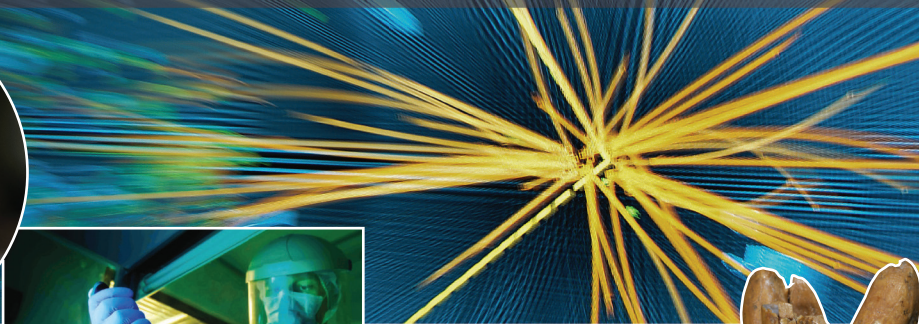
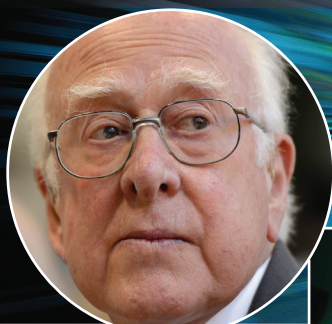


"God particle" tops year of scientific achievements

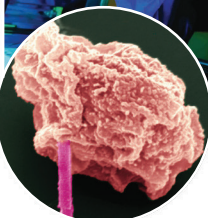
The observation of an elusive subatomic particle, known as the Higgs boson, has been heralded by the journal *Science* as the most important scientific discovery of 2012



■ **Higgs boson:** First hypothesised more than 40 years ago by British theoretical physicist **Peter Higgs** (above). Nicknamed the **God particle**, it holds key to explaining how other elementary particles – those that aren't made up of smaller particles – such as electrons and quarks, get their mass



■ **Denisovan DNA:** Breakthrough method sequences 99.9% of genome of archaic human that lived in Siberia's **Denisova Cave** more than 50,000 years ago. Only tiny scrap of finger bone and two molars have been reliably assigned to Denisovans – close kin to Neandertals

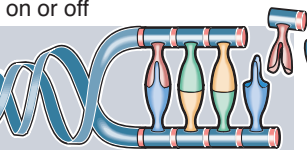


■ **X-ray laser:** In November, first protein structure is revealed by x-ray laser. Scientists determine structure of inactive "precursor" form of an enzyme that's key to survival of **Trypanosoma brucei** – single-celled parasite (left) that causes African sleeping sickness

■ **Majorana fermions:** Discovery of particles that could act as their own antimatter and annihilate themselves. **Particles open up possibility of building stable quantum super-computers**



■ **ENCODE project:** Decade-long, \$288 million study called **Encyclopedia of DNA Elements** builds on **Human Genome Project** which deciphered order of our genetic code. ENCODE discovers that much of genome which was dismissed as **junk DNA** actually plays an essential role, helping to turn genes on or off



■ **Genome engineering:** Genome engineers develop potentially powerful new tools that promise to put the modification of DNA within easy reach of biologists studying variety of organisms, ranging from yeast to humans



■ **Sky Crane:** Even though there was no way to test Curiosity's **entry, descent, and landing (EDL)** system under martian conditions, NASA's sky crane performs flawlessly. **Curiosity** lands a mere 2.4 kilometres from its target after 563 million km journey from Earth

■ **Eggs from stem cells:** Laboratory mice give birth to first live pups born of eggs derived from mouse embryonic stem cells



■ **Neutrinos:** Physicists measure last parameter describing how elusive particles called neutrinos morph into one another. Result may help explain how universe evolved to contain so much matter and so little antimatter

■ **Brain-machine interface:** Electrodes in brain of paralysed human patient capture thought signals which are translated into commands to control robotic arm

