

IN brief

India blacklisted

The Obama Administration has placed India on a priority trade 'watch list' allegedly over lack of intellectual property protection. But the decision contained in the Special 301 report of the United States Trade Representative, announced in May, has not greatly ruffled India's generics industry. "India has been on this list for years," says Yusuf Hamied, chairman of Mumbai-based Cipla, among the world's largest producers of cheap, generic medicines. "With a population of 1.3 billion and an alarming disease profile, India should not be swayed by outside pressures to alter its chosen course appropriate to its own interests," he says. India found itself on the blacklist after a string of setbacks to innovator pharma companies—the latest being a court's refusal to extend patent protection to Basel-based Novartis for a new version of its leukemia drug Gleevec (imatinib; *Nat. Biotechnol.* **31**, 371, 2013). The US concern that the court ruling "may limit the patentability of potentially beneficial innovations," as stated in the special report, is refuted by the Indian Pharmaceutical Alliance. According to a spokesperson, "Indian patent law does not discriminate between domestic and foreign companies but only distinguishes between innovation and discovery of new forms of known substances that do not result in enhancement of efficacy." The US report urges India to adopt a policy "that strikes a balance between innovation to address important health challenges and a robust generic market." India insists its patent law does exactly this: it fosters innovation and contains safeguards designed to protect public health. But Darren Smyth, patent attorney at law firm EIP, says that by tinkering with the intellectual property system, India undermines the balance between originators and generics that is essential. "India has elected to become a generics-only jurisdiction, in[to] which originators would probably choose not to enter, and healthcare needs would be met almost entirely by generics companies," he says.

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IN their words



"The data were in front of our eyes, but we did not see them because the patients had many other things going on,"

Pier Paolo Pandolfi, Beth Israel Deaconess Medical Center in Boston. Pandolfi has developed

a co-clinical trial in which data from mouse models and patients are integrated. (*The New York Times*, 10 June 2013)

Crowdsourced contest identifies best-in-class breast cancer prognostic

Two *Science Translational Medicine* papers published in April demonstrate the power of open innovation for tackling concrete clinical problems. The papers published the winners of a breast cancer prognosis challenge launched last year by Dialogue on Reverse Engineering Assessment and Methods (DREAM) in collaboration with Sage Bionetworks. The DREAM7 challenge gave participants access to genetic and clinical data from 2,000 patients hosted on Sage's Synapse (<https://synapse.sagebase.org/>) computational platform. The best-performing model was selected from a total of 1,400 entries and the results published in a high-impact journal (*Sci. Transl. Med.* **5**, 181re1, 2013; *Sci. Transl. Med.* **5**, 181ra50, 2013). Sage's president, Stephen Friend, who has spent much of his eight years at the company running the oncology program, heralds the outcome as validation of open and collaborative research. "We've engaged in a dialog that has delivered concrete progress," he says. Sage and DREAM are pioneers in this area, but several other research organizations are also exploring frameworks for crowdsourcing scientific research as a more effective means to tackle biomedical problems. And as these and other 'open innovation' concepts begin to move from the fringe to the mainstream, the results from these early efforts are likely to determine the vigor with which other academic and industry groups begin to open their vaults.

Scientific contests are not new; X-Prize challenges have been running for years, as have various critical assessment projects where structural

biologists or genomicists test their modeling mettle. But last year's DREAM7 challenge added an interesting twist. The use of Synapse—a computational platform that allows users to share data, as well as have access to programming codes and analytical tools—enabled competitors to riff on the best strategies based on a real-time 'leaderboard'

that ranked the performance of each model. "It was great because we were able to use the other models that were in that ecosystem," says Andrew Su, a DREAM7 participant and associate professor at the Scripps Research Institute in La Jolla, California. According to DREAM co-founder Gustavo Stolovitzky, of the IBM Computational Biology Center in Yorktown Heights, New York, the 'open-source' nature of the contest allowed researchers to quickly assess the performance of their approach relative to those of other competitors and thereby improve their methodology. He also notes that the whole of the pool in such competitions can be more than the sum of its parts. "There is wisdom in the crowds," says Stolovitzky, "and if you aggregate the community predictions, it is very often better than the best model."

The Sage-DREAM model primarily draws upon scientists with at least some biological expertise, but other groups are casting an even broader net. "There's a whole community of people out there that has skills [which] are useful to you that you are either unaware of or not tapped into," says Eva Guinan of the Dana-Farber Cancer Institute in Boston.

She and colleagues at Harvard abstracted a biological problem—analyzing gene structure in a repertoire of recombined antibody sequences—and posted it in computational format on TopCoder, an online programmers' community. The outcome was remarkable; within two weeks, they received 122 code submissions from programmers around the world, none of whom professed any biology expertise (*Nat. Biotechnol.* **31**,

108–111, 2013). Out of these, 16 considerably outperformed existing best-in-class solutions in terms of processing speed and accuracy.

Several companies, such as Kaggle and InnoCentive, have adopted a business model based on problem-solving through prize-based competitions. These competitions often transpire behind closed doors,



IBM's Gustavo Stolovitzky founded DREAM on the belief that there is wisdom in the crowds.