

# Tearing up the traditional biotech playbook



## Bigger and more expensive science requires more extensive collaboration and new funding opportunities.

To fund a biotechnology startup, you need preliminary data. To generate that preliminary data, you need funding. If funding is scarce, as it is now, investors tend to play safe. They will back middle- to late-stage companies with data that are already showing strong promise for clinical utility, or back a particular person who has shown success. So where does this leave the vast number of startups and young entrepreneurs that do not fit these criteria? How will startups, particularly those tackling ‘riskier’ projects, secure early-stage funding to move their innovation forward? The field of drug discovery has changed, and entrepreneurs need expensive equipment to perform experiments. They need to get creative.

Today’s innovators are embracing alternatives to the traditional startup playbook. In the standard biotech funding model, a company founder would come up with an idea and obtain some preliminary scientific results, then take the data to investors or venture capital (VC) firms who could provide financial backing for the project. The company would then hopefully transition into development and eventually into the larger market. This process, however, is never straightforward – it requires much networking and often entails repeated rejections, especially at the outset or if the project is risky. At the earliest stages, it is angel investors who provide the funding, and later, as the need for capital grows, it is VCs who contribute sizable sums, enough to ensure the project has a chance of succeeding. In the past, this model has delivered. But today’s biotech entrepreneurs are looking for a better fit for their needs.

Small biotech companies today have a variety of options for securing early-stage funding. For someone with good networking skills or some experience as an executive, seed investors or high-net-worth individuals may be willing to put forward \$500,000 to a couple of million dollars into building a new company, even for something risky. Foundations may also support startup companies – in particular, those tied to specific diseases. Foundations

invest millions of dollars each year in basic science and translational research.

Wherever early funding comes from, the problem remains that doing science is expensive, and becoming increasingly so. And in this age of multi-omics, one of the biggest hurdles is the need for large, expensive equipment. Universities recognize this, and it is possible for startups to partner with core facilities at universities in the area to rent time on certain equipment, such as sequencers. One does not need to be in a big city to have this sort of arrangement. The Huck Institute at Pennsylvania State University, for example, runs 12 core labs and offers services for a fee to local companies. This is a way for companies to access state-of-the-art equipment and expertise without the costs of purchasing or maintaining the instruments. Universities may also offer training for students or biotech workers for handling and running such machines.

Not only is science today more expensive, but it is also bigger and more multidisciplinary. There is a need for researchers and entrepreneurs to collaborate. A growing number of incubator and accelerator programs offer networking, support and advice to early-stage and mid-stage companies, globally, without the need for a lot of preliminary data. Big Pharma hosts several such accelerators and incubators – to name a few, Johnson & Johnson’s JLABS, Novo Nordisk’s Bio Innovation Hub and the AstraZeneca Idea Incubator. But even more marked is the trend for independent incubators – startup accelerators like Y Combinator, LabCentral and The Engine – to launch companies with a small amount of seed investment and the conditions to help them succeed. Companies work in a close, supportive environment with other new companies, sharing ideas and equipment, all of which foster innovation.

An alternative to incubators is to join an innovation hub. The Chan Zuckerberg Initiative (CZI) has just announced the formation of new Biohubs in Chicago and New York. The CZI Biohub model brings together universities and scientists into groups aimed at accomplishing the high goal of curing disease. Most are risky projects on a long (10–15 year) time scale. There is emphasis on collaboration between participants of different disciplines and on openness of research. Those researchers who are accepted into the hub have the freedom

to pursue their projects without the need to show the preliminary research traditionally expected for federal funding grants. This model promises big results – and time will tell if they reach the public – but the likelihood is that this model will expand.

Biohub culture has already taken off in China. In particular, BioBAY is a biomedicine cluster located in Suzhou. BioBAY hosts over 500 businesses, mostly small pharma, making it one of the fastest-growing life sciences incubators in China. This hub provides a network of services including shared labs, VC fund support and R&D facilities. It has turned Suzhou into one of China’s leading areas for drug development and innovation.

Looking more globally, there are incentives in other countries that could benefit early biotech funding. For example, Australia has a series of R&D Tax Incentives that are driving the small biotech landscape there. They offer a refundable tax offset that enables small biotech companies to allocate their resources to generate early research data and sustained growth without much risk. Clinical research in Australia costs up to 60% less than in the United States for companies that can use these R&D incentives, and there are clinical contract research organizations like Novotech that have expanded into the Asia–Pacific region and can help. Investments can also come in from companies abroad, such as [sovereign funds in the Middle East](#).

As disruptive science relies increasingly on large, multidisciplinary teams, collaboration is essential. No single group can fund ambitious projects to accomplish lofty goals. Looking into the broad palette of funding options requires some legwork and a lot of networking, including reaching out to contacts in venture capital to ascertain what they would need to see before committing to large-scale funding, such as whether it is necessary to bring a seasoned executive onto the board for advice on business plans and networking connections, or to check out new incentives on offer at different global locations. The earliest biotech startups had to be creative to search for funding, before the traditional VC playbook was established. We are back to using that creativity again. It is a good thing that this is where innovators and entrepreneurs thrive.

Published online: 8 January 2024