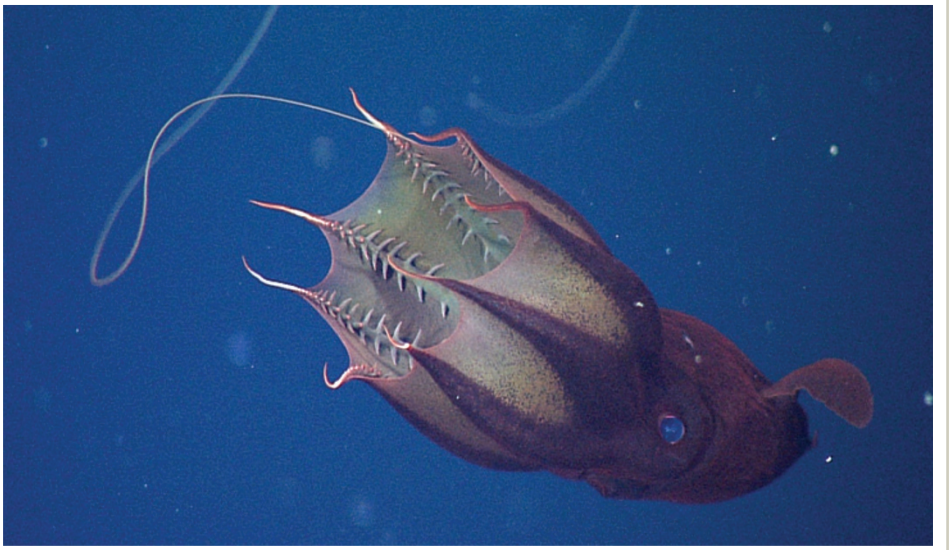
Female sticklebacks that are confronted by predators while producing eggs generate offspring with impaired learning abilities.

Katie McGhee of the University of Illinois at Urbana-Champaign and her colleagues used a fake predator to repeatedly chase one set of female threespined sticklebacks (*Gasterosteus aculeatus*; **pictured**), while leaving another set to produce their eggs in peace. Adult offspring from both groups initially showed similar performances in a task in which the animals learned to associate the colour blue with a food reward. But after five days of the task, the offspring of mothers exposed to predators took twice as long to find the food as did the control group.

At least in these fish, maternal stress can have long-lasting effects on the learning ability of offspring, the authors say.

Biol. Lett. **http://dx.doi.org/10.1098/rsbl.2012.0685 (2012)**

B. WATTS/ALAMY



MBARI

ANIMAL BEHAVIOUR

Feeding habits of the vampire squid

Drifting in the deep ocean, the vampire squid (*Vampyroteuthis infernalis*; pictured) has features of both octopuses and squid. Researchers have now worked out what and how this mysterious creature eats.

V. infernalis — which is related to octopuses and squid — has eight arms and, instead of the feeding tentacles used by squid to capture prey, has two long, retractile filaments. Hendrik Hoving and Bruce Robison at the Monterey Bay Aquarium Research Institute in Moss Landing, California, studied the feeding behaviour of *V. infernalis* using deep-sea video recordings, lab feeding studies and morphological examinations. They conclude that the filaments help the animals to capture food, which includes zooplankton, crustacean remains and even faeces.

The filaments are homologous to the arms of octopuses and other cephalopods, although the creatures' feeding habits are very different, the authors suggest.

Proc. R. Soc. B **http://dx.doi.org/10.1098/rspb.2012.1357 (2012)**

NEUROSCIENCE

Responses vary in autistic brains

Autism may emerge from a general unreliability of neuronal responses in the brain's cortex, rather than from a deficiency in one particular brain area or circuit.

Ilan Dinstein at Carnegie Mellon University in Pittsburgh, Pennsylvania, and his colleagues studied 14 people with autism and 14 people without the disorder. The researchers used functional magnetic resonance imaging to monitor cortical responsiveness as they stimulated the participants' sight, hearing and touch in dozens of trials.

Responses in the visual, auditory and somatosensory areas of the cortex all varied much more between trials for the volunteers with autism than for the controls. The authors propose that this may reflect inappropriate development of neuronal connections, or synapses, in the autistic brain.

Neuron 75, **981–991 (2012)**