

# Why More Startups Are Paying Attention to What They Learned in Bio



Image credit: Dan Forbes



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If spiders have taught us anything, it's how to build better thread.

Above all else, this is the inspiration behind Bolt Threads, a fledgling company in Emeryville, Calif., that has leveraged technology to crack the mysteries of spider silk and replicate the recipe commercially. The company, which plans to spin its silk into sportswear and other forms of apparel, is aiming for a 2016 release of products that will harness proteins found in nature to create fibers and fabrics with both practical and revolutionary uses.

There are many ways entrepreneurs are leveraging science into success. Some call the thinking behind these types of businesses "biohacking" because of the way they reference biological processes in a bid to build better products. Others prefer the terms "synthetic biology" or "next-gen biotech." All are colloquial catchalls for companies that hinge on work done in small, nonindustrial labs -- or even those that use an offbeat scientific rationale to improve health.

Whatever you call it, the market for biology-driven businesses is gaining traction in a big way.

A 2014 report from Allied Market Research predicted that the global synthetic-biology market would grow to \$38.7 billion by 2020. Anecdotal evidence also paints a rosy picture: Witness the rise of Bulletproof Coffee -- that is, butter in your morning java -- which has garnered international attention and support from celebrity investors such as Tim Ferriss. (Claims that the concoction can accelerate weight-loss and improve mental focus are unproved.) "Functional" beverage products such as alkaline and maple water are now available at Trader Joe's and other mass-market stores. Again, these are often purported to have health benefits. Soylent, a meal-replacement drink, even touts itself as the end of food as we know it -- and has notched more than \$20 million in investment from the likes of Andreessen Horowitz.

In fact, the "synbio" industry is exploding with startups, venture money and ideas, according to Nancy Kelley, president and CEO of Nancy J Kelley + Associates, a New York City-based consulting firm. "It's all about the democratization of science," she says. "It's a revolution just like what we saw years ago in the computer industry; anybody has the ability to use biology to do something interesting."

and that price is expected to continue to drop. This means people with big ideas don't need to spend big money to turn a concept into a product.

But these changing economics are only part of the story. Ryan Bethencourt, program director and venture partner at San Francisco's Indie.Bio, the nation's first synthetic-biology accelerator, says that when one applies cost reductions to Moore's Law (the concept that digital technology will increase in power at an exponential rate), the landscape of business opportunities is limitless. "If you consider how far we've come in the context of how much farther we're going to be capable of going, it boggles the mind," Bethencourt says. "In the past, biology has been a backwater type of activity -- a bunch of nerds in a lab. Now this is the new reality for everyone."

If anybody has a pulse on the next-gen biotech market, it's Bethencourt. Since launching in 2014, Indie.Bio has helped more than 75 companies. The assistance may take the form of mentorship, as with Bolt Threads, or some companies may join the accelerator. Indie.Bio's model is simple: All participants in the U.S. program (there is another in Ireland) receive \$200,000 in seed funding, plus \$50,000 in lab space and supplies, as well as mentorship.

However they take flight, synthetic-biology startups have implications for a number of fields. FREDsense Technologies, a Calgary, Alberta-based outfit, has built sensors that detect chemicals in drinking water. As COO David Lloyd explains, the tool will enable communities and other stakeholders to make more informed decisions about water management.

"With this information, you can identify and respond to potential water-quality issues quickly -- something that is not possible with existing methods," he says. "The approach can change everything."

Despite all the opportunities in synthetic biology, challenges to commercializing products in the space are significant. First on the list: marketing. Ethics are an issue; most of these companies are manipulating cells or DNA in some way, and some potential customers have concerns. The second issue is separating style from substance; as biohacking becomes part of our vernacular, it can be difficult to discern which efforts actually are worthy of attention. Another challenge for synbio companies is staying ahead of the curve. Bethencourt says that because so many are now dabbling in this space, it behooves entrepreneurs to figure out ways to get in, get their companies together, get funded and get to market without delay.

Ultimately, this is a solid strategy for survival in any industry. Chalk it up to another thing we've learned from biology.

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