**2007 U.S. BUDGET**

### Senate Panel Backs Integrated Ocean Observation System

From the Gulf of Maine to the Alaska Peninsula, the U.S. coastline is dotted with idiosyncratic networks of buoys, radar, and other instruments that keep their eyes on the seas. For years, marine scientists have wanted to expand and update this network so that all the data would be compatible, allowing them to investigate broad questions, such as the impact of climate change on the coasts.

Last week, a Senate spending panel gave that effort a major boost, adding $70 million to the Administration’s budget request for the National Oceanic and Atmospheric Administration (NOAA) to start up the Integrated Ocean Observation System (IOOS). Although thrilled about the news, lobbyists for ocean science are worried that NOAA may not be in it for the long haul.

In a 2004 report, the U.S. Commission on Ocean Policy described IOOS as a “system of systems” for increasing maritime safety, mitigating the danger of tsunamis and other natural hazards, and improving coastal ecosystems. New buoys and other types of platforms would provide local information, and larger-scale questions could be addressed by standardizing and linking the sensors and data. “IOOS could fundamentally change our understanding of the ocean,” says Philip Bogden, who directs the Gulf of Maine Ocean Observing System.

The commission recommended $138 million to get IOOS rolling, ramping up to $500 million a year in 5 years. NOAA would lead a consortium of 10 agencies already involved in ocean monitoring. Although the White House hasn’t asked Congress to fund IOOS, Congress appropriated about $68 million for it in each of the past 2 years.

This year, the Senate appropriations panel embraced the commission’s recommendation. It designated $10 million to start a data center at the Stennis Space Center in Mississippi and $60 million more for start-up funding. In addition, it earmarked $31 million for 13 existing regional networks and $37 million for a variety of existing programs related to IOOS. But there are strings attached: Before NOAA can spend the start-up money, it must provide Congress next spring with “realistic cost estimates” and a strategic plan.

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### NASA Budget Soars as Shuttle Lands

With NASA celebrating the safe return this week of the space shuttle, space and earth scientists have their own reasons to put some champagne on ice. A Senate panel last week added a cool $1 billion to the space agency’s 2007 budget. The money would ease the financial crunch threatening to cancel and delay a host of science missions—if the measure wins the backing of the full Senate and the House of Representatives later this year.

Senators Barbara Mikulski (D–MD) and Kay Bailey Hutchison (R–TX) argued successfully at a 13 July meeting of the Senate Appropriations Committee that the space agency deserved $1 billion in emergency funding to cover the huge costs of getting the shuttle flying again as well as $40 million to repair damage to its Gulf Coast facilities from Hurricane Katrina. Although Senator Pete Domenici (R–NM) insisted that calling the situation an emergency “is a stretch of the word,” the committee approved the measure by voice vote. NASA chief Michael Griffin would decide how to allocate the money, but the intention

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**Buoyed hopes.** The Senate is backing a long-planned program to expand and link regional ocean observing systems.

That could be a tall order. The commission report included only a rough breakdown for the $138 million, however, and an implementation plan finished last year by Ocean.US, a federal entity, doesn’t contain a budget. “It will be a real push” for NOAA to cobble together all the details in time, predicts John Orcutt of the Scripps Institution of Oceanography in San Diego, California, director of the southern California network. The Senate also directs NOAA to start funding regional centers with competitive grants by 2008.

The panel’s healthy funding for IOOS is part of its $536 million boost to NOAA’s current $3.9 billion budget. That figure must be reconciled with a $506 million cut by the House of Representatives. Still, IOOS supporters are optimistic that the project will move forward in 2007. The bigger challenge, they say, is persuading the Bush Administration to request more money in subsequent years. —ERIK STOKSTAD

**On a roll.** Discovery’s safe landing this week coincides with congressional support for a bigger NASA budget.
Groups Challenge Key Stem Cell Patents

Three patents that cover most U.S. research using embryonic stem (ES) cells should not have been granted because the work was obvious and not new, a nonprofit organization argues in a filing with the U.S. Patent and Trademark Office (PTO) this week. “All they really did here was follow what a number of stem cell scientists were showing,” says John Simpson of the Santa Monica, California–based Foundation for Taxpayer and Consumer Rights (FTCR), which is leading the effort with patent watchdog Public Patent Foundation. A successful challenge to the patents, held by the Wisconsin Alumni Research Foundation (WARF), could allow more companies to exploit the technology for basic research or marketed treatments.

WARF’s patents, the first of which was granted in 1998, cover the use, sales, or research on stem cells obtained from primates—regardless of who makes them or how. Experts say the patents are broad because they cover both actual cell lines and general descriptions of making them. WARF requires that university researchers and those at other nonprofit institutions obtain licenses before they use the cell lines. But it only charges them licensing fees if a commercial product resulting from the research is made with stem cells. Companies must pay as much as $250,000. Harvard University pancreatic cell researcher Douglas Melton calls WARF’s licensing terms “onerous, restrictive, and uncooperative” barriers to cures.

WARF Managing Director Carl Gulbrandsen says the challenge is “politically and financially motivated.” The foundation’s patents are legitimate and “do not inhibit research,” he adds.

Under scrutiny. This colony of human embryonic stem cells (inset) comes from the lab of University of Wisconsin patent holder James Thomson.

James Thomson, a University of Wisconsin, Madison, developmental biologist, applied for the patent in 1995. The first patent was issued in 1998, followed by very similar ones in 2001 and 2006. In 1999, WARF signed a licensing agreement with Geron, now the main licensee.

In its 18 July petition to reexamine the patents, FTCR charges that the first two patents are invalid because they cover a technique that was published before 1995. They cite a patent granted in 1992 to Australian Robert Williams, who described a method of deriving the mammalian stem cells in culture that, like Thomson’s, required feeder cells and could turn into all manner of adult cells. FTCR also says that Thomson’s efforts to isolate primate ES cells mimicked existing approaches to isolate ES cells from mice and other organisms. In an attached declaration to PTO, molecular biologist Jeanne Loring of the Burnham Institute in San Diego, California, says that the techniques mentioned in a 1990 paper and scientific books render Thomson’s work “obvious to someone skilled in the art,” a condition that should disqualify a patent application.

“If it were so obvious, it would have been done [before],” says WARF attorney Elizabeth Donley, who plans to review the Williams patent. “What worked in mice didn’t work in humans.”

Experts say the challenges touch on fundamental difficulties about obviousness and novelty claims. “On one hand, you can say the technology was almost identical to what they did in mouse [cells], so you could argue it was obvious,” says Allan Robins, a molecular biologist with Irvine, California–based stem cell start-up Novocell. “On the other hand, there had been failures in rats and pigs; therefore, you could argue that it wasn’t obvious.”

Bill Warren, an attorney with Sutherland Asbill & Brennan LLP in Atlanta, Georgia, says that PTO could decide not to review the patents because two of four key references FTCR cites were previously reviewed by PTO when it issued the original patents. But “if the Patent Office takes the case, then there are some very close questions of patentability” at issue, he says.

PTO can take up to a year to decide whether to do a full reexamination and 2 years or more to rule.

—ANDREW LAWLER