London **5**

Gene Therapy Trial for Cystic Fibrosis Saved

A gene therapy trial for cystic fibrosis (CF) has found funding from the U.K. government and will go ahead this spring. The phase II trial faced cancellation last summer after the researchers conducting it ran out of funding. But the U.K. Medical Research Council (MRC) and National Institute for Health Research are now providing £3.1 million to support the trial, with an additional £1.2 million from MRC for basic research on using a viral vector to deliver the gene. CF causes a buildup of mucus in the lungs and digestive tract that leads to life-threatening health problems. Scientists will use lipids to deliver a working copy of the gene that causes CF into the lungs of 130 patients, who will inhale the therapy once a month for a year.

New Delhi **6**

India's Budget Plan Disappoints Scientists

The announcement of India's maiden mission to Mars is not cheering Indian scientists who are disappointed with proposed spending increases for research in a new government budget plan. The annual budget proposal presented to India's parliament on 16 March by Finance Minister Pranab Mukherjee calls for the operating budgets for science to rise, on average, by about 5% in 2012–2013—less than many scientists expected.

Prime Minister Manmohan Singh had raised expectations in parts of India's scientific community when he said earlier this year that India needed to double the share of its gross domestic product spent on research to 2% over the next 5 years.

But the new budget "is not good news" because the increases don't keep pace with inflation, which has been running at about 10%, says physicist Ajay K. Sood, president of the Indian Academy of Sciences in Bangalore.

"Things may look up in the coming years," says space scientist Krishnaswamy Kasturirangan, a member of a government planning commission that is preparing a 5-year science spending plan for the government. But he warns that "some serious prioritization needs to be undertaken by the scientific departments."

http://scim.ag/Indiabudget

Grazed Grasslands Biodiverse, Too

Tropical rainforests may boast the highest number of plant species per hectare, but at smaller scales, the grasslands of Eastern Europe (above) and Argentina top the biodiversity list. A mountain grassland in central Argentina packs 89 species into a single square meter and several meadows in Romania and the Czech Republic are on par, researchers reported last week in the *Journal of Vegetation Science*. The researchers scanned millions of published and unpublished plant surveys in different sized plots to learn how maximum diversity changes across different spatial scales.

Species-rich grasslands tend to be over limestone, and such grasslands were once quite common in Europe. However, changes in land-use practices have made these meadows quite rare. Unlike in rainforests, where preservation requires minimizing human activity, protecting these grasslands involves ongoing management: mowing or grazing—in some cases for centuries—is part of the secret to the grasslands' richness.

NEWSMAKERS

Three Q's

Birgeneau

Physicist **Robert Birgeneau** announced last week that he will step down at the end of 2012 after 8 years as chancellor of the University of California, Berkeley. His tenure coincided with an economic crisis in California that resulted in drastically reduced state funding for the university.

Q: How well has Berkeley managed to maintain its strength in the sciences in the face of these cuts?

The funding we get from the state to run Berkeley has dropped by more than a factor of two, but our research funding has gone up by 40%. They've almost cancelled each other out. … But I would say most importantly, as measured by Sloan Research Fellowships [which provide funding for early-career scientists] we've hired really, really talented young faculty. So I don't think I'm being Pollyannaish to say that we have largely weathered this storm.

Q: But I've heard faculty say it's getting harder to attract and retain top talent. Isn't that true?

That's one of these urban myths. In the past year our faculty retention rate is the highest it's been in the past decade.

Q: What are you most looking forward to after you step down?

Doing physics! I have a small research group and our focus has been on these new iron chalcogenide and iron pnictide superconductors, which are fascinating materials. It's an unexpectedly rich new area of solid state physics.

FINDINGS

Immune Cells Alleviate Symptoms Of Rett Syndrome in Mice

One out of about every 10,000 girls is born with Rett syndrome, a genetic condition that stunts growth, causes autism-like behavior, and impairs sleeping, breathing, and movement. A new study with mice suggests that microglia, a type of immune cell in the brain, play a role in the disorder and may >>

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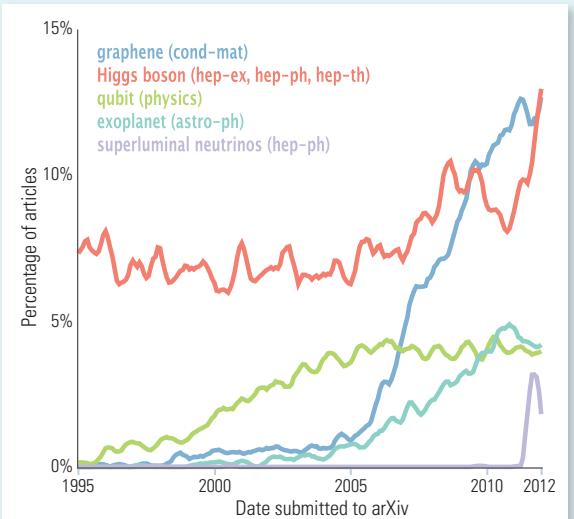
Random Sample

Charting the Culture of Science

Graphene research scooped the 2010 Nobel Prize in physics—but when did it really begin to take hold in the scientific community? What about carbon nanotubes? Or string theory? A team of scientists based at Harvard University has created a tool, called Bookworm, which can reveal such historical trends in the language of research with the click of a button.



