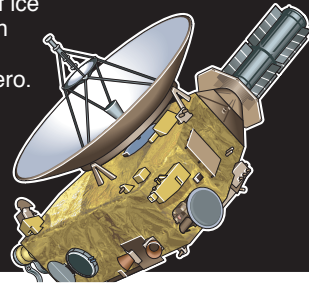


Scientific achievements of 2015

CLOSE ENCOUNTER WITH PLUTO

NASA's **New Horizon** spacecraft swoops past distant Pluto, sending back images of ice mountains and frozen nitrogen glaciers flowing at -235°C , 38 degrees above absolute zero. The July flyby of the dwarf planet reveals evidence of methane ice, carbon monoxide ice and water ice in the bright Tombaugh Regio area



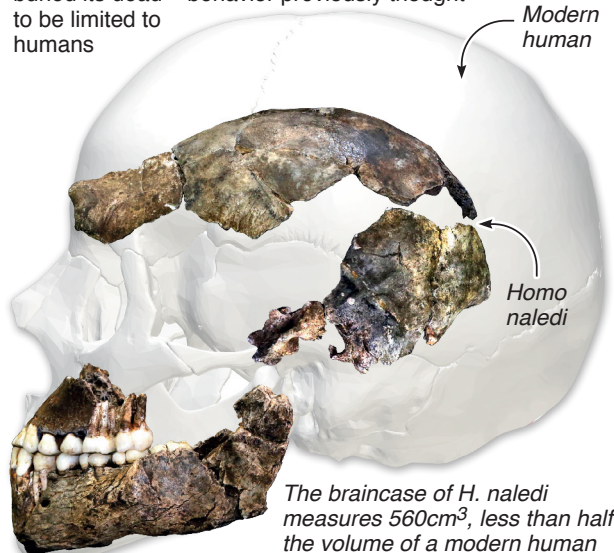
EBOLA VACCINE BREAKTHROUGH

Following the 2014 Ebola epidemic in West Africa, a clinical trial of Canada's Public Health Agency's vaccine, **VSV-EBOV**, developed by Merck, Sharp & Dohme, leads to 100% protection. The vaccine combines a fragment of the Ebola virus with another, safer virus to train the immune system to beat Ebola



NEW HUMAN ANCESTOR

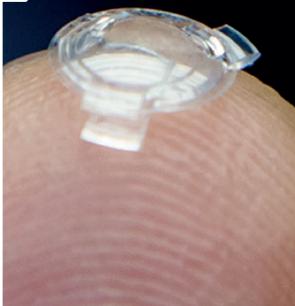
Fossils of a previously unknown human ancestor are found in a cave in South Africa. Similar to small-bodied humans, **Homo naledi** adds yet another branch to humanity's family tree. Homo naledi appears to have buried its dead – behavior previously thought to be limited to humans



The braincase of *H. naledi* measures 560cm^3 , less than half the volume of a modern human

BIONIC LENS IMPLANT

A new intraocular lens, developed by OcuMetrics Technology Corp., enables patients to see three times better than standard 20/20 vision. The procedure, in which the lens inside the eye is replaced with an artificial lens, insertable through a 2.7mm incision, can be done in an outpatient clinic in just eight minutes



CRISPR GENE-EDITING ADVANCEMENTS

Genome-editing technology **CRISPR** is used in China to modify the DNA of a human embryo. Harvard geneticists use CRISPR to insert genes from an extinct woolly mammoth into lab-grown living cells of a modern elephant



NEW STATE OF MATTER



The fundamental states of matter – solid, liquid, and gas – are joined by an exotic new state called **Jahn-Teller metal**. By inserting the metallic element **rubidium** into **buckyballs** – spherical carbon-60 molecules – researchers in Japan have created a crystalline structure that has the properties of an insulator, superconductor and magnet, while acting as a metal

NEW ANTIBIOTIC

Scientists discover a new antibiotic, the first in nearly 30 years, with the potential to treat fatal bacterial infections such as MRSA. **Teixobactin** works by binding to fatty lipids that form building blocks used by bacteria to build cell walls



FREE-FLOWING WATER ON MARS

NASA's **Mars Reconnaissance Orbiter** provides evidence of the presence of liquid water on Mars – 100 metre-long streaks of salty water that vary with the seasons. Hydrated perchlorate salts also make the presence of living organisms on the planet more likely

