but can provide a vehicle for open innovation. For example, Guinan and colleagues at the Harvard Catalyst translational research program hosted a challenge through InnoCentive in which they solicited ideas for new approaches to type 1 diabetes research from anybody in the Harvard community, from deans to custodians. They subsequently obtained funding to support the winning projects, many of which were proposed by nondiabetes specialists, including patients or their family members.

Although some competitions offer a big bonanza, like the million-dollar prize staked by the US Defense Threat Reduction Agency through InnoCentive for pathogen genome analysis algorithms, Guinan's TopCoder Collegiate Challenge paid out only $6,000. DREAM winners typically benefit purely through scientific reputation. Indeed, some scientists are discovering that by turning scientific challenges into a game, they can get people participating purely for fun (**Box 1**).

To Friend, the DREAM7 process and its value as a proving ground for Synapse were more important than the outcome. "The goal was to build a community," he says. "It's about how to incentivize people to bring in information, and get outside experts to become 'part of the team.'" Some crowdsourced tools have become such an integral part of the life sciences that they're taken for granted, such as the GenBank database, but Sage and others are pushing for even more extensive data deposition, with as many details about provenance and processing as possible. For example, the DREAM7 challenge was enabled by the curated METABRIC breast cancer dataset (*Nature* **486**, 346–352, 2012), which was made open-access by Carlos Caldas and colleagues at Cancer Research UK. "We haven't filed any patents and the data are publicly available, including clinical information," says Caldas.

Scientists are also discovering the value of direct input from patients. Companies such as Cambridge, Massachusetts–based PatientsLikeMe and initiatives like the Genetic Alliance's Reg4All program enable patient communities to share their medical information directly with researchers. Sage has likewise introduced several early-stage disease programs at the Sage Congress as part of its BRIDGE initiative, which will provide an interface for patients to communicate and collaborate directly with scientists through Synapse. One major challenge in this area has been reexamining informed consent to allow greater flexibility for seamless reuse of

Box 1 Smart gamers become cancer researchers

Cancer Research UK, the London-based charity, has teamed up with Facebook, Google and Amazon to develop a game that will help directly engage the public in cancer research. Over a hackathon weekend in March, 40 game testers and programmers turned the histological breast cancer data provided by Cancer Research UK into a smartphone game to differentiate breast cancer subtype, provisionally called GeneRun. Carlos Caldas and Paul Pharoah at Cancer Research UK previously designed a web-based game called CellSlider (http://www.cellslider.net/) to recruit amateur pathologists to histologically differentiate breast cancer subtypes, and now hope to build on that success with GeneRun. "People will be looking at data coming off of microarrays and helping score whether there is copy-number gain or loss," says Caldas. "We are trying to see if people can come up with better ways of scoring data."

Attempts to use the wisdom of the crowds in so-called 'serious games' began with highly publicized examples such as FoldIt (http://fold.it). "I think there's a huge latent population of people who are smart and want something useful to do with their spare time," says Ben Good, a postdoc in Andrew Su's laboratory at the Scripps Research Institute. Good and Su recently devised a game called "The Cure" (http://genegames.org/cure/) in which players attempt to outperform an artificial intelligence opponent in selecting genes that might offer a better model for breast cancer prognosis.

The Cure attracted numerous players, but is primarily targeted at individuals with some scientific expertise, and Good is currently consulting with visualization experts on how to make their complex cancer data more abstract and accessible to a wider community. Accordingly, the games with the broadest audiences are those based on inherently visual challenges, such as CellSlider or MOLT (http://biogames.ee.ucla.edu/), which crowdsources malaria diagnosis by having players identify parasite-infected blood cells in pathology slides.

It might be hard to imagine that gamers would prefer counting genetic aberrations and scoring histology slides than shooting zombies, but Caldas sees an energized community waiting to get involved. "Instead of asking them to run marathons or fundraise, you can involve them directly as participants." *ME*

IN brief

GSK shares spoils with Avalon

GlaxoSmithKline (GSK) of London has teamed up with San Diego–based Avalon Ventures to establish up to ten early-stage life sciences companies. One of Avalon's funds will provide funding of up to $30 million in exchange for equity stakes in the companies, whereas GSK's commitment of up to $465 million in seed funding, R&D support and milestones gives the pharma the option to acquire each company after a clinical candidate is developed. Avalon, which plans to start two companies this year and one per quarter thereafter, is responsible for identifying the new technologies and fostering the startups in its incubator in San Diego. Avalon managing director Jay Lichter admits that the built-in deal with GSK isn't for every entrepreneur, but he says many people are "ecstatic" about a quick payout in three to four years after a compound is ready for the clinic. The program is modeled on GSK's Discovery Partnerships with academia, which seeks to find and fund early-stage opportunities at academic institutions, while facilitating the entrepreneurial nature of US investigators who prefer to start companies rather than accepting funding directly from GSK. "Hopefully we set a trend in the industry—instead of people trying to kill each other fighting over table scraps, we find ways to be more collaborative and share the spoils," Lichter says. *Brian Orelli*

Argentina cuts GM red tape

Argentina has streamlined its biotech crop regulatory framework to ensure neither red tape nor international trading partners' policies hold up commercialization. The country, one of the first to embrace biotech crops, relied for two decades on a hodgepodge of agencies and rules to govern genetically modified (GM) crop commercialization (*Nat. Biotechnol.* **28**, 393–395, 2010). A 2010 reform established a new Ministry for Agriculture, Livestock and Fisheries, which updated and consolidated rules in 2012. This spring, the Ministry packaged those rules in a single booklet for commercial and academic growers. Under the old rules, GM crops that had already passed food safety and environmental impact assessments still needed commercial approval. The commercial committee exercised a so-called mirror policy of approving for cultivation only GM crops that trading partners, such as the European Union, had approved for import. That policy led to one crop being held up for a total of 12 years, says the Ministry's biotech director, Martín Lema. Now, thanks in part to World Trade Organization rulings and growing trade with partners such as China, Argentina has abandoned the mirror policy. Typical approval times may be around four years now, Lema says, down from an average of five to six years. Other changes include placing time limits on certain stages in the paperwork required for approvals. "While it's very similar [to the old framework], this one is much more functional.... Industry is in accord with the changes," says Fabiana Malacarne of the Argentine Seed Association, an industry group in Buenos Aires. *Lucas Laursen*