The pages of *Science* and its sister journals jumped with exciting news in 2010. Discoveries about an ancient hominid and the Neandertal genome gave us glimpses of the past, while reports about a synthetic bacterial genome and digitizing our culture exemplified science’s future directions. Other studies tackled the urgent problems facing society today, including the HIV pandemic and the effects of the Deepwater Horizon disaster.

**SCIENCE BREAKTHROUGHS**

*New Hominid Shares Traits with Modern Humans:* Two partial skeletons unearthed from a cave in South Africa belong to a previously unclassified species of hominid that sheds new light on the evolution of our own species. (Berger *et al*, Dirks *et al*, 9 April)

*Neandertal Genome Sequenced:* An international team sequenced the Neandertal genome, using pill-sized samples of bone powder from three Neandertal bones found in a cave in Croatia. (Green *et al*, 7 May)

*First Cell Controlled by Synthetic Genome:* Scientists developed the first cell controlled by a synthetic genome. They hope to use this method to investigate the basic machinery driving all life and to engineer bacteria specially outfitted for tasks such as fuel production or environmental cleanup. (Gibson *et al*, 21 May)

*Vaginal Gel Reduces HIV Infection:* A vaginal gel containing the HIV drug tenofovir showed promise as a safe and effective method for reducing HIV infection in women, according to a major South African trial. (Abdool Karim *et al*, 20 July *Science Express*, 3 September print issue)

*The Effects of the Deepwater Horizon Disaster:* Several papers detected plumes of oil snaking along the sea floor after the blowout and described a remarkable response by Gulf microbes. (Camilli *et al*, 19 August *Science Express*; Hazen *et al*, 24 August *Science Express*; Valentine *et al*, 16 September *Science Express*; 8 October print issue)

*Restoring Vision with Biosynthetic Corneas:* Laboratory-made “biosynthetic” corneas can spur damaged tissue and broken nerves to regenerate, potentially restoring vision in human eyes as well as donor corneas do. (Fagerholm *et al*, 25 August, *Science Translational Medicine*)

*Combating Drug-Resistance in Cancer:* Researchers used information about signaling networks to reveal proteins that reduce cancer cell viability in the presence of certain inhibitors. The results offer new leads for preventing drug resistance in cancers. (Astsaturov *et al*, 21 September, *Science Signaling*)

*Molecular Mimics Prevent Painful Kidney Stones:* Using chemistry techniques, scientists synthesized amino-acid-mimicking molecules that blocked the formation of painful kidney stones. (Loth *et al*, 15 October)

*The Moon Spills Watery Secrets:* A special collection of reports from the Lunar Crater Observation and Sensing Satellite (LCROSS) experiment and the Lunar Reconnaissance Orbiter (LRO) mission revealed new details about the composition and history of the Moon’s surface. (Colaprete *et al* and others, 22 October)

*Digitized Books and Culturomics:* Researchers digitized approximately 4 percent of all the books ever printed, and their computational analysis of the language in them paints a vivid picture of how the world has changed in recent centuries. (Michel *et al*, 16 December *Science Express*, 14 January 2011 print issue)