BUSINESS

Biotech boom prompts fears of bust

A spate of successful public offerings has raised ample funding for biotechnology — and anxiety about when the good times will end.

BY HEIDI LEDFORD

It has been the summer of biotech. After years of fretting that investors had soured on the high-risk industry, untested biotechnology companies are all of a sudden going public. This year, 24 US firms have issued initial public offerings (IPOs), pumping US\$1.8 billion into the industry. Their stocks rose an average of 20% on the first day of trading. Another eight companies plan to follow suit in the coming months.

If they do, it will be a record-setting year for biotechnology (see 'Bullish on biotech'). Each new deal has amped up the excitement. But there is also anxiety that the field could be in a bubble. "It will be a cycle, and this cycle will eventually run its course," says Noubar Afeyan, managing partner at venture-capital firm Flagship Ventures in Cambridge, Massachusetts. "These things end up appearing and disappearing for reasons that people can only explain in hindsight."

Explanations abound for the cycle's upswing. For one thing, investor confidence has been bolstered by established biotech companies that have promising clinical data, says Michael Yee, an analyst at investment bank RBC Capital Markets in San Francisco, California. Yee says that some of these companies may be on the verge of launching blockbuster drugs that are projected to earn around \$10 billion a year in sales. Biotech firm Gilead of Foster City, California, for example, could soon receive approval for its treatments for chronic hepatitis C virus infections, and Bristol-Myers Squibb, based in New York, has created a stir with cancer treatments that target the immune system (see *Nature* 496, 14–15; 2013). The NASDAQ Biotechnology Index, comprising 124 biotech stocks, has risen 46% in the past 12 months.

Meanwhile, the US Food and Drug Administration (FDA), long seen as an obstacle in the industry, approved 39 new drugs in 2012 — the biggest annual tally in more than a decade. The FDA has also pledged to fast-track 'breakthrough' medicines for serious conditions. David Lubner, chief financial

BULLISH ON BIOTECH

Initial public offerings (IPOs) of stock have been completed by 24 biotech companies so far in 2013. With eight more planned this year, 2013 should break the record for proceeds set in 2000 — the last time a big boom turned to bust.

officer at the antibiotics company Tetrphase in Watertown, Massachusetts, says that the success of his firm's IPO in March might have been helped by legislation, passed last year, to ease the approval of drugs that fight antibiotic-resistant bacteria.

Universities also stand to benefit from the boom. When academic discoveries in the life sciences seed start-up companies, the universities license patents to the start-ups but charge little because young biotech companies rarely make a profit and are often cash-strapped. Instead, the universities receive company stock in the start-ups to supplement the small licensing fees. In a hot IPO market, the value of those equity stakes rises. "This market is a real boon for major research universities that have strong life-sciences programmes," says Donald Siegel, dean of the school of business at the State University of New York in Albany.

At the height of the technology boom in 2000, US universities made \$165 million by cashing in equity — money that is often split among individual inventors, their research departments and other university activities, such as technology-licensing offices. Last year, that tally was a respectable \$51 million, and Siegel says that this cashed-in equity represents less than 3% of universities' overall stake. Sean Flanigan, president of the Association of University Technology Managers in Deerfield, Illinois, says that universities stand to benefit in other ways from IPOs.

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Companies can choose to funnel IPO money back into academia, by directly sponsoring research or licensing more technologies.

But the lucrative IPOs depend on continued enthusiasm — which could evaporate if investors decide that the market is too unstable. After a bubble bursts, investors can shun a field for years, says Chris Yung, an associate professor of finance at the University of Virginia in Charlottesville. "As a society, we seem to be pretty poor at determining when we've hit the right point to stop."

One sign of a bubble is when companies are valued more highly than their actual worth, says Yung. However, worth can be difficult to gauge for biotech companies that do not yet make a profit. For example, Agios, a pharmaceutical company in Cambridge, Massachusetts, currently has no drugs in clinical trials, yet the cancer-treatment firm raised \$106 million in its July IPO. Its stock shot up 74% on the first day of trading. Another example is Intrexon, a synthetic-biology company based in Germantown, Maryland. Yee says that Intrexon was one of the hottest biotech IPOs of the past two months, even though he is not entirely sure what the company aims to do scientifically and strategically.

But worth has many measures. Agios has a star-studded team of scientists at its helm and a \$150-million deal with Celgene, a large pharmaceutical company based in Summit, New Jersey. And Intrexon is run by Randal Kirk, a billionaire investor who has a history of reaping huge returns from biotech investments. Yee says that investors might feel good about supporting young companies that are targeting a well-defined population of patients, simplifying clinical trials and boosting the odds of success.

Clinical trial results are due from some of these companies in the next year — and investors will be keeping a close watch. "If the data comes out well, people are going to latch on and believe the dream is still alive," says Yee. "If it doesn't, investors will be reminded that a lot of this stuff is early stage — and it is risky." ■

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