What's hot? Bookworm reveals the popularity of topics in a research area, such as high-energy physics (hep). Graphene is booming, but faster-than-light neutrinos were a flash in the pan.

The research papers were provided by Paul Ginsparg, a physicist at Cornell University, and the founder of arXiv, the online archive of preprint articles for mathematical sciences. arXiv is the perfect data set for this tool because its articles are open access, which "implies being able to treat articles as computable objects, to ingest them into a database and number-crunch them," Ginsparg says. And as of today, Bookworm for arXiv is available for anyone to use at arxiv.culturomics.org.

Converting the 7 billion words from 730,000 arXiv research articles into useable data isn't trivial. But the team is led by Jean-Baptiste Michel and Erez Lieberman Aiden, the Harvard scientists who converted millions of books digitized by Google into useable data, spawning a field called culturomics (*Science*, 17 December 2010, p. 1600). So the Bookworm team—including Benjamin Schmidt, Neva Cherniavsky, and Martin Camacho—were able to build from the same underlying code.

The term "graphene," it turns out, was no more common than the more general term "fullerene" until 2006. Then it exploded onto the scene, sucking attention away from earlier trendsetting fullerenes such as "carbon nanotubes."

BY THE NUMBERS

$10 million Price tag to name Max Planck Florida Institute's new medical research lab, part of its campaign to raise $50 million in private donations over the next 5 years.

21 km Height above Earth from which Austrian skydiver Felix Baumgartner jumped on 15 March. The jump was a test run for a 37-kilometer, record-breaking jump this summer—of interest to NASA engineers working on astronaut escape systems.

10 km^3 The volume of sand—enough to bury Manhattan by 160 meters—spewed by undersea geysers in the North Sea hundreds of thousands of years ago, according to a study reported online 19 March in *Geology*.

(PHOTO) NASA/JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY/CARNEGIE INSTITUTION OF WASHINGTON

>>FINDINGS

even be a promising therapeutic target.

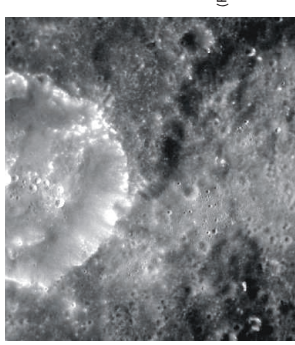
Neuroimmunologist Jonathan Kipnis of the University of Virginia in Charlottesville and colleagues transplanted bone marrow from normal mice into mice with a gene mutation like the one that causes Rett syndrome, thereby giving the mutants a new set of immune cells. Untreated mice got sick and died within a few weeks of birth, but the treated mice had far fewer symptoms and longer lifespans, the team reports in *Nature*. The benefit seems to come from repopulating the brain with genetically normal microglia, whose job it is to clean up cellular debris. Any clinical trials are a long way off, but Kipnis says the findings raise the possibility of using bone marrow transplants to treat girls with Rett syndrome. **http://scim.ag/RettSyn**

More, More Iron for Mercury

The solar system's Iron Planet is living up to its name. A team on the MESSENGER mission orbiting Mercury reports online in this week's issue of *Science* the discovery of more iron than previously thought deep in the planet's interior.

Finding unseen iron required exquisitely sensitive measurements of the motions of both the MESSENGER spacecraft and Mercury. Using measurements of the Doppler frequency shift in the spacecraft's radio signal, the team gauged the variations of gravity across Mercury. Those, in turn, depend on where mass is concentrated in the interior. The internal mass distribution also affects the tilt of Mercury's axis of rotation and the speed of rotation, which were measured using Earth-based radar.

The combined gravity and radar data point to plenty of iron in Mercury. Much of it is likely in the liquid core, now seen to extend 2030 kilometers from the center of Mercury, or 83% of the planetary radius. And the team sees another, unexpected place iron may be stored: a layer of iron sulfide that could have frozen out of the liquid core. That electrically conductive layer might explain Mercury's oddly weak magnetic field. **http://scim.ag/mercuryiron**



Iron inside. An iron sulfide layer may extend Mercury's iron core.

CREDITS (TOP TO BOTTOM): (GRAPH SOURCE) ARXIV.CULTUROMICS.ORG;

Science LIVE

Join us on **Thursday, 29 March**, at 3 p.m. EDT for a live chat on **the future of personalized genomics**. Talk with experts about how full genome scans could revolutionize personal medicine. **http://scim.ag/science-live**

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