

ASTRONOMY

Spots spotted on Vega star

One of the brightest stars in the night sky seems to have surface structures called starspots — a surprising finding for this particular star.

Torsten Böhm at the University of Toulouse in France and his colleagues used a telescope at France's Haute-Provence Observatory to look at Vega, a well-studied star that is roughly double the mass of the Sun. They found evidence of many faint spots: structures caused by magnetic-field changes that slightly alter the temperature in these areas. Vega is an 'A-type' star, a group thought to be incapable of generating magnetic fields and hence these spots.

The starspots could be linked to a weak surface magnetic field that was detected from Vega in 2009, the authors say.

Astron. Astrophys. 577, A64 (2015)

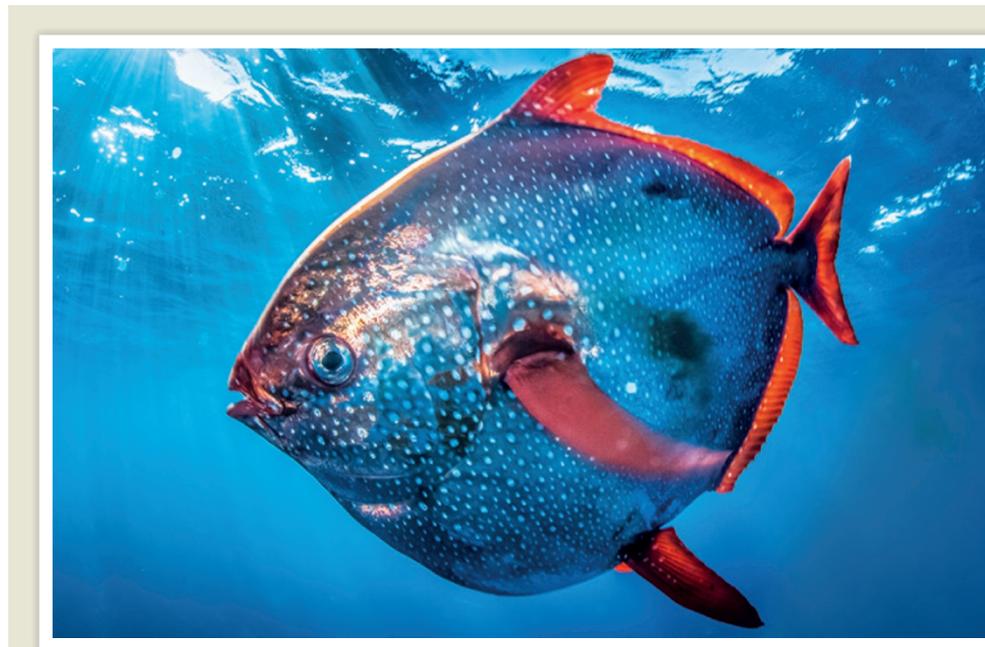
NEUROSCIENCE

A way to regrow nerve fibres

Injured neurons in fruit flies and mice regrow better when the activity of *Rtca*, an RNA-processing enzyme, is reduced.

Permanent damage to the central nervous system can occur when injured nerve cells fail to regenerate their axons — the long, impulse-transmitting part of the nerve cell. Yuh Nung Jan at the University of California in San Francisco and his colleagues screened fruit flies (*Drosophila melanogaster*) and found that severed axons regrew more effectively in mutant flies with reduced activity of *Rtca*.

When the enzyme was overexpressed, axons were regenerated less often and were much shorter than in normal



RALPH PACE

ANIMAL PHYSIOLOGY

Fish keeps warm in cold waters

A fish is able to maintain a warm body temperature in deep, cold waters.

Some species such as tuna can keep parts of their bodies warm, but Nicholas Wegner of the National Marine Fisheries Service in La Jolla, California, and his colleagues report that the deep-swimming opah (*Lampris guttatus*; pictured) can make its entire body — including the heart — warmer than its environment by

3–6°C. They measured the temperature and studied the anatomy of 22 opahs captured off the coast of California at depths of 50–300 metres. They found that the animal generates heat by flapping its pectoral fins and retains it using specialized blood-vessel structures in the gills.

This warmth probably boosts the power output of the fish's muscles, the authors say.

Science 348, 786–789 (2015)

flies. Similar results were seen in rat cells and in mice.

Altering the activity of *Rtca* or other molecules that it regulates could offer treatments for nervous-system injuries, the authors suggest.

Nature Neurosci. <http://doi.org/4m3> (2015)

OPTICS

Iron atoms slow down X-rays

Researchers have made an X-ray beam travel 10,000 times slower than the speed of light — an effect seen before only

for visible light.

Physicists have previously slowed light waves to a crawl and even stopped them by controlling the transparency of the medium through which the light passed — usually an ultracold gas of atoms such as sodium. They did this by tuning the interaction of light with the electrons in the gas. Now, a team led by Jörg Evers of the Max Planck Institute for Nuclear Physics in Heidelberg, Germany, has seen a similar effect by letting X-rays from a synchrotron interact with the nuclei of iron atoms, rather than with their electrons.

Controlling X-rays in this way could be useful for high-resolution imaging and other applications.

Phys. Rev. Lett. <http://dx.doi.org/10.1103/physrevlett.114.203601> (2015)

CANCER

Organoids mimic tumours

Human cancer tissue that is grown into 'organoids' in the laboratory could be used to test drug responses and to personalize therapy.

Organoids are 3D cultures