**NEWSMAKERS**

**Three O’s**

Lured by a 5-year, $40 million investment package, neglected diseases expert Peter Hotez, 53, is leaving George Washington University in Washington, D.C., to set up the National School of Tropical Medicine at Baylor College of Medicine in Houston, Texas. The Sabin Vaccine Institute, which he heads, will relocate its 20-person product development arm to Texas Children’s Hospital.

**Q: Why the move?**
The Texas Children’s Hospital has agreed to become a major investor in Sabin’s vaccine development. Other donors, such as the Gates Foundation and the Dutch government, emphasize the need for co-investors because vaccine development is so expensive. At the same time, Baylor is creating the first school of tropical medicine in the United States. It’s an extraordinary opportunity.

**Q: There’s training in tropical medicine elsewhere. Why a specialized school?**
Schools of public health, where most of the training takes place, don’t have the same technology focus that our school will have. Students will really learn the nuts and bolts of pilot manufacturing, regulatory filings, clinical trials—all of the things you need to do to produce vaccines.

**Genetic Mapmaker**

Ronald Davis of Stanford University has won the 2011 Gruber Prize in genetics, announced 8 June. The prize recognizes Davis’s groundbreaking work on recombinant DNA techniques. He showed that sequence variants in genomes could be used to make physical and genetic maps and also helped develop the first microarrays.

While still a graduate student at the California Institute of Technology, Davis developed a technique to physically map the locations of genes based on differences between strands of DNA visible under an electron microscope. The technology was used to verify that sequences jump around in the yeast genome. David’s work encouraged us to think you could map the human genome,” says genomics David Botstein of Princeton University, who calls Davis “a superior craftsman.” Botstein, a past Gruber prize winner, co-authored with Davis and two others a seminal 1980 paper on making a human genome map.

Davis’s lab boasts several pioneering accomplishments: the development of vectors for cloning DNA in order to isolate genes, artificial chromosomes in yeast, and tools that allowed researchers to replace one nucleotide with another in yeast and bacteria.

These advances took colleagues some getting used to, says Davis. But, he says, “That was the beginning of the genomic era.”

**FINDINGS**

**Tut Tomb’s Spotty History**

King Tutankhamen’s tomb was never plundered, so when Howard Carter discovered it in 1922, the burial chamber was nearly intact. But it had been invaded: Hundreds of brown spots freckling the chamber’s painted walls indicate that bacteria or fungi entered the tomb before his subjects sealed it. The spots are visible in photos taken during the tomb’s unveiling, but their origin has mystified scientists.

Last year, researchers from the Getty Conservation Institute, which helps the Egyptian Supreme Council of Antiquities maintain the tomb, scraped material from the spots and sent it to Harvard University microbiologist Ralph Mitchell, who’s made a career linking microbial and human history. Mitchell and colleagues identified no living microbes, but they did find melanin pigments, which are frequently left behind by bacterial or fungal growth. Mitchell postulates that when Tut died suddenly as a teenager, his burial was rushed and the tomb was sealed before the paint could dry. Bacteria or fungi could have thrived for years in the moist environment until the tomb dried out.

Mitchell hopes further protein and DNA analysis of the spots will reveal more about the organisms that left their mark. “This is still a mystery,” he says.

**The Diving Bell and the Spider**

The water spider spends its life underwater but it needs oxygen to breathe. So when it visits the surface, the spider grabs a bubble of air that sticks to its hairy abdomen. It deposits this bubble into a little silk “diving bell” and breathes from the bell like a tank. The bell functions as a gill: as the spider removes oxygen from the bell, more oxygen flows in. Using a microscopic oxygen sensor, researchers from the University of Adelaide in Australia and Humboldt University in Germany determined how gases move across the bell’s surface and found that the spider can stay underwater for up to 24 hours, they report this week in the *Journal of Experimental Biology*. The spider keeps the bell’s volume proportional to its oxygen needs: To eat, it enlarges the bell, puts its food inside, and crawls in after it. Females lay their eggs inside the bell and enlarge it as the brood grows. http://scim.ag/_spiders
Can Brain Scans Predict Music Sales?

A new study suggests that brain scans can reveal information about consumer preferences that couldn’t be gained from old-fashioned marketing research methods like surveys and focus groups.

