systems, but is the relationship between data and models a one-way process? Massonnet et al. used climate models to assess the quality of the observations that such models use. Starting with a simple model and progressing to more complex ones, the authors show that models are better when they are assessed against the most recent, most advanced, and most independent observational references. These findings should help to evaluate the quality of observational data sets and provide guidance for more objective data set selection. —HJS

Science, this issue p. 452

NEURONAL MATURATION
Integration of adult-born brain cells
Physical exercise or exploration of a novel environment greatly influences the production, maturation, and connectivity of adult-born neurons. Alvarez et al. investigated how experience affects the incorporation of adult-born neurons into the hippocampal network. A brief period of sensory enrichment when new neurons were 9 to 10 days old led to neurons having larger dendrites and more functional spine synapses. A disynaptic preexisting feedback circuit promoted the growth and integration of the new cells. —PRS

Science, this issue p. 459

VASCULAR DISEASE
Wreaking havoc while (growth-)arrested
Cells enter a state of senescence in response to certain stresses. Studying mouse models, Childs et al. examined the role of senescent lipid-loaded macrophages (so-called “foam cells”) in the pathogenesis of atherosclerosis. At early stages of atherosclerosis, senescent foam cells promoted the expression of inflammatory cytokines. At later stages, they promoted the expression of matrix metalloproteases implicated in the rupture of atherosclerotic plaque, which can lead to blood clots. Experimental removal of the senescent cells had beneficial effects at both stages of the disease. —PAK

Science, this issue p. 472

APE GENETICS
Of chimpanzees and bonobos
Modern non-African human genomes contain genomic remnants that suggest that there was interbreeding between ancient humans and archaic hominoid lineages. Now, de Manuel et al. show similar ancestral interbreeding between the ancestors of today’s chimpanzees and bonobos (see the Perspective by Hoelzel). The study also provides population-specific genetic markers that may be valuable for conservation efforts. —LMZ

Science, this issue p. 477; see also p. 414

IMPACT CRATERS
On the origin of Orientale basin
Orientale basin is a major impact crater on the Moon, which is hard to see from Earth because it is right on the western edge of the lunar nearside. Relatively undisturbed by later events, Orientale serves as a prototype for understanding large impact craters throughout the solar system. Zuber et al. used the Gravity Recovery and Interior Laboratory (GRAIL) mission to map the gravitational field around the crater in great detail by flying the twin spacecraft as little as 2 km above the surface. Johnson et al. performed a sophisticated computer simulation of the impact and its subsequent evolution, designed to match the data from GRAIL. Together, these studies reveal how major impacts affect the lunar surface and will aid our understanding of other impacts on rocky planets and moons. —KTS

Science, this issue pp. 438 and 441

ANTIBIOTIC RESISTANCE
Quantifying the alarm from antibiotic resistance
Antibiotic resistance is a major global fear, but how fearful should we be? Multidrug resistance (MDR) is high among developing economies that are vulnerable to purveyors of substandard drugs and where over-the-counter sales are not controlled. Lim et al. collected mortality data on bacteremia from 10 public hospitals in northeast Thailand between 2004 and 2010. During this period, the incidence of bacteremia increased, and high case fatality rates were observed for MDR strains.
especially hospital-acquired Acinetobacter spp. Extrapolating to the whole of Thailand for 2010 indicates that among patients with hospital-acquired MDR bacterial infection, 43% of deaths represented excess mortality caused by MDR—which is high compared with similar estimates for the United States or Europe. —CA


**BIOETHICS**

**Personalized medicine by another name**

A vision of the Human Genome Project was that molecular profiling would enable identification of the molecular underpinnings of disease on an individual basis; “personalized medicine” became a watchword. However, a rebranding has been occurring since roughly 2012 in which the concept has been transmogrified into “precision medicine.” Juenst et al. describe conclusions from interviews and case studies conducted since 2011 with 143 supporters of personalized genomic medicine. The terminology change may minimize unrealistic expectations. However, a shift from “personal” could mean a reversal of the trend toward patient autonomy in decision-making. The need for population-level sequencing to identify groups with particular molecular profiles carries its own risks in terms of pressures to participate and the possibility of stigmatization. —BJ


**CLIMATOLOGY**

**Atmospheric circulation in a warmer world**

One of the most visible effects of climate change in recent decades has been the reduction of sea ice in the Arctic, which has raised the question of how weather at lower latitudes might be affected. This question has lately been asked often after a number of particularly cold winters in parts of the Northern Hemisphere. Meleshko et al. conducted a modeling study of how the polar and mid-latitude atmosphere might respond when a summer sea ice–free state is reached in the Arctic, as is projected for the next century. They find that although climate warming enhances northward heat transport, the resulting increase in polar surface air temperatures does not cause increased oscillation of atmospheric planetary waves, as has been proposed elsewhere. —HJS


**SUPERCONDUCTIVITY**

**Controlling superconducting pairing**

Interfacing superconductors with materials that have strong spin–orbit coupling can modify the superconductivity in unusual ways. Hart *et al.* sandwiched a HgTe quantum well between two superconducting leads, forming a junction. Normally, Cooper pairs—whose formation makes materials superconductive—consist of electrons of opposite momenta. Applying a magnetic field in the plane of the well, combined with an unusual electronic spin texture in HgTe, caused the Cooper pairs in the junction to acquire a nonzero total momentum. By comparing their data to theoretical models, the researchers were able to probe the nature of spin–orbit coupling in the system. —JS

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**GERM CELL DEVELOPMENT**

**Primate germ cell origin**

For species survival, reliable and efficient gamete production is crucial. In mammals, gametes arise from primordial germ cells (PGCs) that make their way to the developing gonads. Much is known about murine germ cell specification in the embryonic epiblast, but the mechanism in primates is less clear. Murine and primate embryos display different anatomical structures during development, so PGC origin may also vary. By examining cynomolgus monkeys *(Macaca fascicularis)*, Sasaki *et al.* found that cynomolgus PGCs originate in the dorsal amnion, which itself provides signals to specify these cells. PGCs then migrate to the posterior yolk sac and eventually to the gonad. Preliminary analyses suggest that human germ cells may have a similar amniotic origin. —BAP


**BARRIED GALAXIES**

**Stellar bars knock holes in galaxy discs**

About half of all spiral galaxies have a bar structure in their central region, but how these morphological features evolve over time remains uncertain. Kim *et al.* studied the distribution of infrared light in more than a hundred barred galaxies, using decomposition to separate the bar from other galaxy components. They quantify a deficit in surface brightness that appears around strong bars and investigate how it varies with other galaxy properties. They conclude that as the bar evolves, stars that were on near-circular disc orbits are perturbed onto the highly eccentric orbits that form the bar, causing the deficit. —KTS


—JS

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