

EVOLUTION

Early life liked it hot

The last universal common ancestor of all life — a microbe dubbed LUCA that existed around 3.5 billion years ago — probably resided in a hydrothermal vent that had low oxygen levels.

To find out how the organism lived, William Martin and his colleagues at Heinrich Heine University Düsseldorf in Germany reconstructed the evolutionary trees of more than 6 million genes from bacteria and archaea. They identified 355 protein families that were probably in LUCA's genome — these are involved in anaerobic metabolism and fixing carbon dioxide and nitrogen. This suggests that LUCA lived in an environment that was rich in hydrogen, CO₂ and iron, such as a hydrothermal vent.

LUCA may have depended heavily on the geochemistry of the vent to survive.

Nature Microbiol. <http://doi.org/bm2s> (2016)

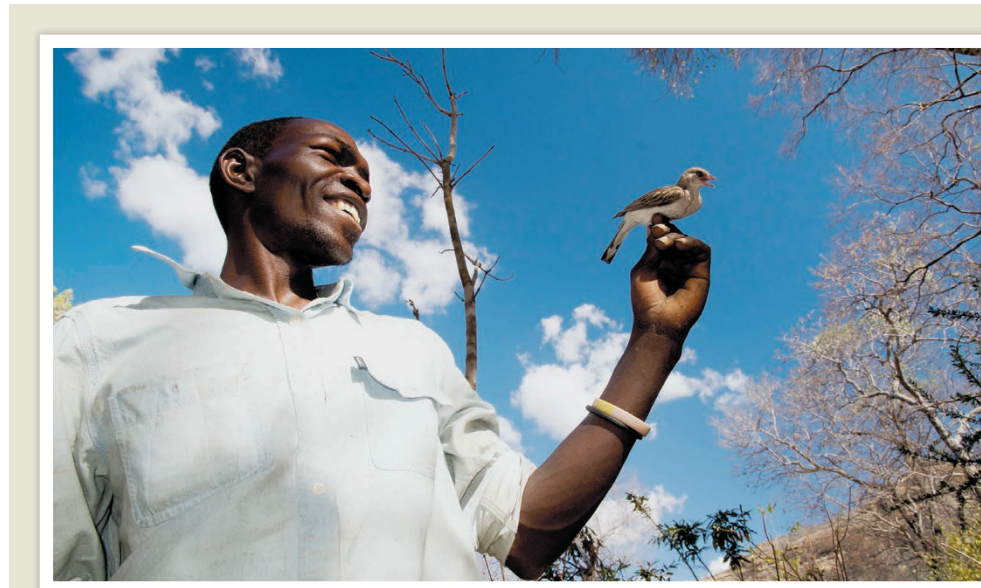
CHEMISTRY

'Molecules' made from superatoms

Chemists have built structures similar to molecules but made up of superatoms — clusters of atoms with some of the same properties as atoms.

To make superatom 'molecules', Xavier Roy and his colleagues at Columbia University in New York City created cobalt–selenium clusters. They then attached two or three clusters to one another with 'arms' comprising various elements.

The team hopes that the technique can be used to make materials with



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BEHAVIOURAL ECOLOGY

Bird helps people to find honey

A bird species responds to the specialized calls of human honey hunters, then leads them to bees' nests.

The greater honeyguide (*Indicator indicator*, pictured with honey hunter) benefits by eating the beeswax left behind by hunters after they break open bees' nests to get the honey. Claire Spottiswoode at the University of Cambridge, UK, and her colleagues found that 75% of nests located by honey hunters in Niassa National Reserve, Mozambique, were found with

the help of the bird. Playing recordings of a traditional trill-grunt call made by the local Yao people while hunting doubled the chances of attracting a honeyguide to 66%, compared with recordings of other human or animal sounds. Overall, the call tripled the chances of finding a bees' nest to 54%.

The ability to understand and respond to human calls is not restricted to domesticated animals, the authors say.

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tailored properties such as heat conduction or the ability to store information magnetically.

Nano Lett. <http://doi.org/bmw5> (2016)

PLANETARY SCIENCE

Revived telescope finds 104 planets

Astronomers have spied 104 new worlds in the Milky Way using NASA's Kepler Space Telescope.

Part of Kepler broke down in 2013, but engineers managed to repair it and send

it on a fresh mission, dubbed K2. This latest discovery, from Ian Crossfield at the University of Arizona in Tucson and an international team, is the biggest so far for the K2 mission. The team reports numerous planetary candidates, and confirmed more than 100 as exoplanets using additional observations from ground-based telescopes. They found that the majority of planets are smaller than Neptune, and probably have thick atmospheres and rocky cores. Nearly 40 have a radius that is about twice that of Earth or smaller, and 4 of those

orbit the same red dwarf star.

Two of the planets orbiting the red dwarf could have irradiation levels that are similar to Earth's, making life on those planets a possibility, according to the authors.

Astrophys. J. Suppl. Ser. (in the press); preprint at <http://arxiv.org/abs/1607.05263> (2016)

NEURODEGENERATION

How immune cells clear amyloid

Three key proteins allow immune cells in the brain to clear out a protein called