

## A Look Ahead for 2014



Gulf Coast, United States

### Costs of BP Oil Spill Revealed

Advocates for restoring ecosystems around the Gulf of Mexico are watching for two big breaks that could come in 2014. A federal court is expected to decide how much the oil giant BP will have to pay in Clean Water Act fines for the 2010 *Deepwater Horizon* spill. The total could exceed \$15 billion, and 80% of the funds will be spent on economic and ecological restoration in the five Gulf Coast states. Meanwhile, a separate government-led process will determine how much damage the spill caused to natural resources and how much oil companies owe to repair it. That sum is also expected to run in the billions.

California

### Stem Cell Funder Faces Uncertain Future

The California Institute for Regenerative Medicine is pondering its future as it looks for a new director. Created by California voters in 2004 in part to sidestep federal restrictions on embryonic stem cell work, the funding agency will get its last annual installment of about \$300 million from the state this year. It has enough money stockpiled to last a few more years, but to stay in business longer, it could seek funds from another state referendum, as early as this November. Some advocate that the institute, which has lately favored clinical trials over basic research, instead seek money from industrial partnerships.

China

### New Hunt for Submerged Relics

China is expected to launch its first dedicated underwater archaeology ship in early 2014 as part of an ambitious push into marine

archaeology. The \$98.8 million, 500-ton vessel will scour for wrecks in coastal Chinese waters and in the South China Sea, according to state news agency Xinhua. Control of that area is disputed by several Asian nations, prompting concern that China is using exploration as a pretext for flexing its naval muscle. Officials counter that the ship is intended to bolster appreciation of the country's cultural heritage by excavating historical relics.

India

### Three Years Polio-Free

Barring any surprises, on 13 January India will have gone 3 years without a case of polio, an achievement many never thought possible. With its astounding birthrate, population density, and poverty, India was long considered the most biologically challeng-



ing country in which to eradicate the virus. But after a few weeks of additional surveillance for undetected cases, the country is set to be certified polio-free. Massive vaccination campaigns will still continue; as long as polio is still circulating anywhere, as it is in neighboring Pakistan, the country is at risk of reinfection.

United States

### BRAIN Initiative Funding Starts to Flow

The Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative, an ambitious U.S. effort to find new ways to study the brain in action, will start in earnest this year as roughly \$110 million in federal funding begins to flow to researchers. The Defense Advanced Research Projects

Comet Churyumov–Gerasimenko

### Rosetta Springs to Action

Europe's Rosetta spacecraft has been speeding across the solar system for nearly a decade in pursuit of comet Churyumov–Gerasimenko. Like the stone that decoded Egyptian hieroglyphics, Rosetta will this year seek to decode the origins of the solar system. Waking on 20 January from 957 days of hibernation, it will close in for an August rendezvous and begin observing the comet, then dispatch a lander called Philae to ride with the nucleus hopefully as long as its close encounter with the sun in mid-2015. Comets are ancient relics of the solar system and may have seeded planets like Earth with water and even the building blocks of life.

Agency will dole out \$70 million in 5-year grants to teams working on devices to cure neurological disorders and restore memory loss. And in December, the National Institutes of Health released a call for grant applications for \$40 million in six "high-priority" fundamental research areas, including novel methods of classifying types of brain cells and determining their role in specific neural circuits.

Mars

### Indian Orbiter on Steady Course

India's maiden mission to Mars, the satellite known as Mangalyaan, is healthy and cruising toward a September rendezvous with the Red Planet, says the Indian Space Research Organisation (ISRO). The \$70 million mission, launched on 5 November, will spend its projected 6-month sojourn measuring atmospheric composition and mapping surface features. Among Mangalyaan's instruments is the first dedicated methane sensor for Mars, which will estimate the presence



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or absence of the gas—possibly indicative of carbon-based life—on a planetary scale. But more than anything, says ISRO Chair K. Radhakrishnan, the mission is intended to “demonstrate India’s technological prowess” for future interplanetary missions.

#### United States

### Bring Back the Budget Wars

As much as scientists hated the chronic gridlock on the federal budget, they may soon develop second thoughts about the recently passed 2-year agreement that staves off the budget cuts known as sequestration until 2016. The agreement still gives powerful interests, like the military, the chance to argue for changes to spending provisions they don’t like. And while everybody likes science, no one makes it their top priority.

President Barack Obama’s upcoming 2015 budget request will again propose a healthy increase for research. But his requests haven’t fared well in years past, and there’s little reason to expect a better result this time around.

#### United States

### Will Congress Re-COMPETE?

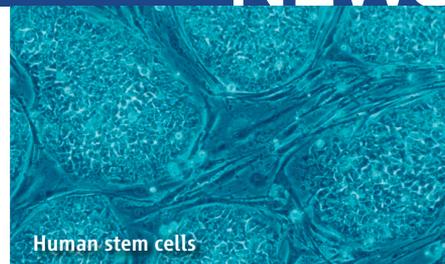
Beyond allocating money, Congress can shape U.S. science policy by creating or killing programs at individual agencies and altering their priorities. This year, Congress is scheduled to take up such a bill, a successor to America COMPETES, that provides

guidance to the National Science Foundation (NSF) and several other research agencies. Science lobbyists expect the Senate to reaffirm federal support for research and science education, but they fear the House of Representatives will push for language that alters peer-review guidelines and hampers NSF’s ability to fund the best research. If that happens, many believe that no bill would be better than a bad bill.

#### Italy

### Fight Over Stem Cell Therapy Endures

The tumult surrounding a controversial Italian stem cell therapy is set to continue. Patients have lobbied hard for the government to fund the therapy, designed by the Stamina Foundation to treat neurodegenerative diseases. In October, the government scrapped a publicly funded clinical trial after a panel concluded that the treatment had no scientific merit. Then last month, in a ruling that shocked many scientists, an Italian court said that the panel wasn’t impartial. This year, the government



Human stem cells

is expected to ask a new expert group to study the treatment’s validity before deciding whether to pull the plug again.

#### European Union

### Overhaul for Clinical Trial Rules

Before May, the European Union is slated to approve a revamp of its unpopular 2001 clinical trials directive. The new regulation will cut down on red tape and require results from every trial to be uploaded to an E.U.-wide database. In a similar vein, the European Medicines Agency has promised to push ahead with its plans to open to the public and scientists its treasure chest of clinical data from marketing authorization applications. But these plans have already been delayed: In particular, two drug companies have sued the agency for divulging data to competitors.



Antarctica

### Groundbreaking on the Ice

Two new Antarctic research stations are rising as China and South Korea stake their claims on polar research. A Chinese team reached East Antarctica last month to start building the nation’s fourth Antarctic base, called Taishan. Researchers from many countries are eager to use the summer-only outpost as a launch pad for probing the geological history of the Grove Mountains and the glaciology of the Amery Ice Shelf. Taishan’s main building is expected to be completed next month, and a permanent runway should open in about 2 years. Chinese scientists are also surveying along the western coast of the Ross Sea this season for a place to build their third year-round station.

Meanwhile, the Korean Polar Research Institute plans to open its Jang Bogo research center at Terra Nova Bay in February. The roughly 4000-square-meter facility—South Korea’s second year-round station—is designed to house 16 people in the winter and 60 in the summer. Among the key scientific tasks at Jang Bogo will be monitoring regional climate change.