

Long-term Eco-Friendly Biocontrol for Crop Diseases



LEAD INVESTOR

 **Shu Li**

Innatrix develops frontier technology and is determined to solve a very essential problem faced by the agriculture industry. Developing sustainable biological products is very important to both the crop yield but also to the environment as well. The CEO Dr. Jiarui Li is a very talented scientist-turned-entrepreneur and is so mission-driven. I'm constantly impressed by their work and very excited about their technology. Look forward to seeing their future development!

Invested \$1,200 this round

[Learn about Lead Investors](#)

OVERVIEW UPDATES WHAT PEOPLE SAY ASK A QUESTION

Highlights

- 1 Raised over \$320K from NSF SBIR, NSF I-Corps, and One NC Small Business Program
- 2 CEO (Ph.D., MBA) has developed products to control devastating nematode (\$1 billion loss)
- 3 The team has over 20 years in protein evolution technology and crop protection field
- 4 Senior advisor Dr. Pam Marrone has founded 3 agtech companies and all successfully exited
- 5 Patented protein evolution technology (patent held by Innatrix)
- 6 The team has 2 patents and more than 40 peer reviewed publications

Our Team



Jiarui Li President & CEO

Dr. Li has developed several products for crop disease and pest control; He received 2 patents and published 33 peer-reviewed research papers. Dr. Li has also raised \$320K in non-diluted funding.

The directed protein evolution technology is a powerful technology to treat untreatable crop diseases that lead to billions of dollars in losses annually. These diseases are untreatable because crop pathogens and pests become resistant to traditional pesticides used. This is when we decided to develop our technology to overcome resistance.



Marshall Edgell Founder

Dr. Edgell has over 40 years of research experience. He was a discoverer of the cleavage properties of restriction enzymes and site-directed mutagenesis. He also designed Innatrix's patented protein evolution technology, EvoStat.



Peter Reintjes Bioengineer

Peter has many years of experience in the automation of scientific laboratory



processes. He has expertise in electronic systems design, software development, and programming. Peter also developed our patented protein evolution technology, EvoStat.



Madison Frye Business Manager

Madison has conducted over 100 customer interviews through NSF Innovation Corps (I-Corps) program, and found a market fit for Innatrix's protein evolution technology. She is also a consultant for various biotechnology companies in the RTP area.



Ramya Vijapurapu Marketing Manager

Ramya has been generating various digital marketing approaches and strategies for Innatrix since February 2021. She is in the Master of Microbial Biotechnology (MMB) program at NC State University, gaining industry experience through project work.

About Innatrix

Long-term Eco-Friendly Biocontrol for Crop Pathogens



(By strawwallstudio)



Jiarui Li, Ph.D., MBA, CEO, Innatrix

Global Pesticide Market



Global fungicide and bactericide markets are expected to reach USD 28 billion by 2024

Between 20% and 30% of these pesticides will soon be banned due to health concerns



The Problem - Late Blight

\$6.7 billion annual loss globally for potato



Late blight kills potato plants



LB affects potato tuber quality



Late blight kills tomato plants



Pathogens are notorious for developing resistance to chemical controls

Innatrix Solution

- Eco-friendly: protein-based biological products
- Cost effective
- Unique: Patented protein evolution platform
- Manage pathogen resistance

Target Customers

Products

Target Customers



Crop product distributors
Simplot, Nutrien, Helena

Product



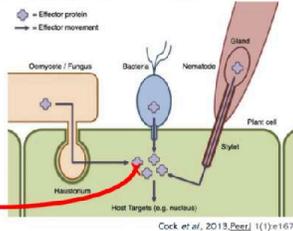
Novel sustainable biological
crop protection products

Patented Technology

Innatrix protein evolution



Protein ligands bind to virulence proteins



Cock et al., 2019, *Plant* 1(1):e167

Late blight can't infect plants when the target protein is bound by protein ligands.
*Patent currently held by founder, Marshall Edgell

How is it used



Seed treatment



Aerial Spray

Innatrix Competitive Advantages

	Chemical		Microbials
Cost to develop	>\$300M	\$4-5M	\$4-10M
Time to market	10 years	3-5 years	3-5 years
Safety profile	Problematic	Excellent	Excellent
Manage disease resistance	Very problematic	Good	Good
Production cost	Low-cost at large scale	Scalable, low cost	Variable
Production system	Standard chemical plant	Universal fermentation	Different from product to product
Product stability	Excellent	Very good	Variable
Regulatory path	Stringent	Manageable	Variable

