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## ZOO NEWS

### A fishy story

The first fish ever to receive chemotherapy for cancer has died, probably of old age. Bubba, a large grouper, also changed gender in the mid-1990s — but that's quite common for a fish.

## NUMBER CRUNCH

Last week four mathematicians were awarded the Fields Medal, the mathematical equivalent of the Nobel prize.

**27,000** Google hits exist for Andrei Okounkov — recognized for his work on representation theory and randomness.

**50,800** is the number of hits for Wendelin Werner — praised for geometric insights into statistical processes and field theory.

**71,400** hits exist for Terence Tao — harmonic analysis and number theory.

**516,000** hits exist for Grigory Perelman — nominated for his work on solving the Poincaré conjecture. He declined the prize because he didn't want the publicity.

## SCORECARD

**Ethical stem cells**  
Scientists may still be debating whether a paper published in *Nature* last week by Robert Lanza and his colleagues at stem-cell company ACT represents an ethically acceptable source of human embryonic stem cells. But the business world seems convinced — the company's share price leapt from \$0.45 to \$2.30 in just 10 hours after the news became public.

**Breast cancer research**  
"Breast cancer has become more about making money for corporate sponsors than funding innovative treatments," according to Samantha King of Queen's University in Ontario. Strong words, but perhaps not unjustified. When she studied one high-profile firm's walk for breast cancer, she found that only 64% of the money raised went to breast cancer organizations.

Source: Pink Ribbons (Univ. Minnesota Press).

# Cash-strapped research ship must earn its living

## TOKYO

The Japanese ship *Chikyu* is the most sophisticated research vessel ever, and scientists are keen to start using it. But before it can begin probing seismic zones of the sea floor, a lack of funds means it must spend months looking for oil.

*Chikyu* has run aground on high oil prices, which have more than doubled since the US\$30-a-barrel days when much of the planning was done. This raises the cost of operating the ship, which consumes 110,000 litres of oil per day even when it's stationary and drilling. It also increases the cost of hiring crew, as *Chikyu* is competing with an oil industry scrambling to ramp up production to take advantage of high prices. As a result, estimates of annual running costs have jumped by 50%.

The vessel, which cost ¥60 billion (\$500 million), was built to take the leading role in the Integrated Ocean Drilling Project (IODP), due to start in September 2007. The IODP is a collaboration of Japanese, US and European scientists who study rock and ice-core samples in search of clues about Earth's evolution. Japanese researchers are especially interested in collecting samples from deep fault regions, which can help show how tectonic plates shift during earthquakes.

This month, *Chikyu* headed off to practice core sampling and analysis off the Japanese coast, after which it was due to join the IODP. But the rising running costs caused the ship's managers at the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) to change plans. From November the vessel will spend nine months working in the Indian Ocean off Kenya for an oil exploration project run by Australian petroleum company Woodside. "The alternative was just to have it sit in port," says JAMSTEC director Kiyoshi Suyehiro.

As a non-profit organization, JAMSTEC won't receive any money from Woodside. But drilling for oil will at least be an opportunity to train the crew and test the riser drilling system, which is common in oil drilling but hasn't yet been used in research. Riser drilling uses circulating mud to prevent the hole from collapsing under high pressures, and so allows deeper digging.

*Chikyu* is designed to reach down 7,000 metres, even in deep waters — the only research vessel that can drill so deep. The oil project in



JAMSTEC/IODP/MI

The state-of-the-art research drilling vessel *Chikyu* is being kept afloat by exploring for oil.

Kenya will involve drilling 2-kilometre wells in ocean up to 3 kilometres deep, so it will provide a reasonable trial. The rough currents will also test *Chikyu*'s thruster system, which keeps its position stable.

But much of *Chikyu*'s research equipment will sit idle. For example, as the core samples will belong to Woodside, the crew won't be able to analyse them using the vessel's magnetic resonance imaging devices.

*Chikyu* is still on course to begin scientific drilling in September 2007, but high running costs are likely to continue to plague the ship. Its first project will be to dig into the Nankai Trough, an earthquake-generating zone off the Japanese coast. The first stage, drilling down to 6,000 metres, is scheduled to take five years, but is likely to take much longer than expected unless oil prices drop or extra funding is secured to allow the vessel to operate continuously.

JAMSTEC, which refuses to shift funds from its other ocean exploration projects, is pressing for extra money from the Japanese government. It has convinced the science ministry but will have a harder time persuading the finance ministry, which is trying to rein in the Japanese budget by ¥14.3 trillion over the next five years.

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