

RESEARCH HIGHLIGHTS

Selections from the scientific literature

STEM CELLS

Cord-blood cells made plentiful

A group of small molecules can spur the growth of stem cells from umbilical cord blood. These could one day be used as transplants to treat, for example, certain blood cancers.

Guy Sauvageau at the University of Montreal in Canada and his colleagues screened a library of small molecules for ones that stimulate the proliferation of human cord-blood stem cells that drive the long-term production of all blood cells. They found one molecule that worked particularly well and synthesized an optimized version, UM171, that performed even better. This molecule triggered the expansion of cord-blood stem cells that, when transplanted into mice, generated the full array of mature blood cells.

Cord-blood stem cells could be an alternative to bone-marrow transplants, which are currently in short supply, the authors say.

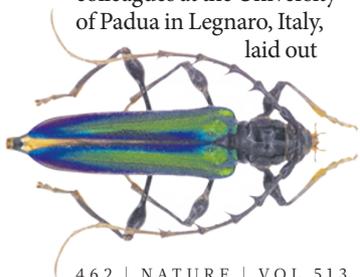
Science 345, 1509–1512 (2014)

ECOLOGY

Boring invaders held at the border

Insect traps near busy ports could provide crucial early warnings of the arrival of invasive tree-boring beetles.

These pests can damage forests and can travel around the world hidden in wood. So Davide Rassati and his colleagues at the University of Padua in Legnaro, Italy, laid out



bait to lure the beetles into traps at 15 Italian ports and in the surrounding forests. They caught 14 alien species, including *Cordylomera spinicornis* (pictured), along with native beetles from the Scolytinae, Cerambycidae and Buprestidae families, including four species never before found in Italy. The number of alien species correlated with the volume of imports at the ports.

The authors suggest that traps in busy ports could help the fight against these economically damaging invasive pests. *J. Appl. Ecol.* <http://doi.org/vrj> (2014)



ZOOLOGY

Clock ticks for tiny group of fish

One of Earth's rarest fish, the Devil's Hole pupfish, is often cited as an unusual example of a small but long-lasting population of animals. But these fish may not have been isolated for as long as once thought.

Less than 100 adult pupfish (*Cyprinodon diabolis*, pictured) live in a small pool in the southwestern United States, and they have supposedly been there for 10,000 to 20,000 years. Michael Reed at Tufts University in Medford, Massachusetts, and Craig

Stockwell at North Dakota State University in Fargo analysed genetic data from *C. diabolis*, along with their numbers over time. They concluded that the fish have been living in this pool for only a few hundred to a few thousand years, and will probably become extinct within the next 400 to 3,000 years.

This means that *C. diabolis* is no exception to the rule that small, isolated populations cannot persist for long.

Proc. R. Soc. B 20141648 (2014)

VIROLOGY

Flu virus comes in various flavours

The proteins that make up the influenza viral particle differ depending on which species the virus was generated in.

The composition of a virus is important for its ability to infect and spread. Edward Hutchinson, Ervin Fodor and their colleagues at the University of Oxford, UK, used mass spectrometry to identify and quantify the proteins in seven different flu viruses derived from either mammalian tissue or chicken

eggs. The authors found a common core architecture of proteins, but some components were unique to the host.

The finding suggests that flu vaccines grown in chicken eggs or mammalian tissue could have different compositions. *Nature Commun.* 5, 4816 (2014)

CANCER IMMUNOLOGY

Therapy broadens immune response

A drug that activates the immune system against a type of skin cancer does so by promoting new immune responses to cancer, rather than

STONE NATURE PHOTOGRAPHY/ALAMY

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