Technical goals are guided by the customer needs

152 Customer interviews:

- Growers
- Potential distributors/channel partners
- Scientists and managers from seed companies
- Crop consultants and PCAs
- Partners for manufacturing
- Land grant university extension



Key findings:

Organic growers have limited tools

- > Can't use systemic pesticides
- > Non or very few options to control devastating pathogens

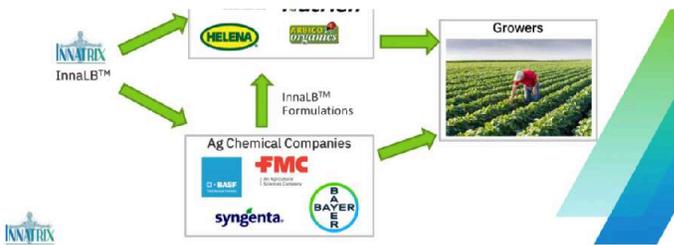
Conventional growers are interested in eco-friendly products

- > Pathogens develop resistance on chemicals
- > Participate in IPM programs
- > Do not want to use harsh chemicals for environment and regulatory reasons
- > Would adopt friendly pest control solutions

Go-To-Market Strategy for InnalB™

Ag Retailers



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Pipeline and Milestones

Indication	Product Maturity			
InnaLB™ (Potato late blight)	Discovery	Lead identification	Proof of concept	Product development
InnaHLB™ (Citrus greening)	Discovery	Lead identification		
InnaNema™ (Soybean cyst nematode)	Discovery	Lead identification		

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Product Development Path and Funding

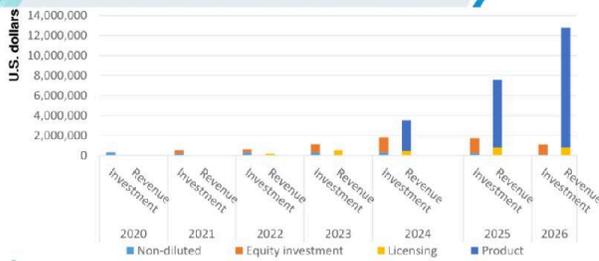


External funding support

Name	Type	Amount (\$)
NSF SBIR Phase 1	Non-dilutive	\$24,594
NSF I-Corps Program	Supplemental	\$25,000
One NC Match Fund	Match Fund	\$98,087

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External Investment & Revenue Projections



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Exit Plan

Possible Buyout:

Unique value propositions and rapid growth make us an attractive target for agbiotech and agchemical industry buyout.

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Marshall Edgell, Ph.D.
FOUNDER
Emeritus Professor of UNC



Jiarui Li, Ph.D., MBA
PRESIDENT & CEO
Raised \$71.3M



Peter Reintjes, B.S.
ENGINEER
Automation expert, expertise in software & hardware building



Madison Frye, M.S.
BUSINESS ADVISOR
Consultant for various biotechnology companies in the RTP area



Ramya Vijapurapu, B.S.
BUSINESS ADVISOR



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Strategic Advisors



Pam Marrone, Ph.D.
SENIOR ADVISOR
Founded Entotech, Inc., AgraQuest Inc., Marrone Bio Innovations. All successfully exited



John Salmeron, Ph.D.
BUSINESS ADVISOR
Founder of 5 Research partners, LLC



Matthew Levy
SCIENTIFIC ADVISOR
CSO at Drive Therapeutics



Shu Li, Ph.D.
ADVISOR
CEO & co-founder of Petri Bio, co-founder of Alpine Roads, a VC-backed startup



Mike Carnes
ADVISOR
Technology commercialization consultant & equity funding specialist at SBTDC



Daniel D. Kunitz
ADVISOR
Venture partner at NextGen Venture Partners



Merrill Mason, JD
ATTORNEY
Owner of Smith Anderson




We need to change the way we do agriculture...

- # Develop eco-friendly ag products;
- # Manage disease and pest resistance;
- # Faster and economically to develop products;
- # Feed the world more sustainably.

Innatrix has the tools to do the job!




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Thank you for your attention!