

receives a cell line signs an agreement not to do experiments to implant the line in an embryo, generate an embryo, or implant an embryo in a uterus. If WARF allowed free sharing, it couldn't police this, Gulbrandsen notes.

He doesn't deny that WARF is seeking six-figure sums — a \$25,000 annual maintenance fee plus \$100,000 up-front fee — from companies taking out commercial licences. “But we've tried to be accommodating where a smaller company thinks that the price is too high,” he says — in one case, WARF accepted equity in a firm instead of cash.

WARF has issued seven commercial licences to companies (see chart, left) since its first broad patent in 1998, but declines to identify them. Becton, Dickinson & Company, a New Jersey-based drugmaker, says it has a licence. Advanced Cell Technology (ACT) of Worcester, Massachusetts, told *Nature* that it, too, has signed a deal with WARF. *The Wall Street Journal* reported last month that General Electric and Novartis are about to launch US projects with embryonic stem cells — General Electric will develop drug-testing products for sale to pharmaceutical companies, and Novartis aims to turn stem cells into heart cells. And Johnson & Johnson, the New Jersey-based maker of medical products, has bought an equity stake in Novocell of Carlsbad, California, which seeks to generate insulin-secreting pancreas cells from stem cells.

The disgruntled blame the small number of licencees on WARF's prices and restrictions. “It granted only seven commercial licences in seven years, on a technology that is hot — why?” demands the anonymous executive. He adds that US-based firms feel hamstrung by one requirement in particular: “If we sign an agreement with WARF in the United States, it wants to place restrictions on us globally, even though the patents do not apply worldwide.”

But Robert Lanza, vice-president of medical and scientific development at ACT, says that the price his company paid the foundation for a commercial research licence was “very fair”. In WARF's position, many companies might overcharge licensees, he says. “And WARF isn't. My hat's off to them.” ■

IN BRIEF

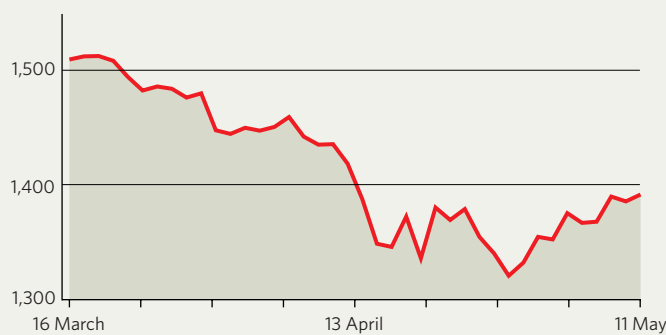
DISEASE TEST APPROVED The US Food and Drug Administration has approved the first genetic blood test for cystic fibrosis. The Tag-It test, made by TM Bioscience of Toronto, Canada, can now be used to identify children and adults who carry the disease. Cystic fibrosis is the most common inherited fatal disorder, afflicting about 1 in 3,000 babies in the United States. The test identifies only some of the 1,300 genetic variations associated with the disease, and the terms of the approval require that it be used with other approaches to diagnose cystic fibrosis.

VACCINE MAKERS FLOUNDER The number of US companies manufacturing vaccines has fallen from 26 in 1967 and 17 in 1980 to just 5 last year, and shows no sign of reviving. Writing in this month's *Health Affairs*, Paul Offit, head of infectious-disease research at the Children's Hospital of Philadelphia, says that high development costs, low revenues and the threat of legal liability are forcing manufacturers out of the vaccine business. Offit says the US government should provide more financial incentives for vaccine development and amend a 1986 law designed to limit manufacturers' exposure to legal liability for ill-effects caused by vaccines.

UP IN SMOKE European car makers are falling short of voluntary targets agreed with the European Commission to increase fuel efficiency and decrease carbon dioxide emissions from their vehicles. Average new-vehicle emissions fell by 1.8% last year, the *Financial Times* reports, against a 3.3% average reduction needed to meet the emissions target of 140 g per km by 2008. European manufacturers have launched smaller models, such as the BMW 1 Series, with a view to improving the figures. The industry fears that the European Union will set compulsory limits if the voluntary one isn't met.

MARKET WATCH

Nanotechnology stocks



Nanotechnology stocks have lost ground rapidly over the past two months, according to one of the first stock-market indices devoted to tracking them. But analysts still expect the field to attract \$400 million in venture capital this year — the most it has managed since 2002.

The downturn reflects the general doldrums in technology shares this year, says Peter Hebert, chief executive and co-founder of Lux Research, the consultancy in New York that developed the index.

“Most of it has to do with the overall market for technology stocks,” he says, adding that ‘the Lux’ has taken an even harder hit this year than the Nasdaq — the main US index for technology stocks — because the former is weighted towards smaller firms, whose shares tend to suffer most when investors are feeling cautious.

But 2005 is shaping up to be a bumper year for venture-capital investment in nanotechnology. Lux reports that

\$66 million was raised in March alone for three US companies — Nanomix, Nantero and Nano-Tex — and estimates that the flow of venture capital into US nanotechnology firms will double this year from the \$200 million raised during 2004.

Tracking the financial performance of something as loosely defined as nanotech isn't easy, Hebert concedes. Lux has had a stab by pulling together companies that supply nanotech products, build nanotech tools such as atomic-force microscopes, or use nanotech in their businesses. Its index allocates equal weighting to all of the firms — effectively giving more clout to the smaller, more specialized ones.

“We've been one of the first to stress that nanotechnology isn't an industrial sector per se,” says Hebert. “It's an enabling technology. Investors have been perplexed about how to approach nanotech — but we're seeing progress now.” ■

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