In 2007, neuroeconomist Gregory Berns of Emory University in Atlanta used functional magnetic resonance imaging to monitor brain activity in 27 teenagers as they listened to dozens of songs from the MySpace pages of unsigned artists. When one of the songs (“Apologize” by OneRepublic) became a huge hit, Berns reexamined his data to see if anything could have predicted it. One hot spot was the nucleus accumbens, a component of the brain’s reward circuitry, he reports in a paper in press at the *Journal of Consumer Psychology.* The average activity elicited by a song in this region correlated with the song’s sales over the next 3 years. Intriguingly, the brain scans predicted commercial success better than whether the subjects reported liking a song.

“This is a really cool result,” says Brian Knutson, a cognitive neuroscientist at Stanford University in Palo Alto, California. He suggests that activity in the nucleus accumbens may provide a pure indication of how much people want something, unencumbered by economic and social considerations. http://scim.ag/brain-music

Random Sample

**Matchmaker, Matchmaker**

Pikas in the Pacific Northwest, kiss your privacy goodbye. This spring, Gregg Treinish, wildlife biologist, founder, and director of Adventurers and Scientists for Conservation (ASC), recruited 22 hikers on the Pacific Crest Trail from Campo, California, to Manning Park, British Columbia, to spy on the small, furry mammals. The hikers are recording pika sightings, straw nests, and even urine stains as part of a pilot project to track the impacts of climate change on the creatures.

Recruiting passersby for research is a time-honored tradition: Psychologists designing an experiment often grab stray students for a quick, cheap pilot study before shooting for the big bucks. Treinish wants to apply the same principle to ecological studies: the nonprofit ACS, founded in November 2010, seeks to connect scientists with far-ranging adventurers for “model expeditions that could be repeated on a widespread scale,” he says. Researchers are already using his matchmaking to recruit intrepid explorers to catalog the presence of ice worms in glaciers or record grizzly movements near Yellowstone National Park. “There’s no project too big or too small,” Treinish says.

Elisabeth Holland, a biogeochemist and lead author of the Intergovernmental Panel on Climate Change reports, is on the ASC advisory board. Treinish has also recruited professional adventurers ranging from ocean rower Roz Savage to high-altitude mountaineer Conrad Anker as ASC advisers. Interested adventurers and scientists can register on his Web site: http://adventureandscience.org.

**New Particle a No-Show In Second Act**

It *would* have been the feel-good science story of the year. Two months ago, the 500 physicists working with the massive CDF particle detector at Fermi National Accelerator Laboratory (Fermilab) in Batavia, Illinois, reported hints of a bizarre new particle (*Science*, 15 April, p. 296). That unexpected find would have marked a triumph for the 25-year-old Tevatron atom smasher, which feeds CDF and will shut down this year, having been surpassed by a more-powerful atom smasher in Europe. Alas, physicists working with CDF’s sibling at the Tevatron, the D0 detector, see no sign of the particle, which appeared to weigh about 160 times as much as a proton. That suggests the first team was misled by some unaccounted “systematic” effect in their analysis and that the particle doesn’t exist.

Still, it’s far from clear why the experiments disagree, says Robert Roser, a Fermilab physicist and co-spokesperson for the CDF team. “The fact that they don’t see [the peak] means that the situation is muddy and that you have to get down in the mud and wrestle around and figure it out,” he says. Mud wrestling over systematic errors may be less exciting than it sounds.

http://scim.ag/Fermilab

**BY THE NUMBERS**

13% Reduction in sensitivity of the planned European Extremely Large Telescope (E-ELT), slated to be built in Chile. The telescope’s mirror will be shrunk from 42 meters in diameter to 39.2 meters to save costs.

94.1% Percentage of Italian voters in a national referendum who chose to shelve the government’s plans to resurrect nuclear energy.

**Clues to Autism Emerge In Protein Network**

Autism is a puzzle for scientists, with dozens of “suspect genes” scattered among various types of the disorder and showing up in the DNA of only a handful of patients. But now researchers have identified a densely connected network of proteins that may help reveal how autism develops.

Proteins working together inside cells sometimes physically touch each other; often, many of them will also link to a few central proteins that play a key role in a particular biological process, forming what researchers call an “interactome.” Using a screening process to find interactomes relevant to autism, Huda Zoghbi, a neurobiologist at Baylor College of Medicine in Houston, Texas, and colleagues caught 500 proteins that connected with 26 proteins produced by different autism genes and also interacted with each other.

The proteins play key roles in a complex process, one that likely causes a problem at the synapses of people with autism, Zoghbi says. Her team reported its findings online 8 June in *Science Translational Medicine.* Pathways shared by different types of autism are promising targets for drug development, she adds. http://scim.ag/autism-proteins

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