NEWS IN BRIEF

Charting the decline of US biomedical research funding

A new study has reported that US-based organizations funded 44% of the world's biomedical research in 2012, down from 57% in 2004 (*JAMA* **313**, 174–189; 2015). US governmental biomedical funding fell by 7% of the total global governmental biomedical funding (from 57% to 50%), and US private biomedical industry funding fell by 9% of the total global private biomedical funding (from 50% to 41%). The results are in line with a previous analysis that showed that the US biomedical research funding declined from 51% of the global total in 2007 to 45% in 2012 (*New Engl. J. Med.* **370**, 3–6; 2014). Both studies showed that China, India, South Korea and Singapore have in the meantime been posting gains in their share of research funding.

The analysis was done by Hamilton Moses III, of the Alerion Institute think tank, and colleagues at Johns Hopkins, Stanford, the University of Rochester and the Boston Consulting Group.

The authors also reported that the United States' share of life science patent filings has fallen from 57% in 1981 to 51% in 2011. In terms of top-cited publications, US researchers published 63% of the total in 2000 but only 56% in 2010. The study also found that whereas the science and technology workforce in the United States grew annually by 2.7% between 1996 and 2011 to reach 1.25 million workers, in China it grew annually by 6% to reach 1.31 million workers. This makes the Chinese science and technology workforce the largest in the world, the authors note.

"The analysis underscores the need for the United States to find new sources to support medical research, if the clinical value of its past science investment and opportunities to improve care are to be fully realized," the authors write. They suggest several mechanisms to raise funding, including foreign capital repatriation, biomedical research bonds analogous to those used to finance sports stadiums and airports, and public–private risk-sharing collaborations. "Given international trends, the United States will relinquish its historical international lead in the next decade unless such measures are undertaken," they write.

Two other means of boosting biomedical research funding have also been proposed recently. Under one, the patents on drugs would be extended by one year and the additional revenue would be funnelled to research efforts (*Nature Rev. Drug Discov.* **14**, 147–149; 2015). Under another, drug makers who break the law would have to redirect some of their profits to the US National Institutes of Health.

Asher Mullard

Roche buys $1 billion majority stake in Foundation

In the latest play to expand its diagnostic capabilities, Roche has bought a controlling stake in the genomic cancer diagnostics firm Foundation Medicine. Although Foundation has yet to turn a profit, it has made a name for itself by genetically profiling patient tumour samples to match patients to targeted and novel therapies.

Under the terms of a research and development (R&D) collaboration that was set up as part of the share purchase, the two companies now plan to focus on developing genomic profile tests for cancer immunotherapies and for continuous blood-based monitoring. Roche also says it will use Foundation's molecular profiling platform to standardize clinical trial testing, enabling better comparability of its clinical trial results. The collaboration could also lead to new combination therapies, the identification of novel targets and more accurate patient population identification and inclusion criteria for clinical trials.

Roche says it plans to let Foundation continue to operate independently. Foundation has previously struck research deals with more than 20 biopharmaceutical companies, including AstraZeneca, Eisai, Johnson & Johnson, Novartis and Sanofi. Foundation, for its part, hopes that the collaboration with Roche will boost market adoption and reimbursement for its tests.

The deal mirrors Roche's partnership with Genentech. Roche bought a majority stake in Genentech in 1990, before acquiring it outright in 2009. Mike Varney, the new chief of R&D at Genentech, recently told *Nature Reviews Drug Discovery* that Roche has kept its 2009 pledge to let Genentech's R&D division operate independently (see *Nature Rev. Drug Discov.* **14**, 158–159; 2015). The ability to tap into Roche's diagnostic tools and capabilities has been "a big synergy that we have found working within the broader Roche organization," he added.

Asher Mullard

$215 million precision-medicine initiative takes shape

The US President Barack Obama has earmarked US$215 million from his proposed 2016 budget to precision medicine. These funds will "encourage creative approaches to precision medicine, test them rigorously, and ultimately use them to build the evidence base needed to guide clinical practice," write the US National Institutes of Health (NIH) Director Francis Collins and the US National Cancer Institute (NCI) Director Harold Varmus in an article outlining the initiative's aims (*New Engl. J. Med.* 30 Jan 2015 [epub ahead of print]).

Under the proposed initiative, the NIH would receive $130 million to develop a national research cohort of a million or more volunteers, who will be followed over time. By combining medical records, genomics, metabolite analysis, microbiome analysis, environmental and lifestyle data and more, the NIH hopes to improve its understanding of health and disease over time. The million-participant cohort will be assembled in part from existing cohort studies, and there has been speculation that projects like the NIH-funded Framingham Heart Study could be one such resource.

The NCI would receive $70 million to scale up efforts to identify genomic drivers of cancer. "Oncology is the clear choice for enhancing the near-term impact of precision medicine," write Collins and Varmus. To realize the possibility, they add, the community needs to analyse more cancer genomes, and needs to build a "cancer knowledge network" that can store the resulting molecular and medical data and deliver them to scientists, health-care workers and patients. The funds will also be used to address unexplained drug resistance, genomic heterogeneity of tumours and our limited knowledge about how to best use drug combinations.

The US Food and Drug Administration would receive $10 million to improve its ability to incorporate genomic data into its regulatory framework.

The US Congress now needs to approve the proposed budget, which also called for $1 billion in extra funding for the NIH (an increase of 3.3% from the 2015 budget).

Genomics also got a boost in the United Kingdom, where researchers started enrolling subjects into the 100,000 Genomes Project. The British Government announced the project in 2012, and it focuses on rare inherited diseases, cancer and infections.

Asher Mullard