

## CUTTING-EDGE LEADERSHIP IN A NEW TECHNOLOGY CAN CUT BOTH WAYS

**P**RECISION BIOSCIENCES built its business model around a groundbreaking, cutting-edge technology – a gene editing platform derived from a natural gene editing enzyme. “We have a technology that allows us to go into a living cell or organism and change the DNA in very defined ways,” says Co-Founder and Chief Scientific Officer Derek Jantz, PhD. “We can change the function of that cell, or in the case of human medicine, we can potentially correct genetic defects that are associated with disease. We can also improve crops to enhance nutrition through gene editing, allowing us to improve human health through both medicine and agriculture.”

The trouble with being in the lead with a cutting-edge technology is that sometimes you’re so far ahead of the market you must spend more time in the Valley of Death than usual.

“The real challenge was bridging that gap between the handful of early adopters who were willing to give us a little bit of money and the point where we could raise significant outside capital because the technology and approach were well validated,” said Dr. Jantz. “Anytime we could scrape together some money we would hire another person, and it was a constant struggle to keep money trickling in and the lights on so that we could continue to advance the technology.”

The One North Carolina Small Business Program played an important role in moving the company ahead.

Dr. Jantz and his business partners, Matt Kane and Jeff Smith, founded Precision BioSciences after winning second place in Duke University’s “Start-Up Challenge” in 2006. To supplement the competition prize money, they applied for federal Small Business Innovation Research (SBIR) grants.

“We were ahead of our time,” Dr. Jantz explains. “We were a gene editing company before gene editing was cool. As a consequence of that, we didn’t really have other [funding] options. In those early days it was critical for us to get grants to pay the bills and continue our research until the rest of the biotech field could see the value in what we were doing.”

Today, there’s no question the industry has taken notice of Precision BioSciences and ARCUS®, the company’s gene editing platform, which has been designed to create products to potentially cure genetic diseases, fight cancer, and feed the planet. But without the SBIR matching funds from the One North Carolina Small Business Program, the company might have never gotten across the Valley. “If we look at our balance sheet from the early days of the company, there were multiple occasions where we had less money in the bank than the NC matching funds, meaning if we had not gotten those funds, there’s a very good chance that we would have gone under.”

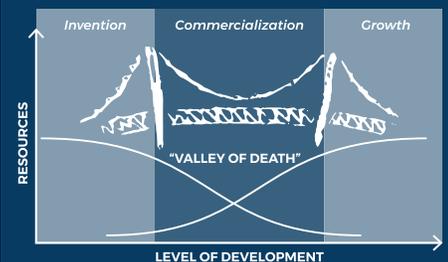
The grant program’s flexibility also provided a big up side. “It was easy and there weren’t a lot of strings attached to the money, so we could use it to do a lot of different things,” said Jantz. “That money coming in during the Valley of Death period really allowed us to drive the technology forward to where we are today, at the cusp of human clinical trials; it generated significant value not only for the patients that we’re hoping to treat, but also for the local economy, where we will continue to invest significantly as the company grows.”

Precision BioSciences isn’t done growing yet. The company recently announced a strategic collaboration with Gilead Sciences to use ARCUS to develop a treatment for Hepatitis B Virus (HBV), a disease that affects an estimated 257 million people worldwide. Since then, Precision has announced FDA authorization for their first investigational new drug (IND) application, clearing the way for their first clinical trial, which will evaluate a gene-edited, off-the-shelf T-cell therapy to treat B-cell acute lymphoblastic leukemia (B-ALL) and non-Hodgkin lymphoma (NHL). Precision BioSciences’ food and agriculture subsidiary, Elo Life Systems, has an ongoing partnership with Cargill to reduce saturated fat in canola oil, and is developing high protein plant crops at their recently launched Elo-Australia location.

### ABOUT THIS SERIES

Entrepreneurs and business owners face many challenges during the life of their companies, but none strike more fear and difficulty than the ‘Valley of Death.’

A familiar phrase to venture capitalists and business executives, the Valley of Death is the period of time a company must navigate between the discovery of a business-worthy idea or technology and the point when the company generates enough paying customers and revenue for long-term survival, job creation, and profits. Finding funding sources to bridge this gap is an ongoing struggle.



The One North Carolina Small Business Program helps promising, technology-oriented companies in the state survive and thrive. By providing matching dollars to companies that have already won highly-competitive federal technology grants, the OneNC Small Business Program is an important solution for North Carolina companies facing one of the business world’s toughest challenges.

# BRIDGING THE VALLEY OF DEATH: A One North Carolina Small Business Program SUCCESS STORY



## one north carolina Small Business Program

### ABOUT THE PROGRAM

- Established in 2005 (§ 143B-437.80-81), the Program awards matching funds to small businesses that receive federal Phase I Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) Phase I grants.
- SBIR and STTR grants are the single largest source of early-stage technology development and commercialization funding for small businesses (more than \$2 billion annually) – larger than all private sources combined.
- Yet the federal grants are often not large enough to allow the small businesses to complete their work, and federal restrictions on the uses of grant funds often limit the businesses.
- The North Carolina Program supplements and leverages the federal funds, helping hometown businesses commercialize innovative technologies & create jobs.
- Since Program Inception:
  - 398 grants awarded
  - Over \$24.7 million awarded
  - 255 different companies in 25 counties and 41 cities across the state have received funding
  - More than 900 jobs created or retained
  - More than \$500 million in external capital investment
  - More than 100 patents and copyrights already received, and another 250 applied for and under review
  - More than \$125 million in total sales resulting directly from the technology developed with Program funding
  - More than \$1.5 billion in total sales resulting indirectly from licenses of the technology developed with Program funding
  - More than 95 percent of the grantee businesses agree that the Program encourages the establishment and growth of high-quality, advanced technology firms in North Carolina
  - For more information, visit: [nccommerce.com/sti/grant-programs](http://nccommerce.com/sti/grant-programs)



### ABOUT THE COMPANY

- Precision BioSciences is dedicated to improving life. Its mission is to cure genetic disease, overcome cancer, and feed the planet. It is striving to achieve this goal with ARCUS, a therapeutic-grade, naturally-derived genome editing system that combines both specificity and efficacy to help overcome life's greatest genetic challenges.
- Year Founded: 2006
- Office Location: Durham, N.C.
- Current Number of Employees: 125
- Website: [precisionbiosciences.com](http://precisionbiosciences.com)
- Federal SBIR/STTR Funder: U.S. Department of Health and Human Services - National Institutes of Health
- One NC Small Business Grant Recipient in 2007, 2008, & 2010



*Jeyraj Anthony, PhD, and Dan MacLeod, PhD, review data for the T-cell therapy PBCAR0191, recently cleared by the FDA for clinical trials to treat B-cell acute lymphoblastic leukemia and non-Hodgkin lymphoma.*



*Aaron Martin, PhD, working in the Precision BioSciences cell therapy laboratory at company headquarters in Durham, NC.*

