IN brief

Chinese investors tap US biotechs

China is ramping up its investments in US biotechs, and two recent transactions highlight the trend. BGI, the Shenzhen-based genome sequencing giant purchased California-based Complete Genomics for $117.6 million (*Nat. Biotechnol.* **30**, 1159–1160, 2012) and Joinn Laboratories, a Beijing-based contract research organization, acquired Bayer's life science park in the San Francisco Bay area in January for an undisclosed price. Cash-rich Chinese investors, spurred by success in other sectors such as information technology, are buying into biotech. IDG China, for instance, an independent investor belonging to a global fund headquartered in San Francisco, last January invested $10 million for a controlling interest in new drug developer EntreMed of Rockwell, Maryland. "Buying US biotechs allows Chinese firms to combine the US advantages in research capacity, with China's huge market and growing financial strength," says Ken Ren, EntreMed's CEO. The global financial crisis has meant the price of biotechs is at an historical low, says Shuguang Zhang, associate director of the Center for Biomedical Engineering at the Cambridge, Massachusetts–based Massachusetts Institute of Technology (MIT). "In addition, because China has the world's best engineers," those innovative [US] technologies obtained through acquisitions can be more speedily developed and manufactured [in China] into new drugs and medical devices, Zhang says. Fang Hu, former president of Shanghai-based biotech Sunway Bio, says that China, with its huge pool of patients, experienced clinicians, lower development costs and friendly regulators, can also speed up clinical trials. EntreMed, for instance, is conducting phase 2 studies in the US for their lead compound, ENMD-2076, for triple-negative breast cancer and at the same time submitted an application to conduct clinical trials to the Chinese State Food and Drug Administration. EntreMed's Ren explains that "The US clinical data can help us gain the confidence of Chinese regulators," and as clinical trials conducted in China will be quicker than in the US, the information obtained in China can help design phase 3 trials in the US for FDA approval. Despite the mutual advantages, Ren does not think Chinese investors will swamp the US biotech sector. "Investing in the biotech sector requires patience and experienced investors, which are lacking in China" he says. To MIT's Zhang, who is widely involved in biotech development in China, the country's overall drug development capacity is still weak, despite skilled workers in certain areas like genomic sequencing and chemical synthesis. "This fact ensures Chinese investment into US biotech won't be causing any great harm, because Chinese investors are unlikely to close facilities, fire researchers and bring technologies back home," Zhang adds. *Hepeng Jia*

Box 1 Iceland warms to Amgen acquisition

Amgen's acquisition of deCODE Genetics appears to have aroused no great concerns in Iceland that the country's genetic heritage is now in the hands of a large American biotech firm. deCODE built its tissue collections with the full informed consent of volunteer donors. Moreover, strict national legislation governs their use. "Legally you can be in control of a biobank here, but you are not the owner of the samples," says Jón Jóhannes Jónsson, professor of biochemistry and molecular biology at the University of Iceland, in Reykjavik. "You cannot export samples for research to the States, for example, without the approval of the National Bioethics Committee and Data Protection Authority." Jónsson opposed deCODE's original efforts to build a proprietary database that sought to enlist the country's entire population on the basis of presumed consent, but not its later work. "They've enhanced the standing of science in Iceland," he says. As a result, the Amgen acquisition generally has been welcomed, he observes. "I think in general people are relieved this has brought some stability to the deCODE operations." However, Skúli Sigurdsson, senior fellow at the Max Planck Institute for the History of Science in Berlin, who campaigned against deCODE in the late 1990s, remains critical of the "Klondike mentality" associated with the company's legacy and is dubious about the viability of its vision. He says, "It may generate worth and value in the long term, but not on the timescale of the stock market." *CS*

triggering receptor expressed on myeloid cells 2 (TREM2) and amyloid precursor protein (APP), which confer, respectively, an increased and a decreased risk for Alzheimer's disease (*N. Engl. J. Med.* **368**, 107–116, 2013, and *Nature* **488**, 96–99, 2012). The APP variant appears to offer further evidence in support of the use of beta-secretase 1 (beta-site APP cleaving enzyme 1; BACE1) inhibitors in Alzheimer's therapy, although the clinical experience with this drug class has so far been disappointing. TREM2, which is also linked to a rare inherited brain disorder called Nasu-Hakola disease, is involved in regulating inflammation, although its role in Alzheimer's pathogenesis is at this stage unclear. "We have an additional discovery in Alzheimer's disease, which we are working on now," Stefánsson says. These findings, along with the previously recognized *APOE* ε4 allele, the best characterized risk factor for the condition, by no means explain in full the genetic component of Alzheimer's, however. At present, genetics can offer only a partial and fragmented picture of the biological processes underlying Alzheimer's and many other diseases. "This is just where we are at this particular moment," he says. Different approaches and different types of analyses could yield more information. But the failure, so far at least, of genetics to account for most of the heritable aspects of human disease remains a conceptual logjam. "We are struggling to figure that out," Stefánsson says. "Some of it probably lies in different modes of inheritance."

Eric Lander, of the Broad Institute, in Cambridge, Massachusetts, and colleagues recently proposed that "a substantial portion of missing heritability" may be overestimated and can actually be explained by interactions among loci that have already been identified (*Proc. Natl. Acad. Sci. USA* **109**, 1193–1198, 2012). "The problem with that is nobody has been able to show these interactions," Stefánsson says. "Why have we had difficulty in showing epistasis? I think it's [due to] methodological inadequacy."

For Amgen, balancing deCODE's continuing investigations into population genetics against its need to make a return on its upfront and continuing investments will be a complex task. Kamb says the company is taking a 'Hippocratic oath' of sorts with respect to its new acquisition. "We don't want to disturb that culture too much," he says.

Jonathan Knowles, professor of translational medicine at the Swiss Federal Institute of Technology Lausanne, was head of research at Basel-based Roche when it entered a much heralded alliance with deCODE in the late 1990s. He agrees it is important to retain deCODE's culture. "I personally wouldn't have acquired [deCODE] 100% for that reason. I would have wanted it to keep its autonomy," says.

For critics, the Roche deal exemplified the failure of genomics to deliver on its promise, but Knowles retains a positive view of the experience, which, in the long run, was cost-neutral for Roche. "It didn't deliver any salient product, but it was very important in helping to reset the mindset of the company," he says. Time will tell whether Amgen has timed its move more effectively.

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