

## Amgen's PCSK9 patents upheld

The market share fight for the newest class of cardiovascular drugs saw Thousand Oaks, California-based Amgen win a legal skirmish in March when a US District Court jury upheld two of its patents covering monoclonal antibodies against PCSK9. Defendants Regeneron Pharmaceuticals and partner Sanofi admitted that their cholesterol drug Praluent (alirocumab) infringed claims in both patents, but argued that the patents were invalid. Regeneron, of Tarrytown, New York, and Paris-based Sanofi plan to appeal the decision to the US Court of Appeals for the Federal Circuit. In a statement, Sanofi and Regeneron said, "This decision is the first step in this ongoing litigation and does not impact Praluent or our ability to deliver it to physicians and patients at this time." Amgen markets its own PCSK9 drug, Repatha (evolocumab), which was approved by the Food and Drug Administration in August 2015, one month after Praluent. However, instead of damages or royalties, Amgen has requested a permanent injunction on sales of Praluent, which would leave Repatha as the sole PCSK9 drug on the market—for the time being. Last month, Pfizer's PCSK9 inhibitor cleared its second phase 3 trial, setting up a possible regulatory filing in the coming months. If it reaches the market, bococizumab could compete with Repatha and Praluent.

## J&J incubators open in Belgium and Texas

Johnson & Johnson Innovation has set its sights on European biomedical innovation by opening a bioincubator to identify early-stage companies and nurture them at its Janssen campus in Beerse, Belgium. The initiative, called JLINX, launched in March with undisclosed venture funding from the company's J&J Innovation-JJDC venture arm. JLINX will host startups and provide entrepreneurs with access to J&J's scientific, technical, and business expertise, as well as an opportunity to share ideas and collaborate. J&J will make venture investments in the companies but will not hold rights to any products they commercialize. J&J said it hopes to bring in external investors for JLINX companies. Bioqube Ventures, the incubator's independent management arm, will manage the investment portfolio, work with external investors, and help choose new companies for the incubator. J&J said JLINX will have a particular focus on human microbiome research. It is accepting applications from startups and will be fully operational this summer. J&J's other regional innovation centers include Boston, California, London, and Shanghai.

In March, J&J also unveiled the JLABS incubator in Houston. The facility is housed within the Texas Medical Center (TMC) Innovation Institute. J&J said the incubator, dubbed JLABS @ TMC, will initially house 21 companies and can accommodate up to 50. Several resident biotech will focus on oncology and immuno-oncology. TMC JLAB joins a network of J&J Innovation life science incubators in Boston, San Diego, and the San Francisco Bay Area and a planned incubator in Toronto.

## Citizen science lures gamers into Sweden's Human Protein Atlas

Since its launch in March, more than 40,000 people have joined Project Discovery, an effort by the Human Protein Atlas (HPA) that aims to map protein expression throughout the body. The citizen science initiative entices gamers to help analyze around 250,000 images of stained tissue samples by embedding the scientific data within EVE Online, a futuristic role-playing game with around half a million subscribers that has been running for more than a decade.

Gamers have to pinpoint fluorescently labeled proteins within cells, and if their analysis is good enough, they win in-game credits to spend on cyber-goodies. Players have already made more than 4.5 million individual protein location annotations. "It's mind-blowing," says Emma Lundberg, director of the HPA's subcellular protein atlas and leader of Project Discovery, who is based at the SciLifeLab in Stockholm. "Interest in the game has been much higher than we expected."

It's not the first time that gamers have been enlisted to help analyze data through citizen science projects. FoldIt, for example, allows players to tinker with protein models to find the most stable conformations, or redesign them to boost their catalytic activity (*Nat. Biotechnol.* **30**, 190–192, 2012).

But citizen science games have generally been home-grown affairs designed around the data and developed from scratch. "Project Discovery is the first time that a citizen science task has been put into a triple-A computer game," says Lundberg.

"It's the most innovative thing I've seen yet in citizen science," agrees Amy Robinson, executive director of EyeWire, a neuron-mapping game based at Princeton University, in New Jersey. Project Discovery also illustrates how much citizen science has changed over the past decade.

In the past, most citizen science projects simply asked ordinary members of the public to collate data, perhaps counting birds or butterflies for ecology surveys. But internet access allowed them to participate in other ways: donating idle computer time, or directly analyzing data. To make the analysis process more interesting—and keep volunteers coming back for more—some projects turn the task into a game (a tactic known as 'gamification'). A growing number of tools and platforms make it easier than ever to set up a project.

For the Human Protein Atlas, Lundberg hopes the gaming approach will help to unblock a major data bottleneck. Her team

has used semi-automated sample preparation and microscopy to build up a stash of 13 million images showing the locations of different proteins in various tissues. Computers can interpret simple features in those images, but with 30 cell lines and 29 different proteins in the mix, it has been difficult for machines to read more complex distribution patterns. "Humans are very good at recognizing those patterns," she says.

Project Discovery could not have happened without a close partnership with CCP Games, in Reykjavik, the company behind EVE Online, which also covered most of the set-up costs. But it also involved a crucial third partner, a startup called Massively Multiplayer Online Science (MMOS), in Monthey, Switzerland, that has developed a set of software tools that make it much easier to integrate scientific data problems into games. "It lowers the barrier to entry," says Attila Szantner, co-founder of MMOS.

Szantner hopes that linking research problems with established games like EVE Online will give citizen scientists a stronger incentive to keep playing. "Keeping up long-term engagement is the major problem," he says. "Gamification is usually a little spice on the top, but here it's the core mechanism." EyeWire currently has 219,000 players signed up, with roughly 1,000 of them active per week. But Robinson says fewer than 10% of the participants do most of the work, and she is eager to capture a broader demographic.

Lundberg is optimistic that players will stay with Project Discovery, but she adds that it remains to be seen whether the data they produce are good enough. "The community will not believe anything until we've proven it," she says. The group is continuing to tweak the game mechanics in order to improve the quality of players' annotations, and Lundberg hopes to have enough data to analyze their success rates by summer.

Joanna Reynolds, director of research communications and engagement at Cancer Research UK (CRUK), says that she has seen a big change in researchers' attitudes to citizen science in recent years. When CRUK produced its first citizen science project, Cell Slider, in 2012, "citizen science still felt very unproven," she says. But after demonstrating that it could produce useful results (*EBioMedicine* **2**, 681–689, 2015), CRUK now has more than a dozen research groups working with the citizen science team and has developed a series of other projects,