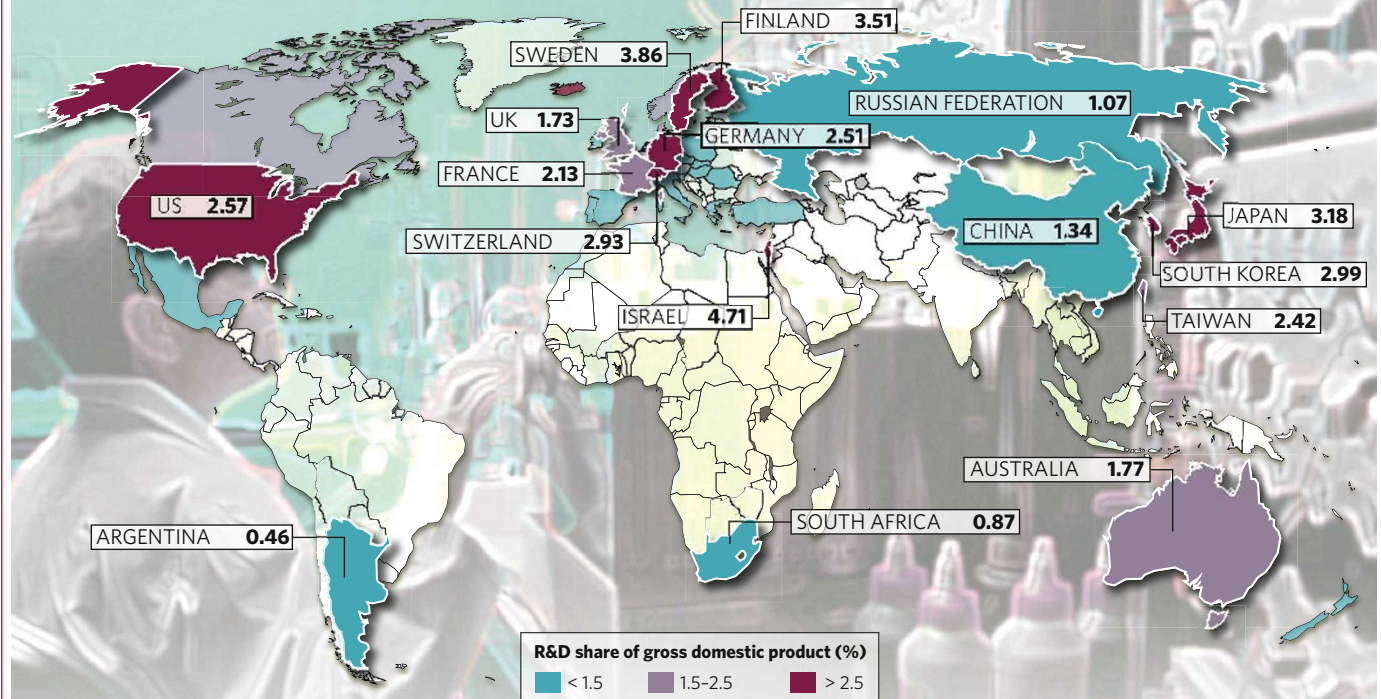


## NEWS

## How the world invests in R&amp;D



Data from 2008 National Science Foundation Science & Engineering Indicators; data are for most recent year available, and include civilian R&D only for Israel and Taiwan.

The latest analysis from the US National Science Board confirms that Israel leads the world in its economic devotion to research and development (R&D). Its civilian R&D spending in 2005 accounted for 4.71% of gross domestic product (GDP), more than twice the average among members of the Organisation

for Economic Co-operation and Development (OECD).

Although US R&D investment was the world's largest — \$340 billion — and in 2004, it was more than that of the rest of the G7 nations combined, the report offers some evidence of a slight decline in its standing. Its 2.57% share of GDP

is comfortably above the OECD average of 2.25%, but both South Korea and Switzerland have leapfrogged ahead of the United States by this measure since the board's previous report in 2006. Germany could now be poised to do the same.

Most countries are investing more in R&D than they were, says

Arden Bement, director of the National Science Foundation, which published the report. For example, although China ranks 23rd in GDP share — just 1.34% — it has pulled ahead to third in total R&D investment with an estimated \$115 billion in 2005.

Rachel Courtland

## International genome project launched

A much-anticipated international project to sequence the entire genomes of 1,000 people was launched on Tuesday, but some question whether the three-year project is ambitious enough in its scope.

The '1,000 Genomes Project' will create a highly detailed reference map of human genetic variation and is the largest such project announced to date. "This is a historic turning point in genomics," says Yang Huanming, director of the Beijing Genomics Institute, whose Shenzhen branch is one of the three institutes launching the project. The other two are the Wellcome Trust Sanger Institute in Cambridge, UK; and the National Human Genome Research Institute in Bethesda, Maryland.

The project is expected to cost just US\$30 million to \$50 million — a fraction of what it would cost if they used the 'older' technologies used in the Human Genome Project. Instead, the initiative will use 'next-generation' sequencing technologies, although these are still being tested. "Projects such as this drive technology development," says David Altshuler, a geneticist at Massachusetts General Hospital in Boston. The project leaders have not yet decided what the depth of coverage of the genome will be — that is, how many repeats they will carry out for each chromosome.

All the participants in the first phase of

the project will be drawn from the International HapMap Project, a large study on genetic diversity, although more people may be recruited later. HapMap has guided scientists to hundreds of 'single nucleotide polymorphisms', or SNPs — places where people's genetic codes differ by a single DNA base — in genetic regions associated with disease.

But these associations explain only a small part of an individual's risk for any particular disease. And scientists must undertake large, expensive follow-up studies to hunt down the specific causes of disease risk lurking in these genetic regions.

**"Projects such as this drive technology development."**