

Bionematicide Product Headstart

We've selected and characterized a novel protein and validated activity *in planta* against root knot nematode and soybean cyst nematode. Use our end-to-end R&D platform to advance this candidate to commercial readiness, or discover other novel nematicidal biologicals.

WORK PERFORMED TO DATE

Target

Root Knot Nematode,
Soybean Cyst Nematode

Mode of action

Protein R (known);
Additional proteins (putative)

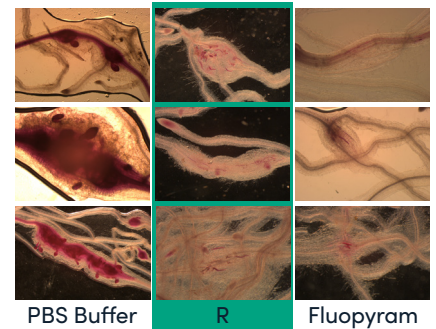
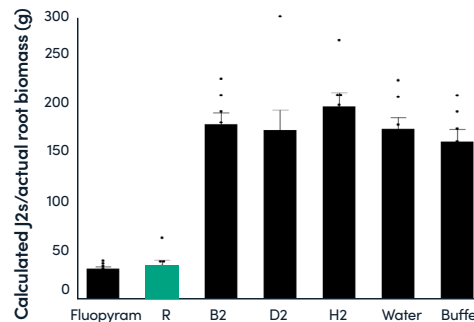
Key assets

- Novel protein MoA
- 8,526 strains with confirmed Protein R gene clusters

We've demonstrated the following results *in planta*

- Reduced egg hatching of Root Knot Nematode (RKN) by >55%
- Reduced RKN gall formation by nearly 75%
- Reduced infection by Soybean Cyst Nematode by 78%

Efficacy of different treatments against SCN



HOW GINKGO CAN PARTNER ON A BIONEMATICIDE PROGRAM

Wild type formulation and fermentation process development

Test wild type strains with Protein R production pathways in a prototype formulation that matches your desired product strategy.

Optimize AI expression in root-colonizing strain

Express Protein R in one of our proprietary chassis strains with proven root-colonizing activity. Test and rapidly optimize expression through mutagenesis and ultra high throughput screening.

Engineered root-colonizing strain expressing multiple AIs

Express Protein R or other AIs in a root-colonizing microbe. Optimize expression through mutagenesis or rational engineering approaches.

HOW WE PARTNER

Our IP Philosophy

Each party retains ownership of the Background IP they bring to a collaboration. Ginkgo seeks ownership of the foreground IP and grants the partner the licenses needed to manufacture and sell the product in a given market.

Commercial Structure

Our payment structure reflects our philosophy: we share risk and share in the success. We get paid through a combination of R&D fees and downstream value-share such as royalties, equity or commercial milestones. Through Joint Steering Committees, we work with partners to govern key decisions in project progress.

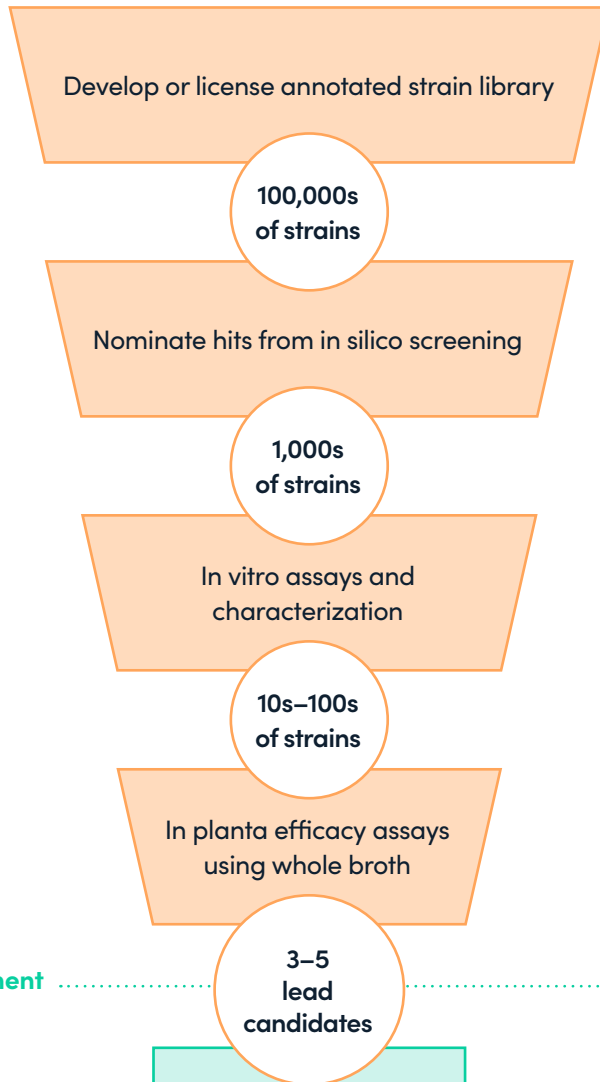
How to start? Speak to our team!
agriculture@ginkgobioworks.com

Get a Headstart on Discovery

Access Ginkgo's diverse strain library to accelerate your next biological product

WILD TYPE MICROBIAL PRODUCT DISCOVERY TO DEVELOPMENT

Early to late discovery

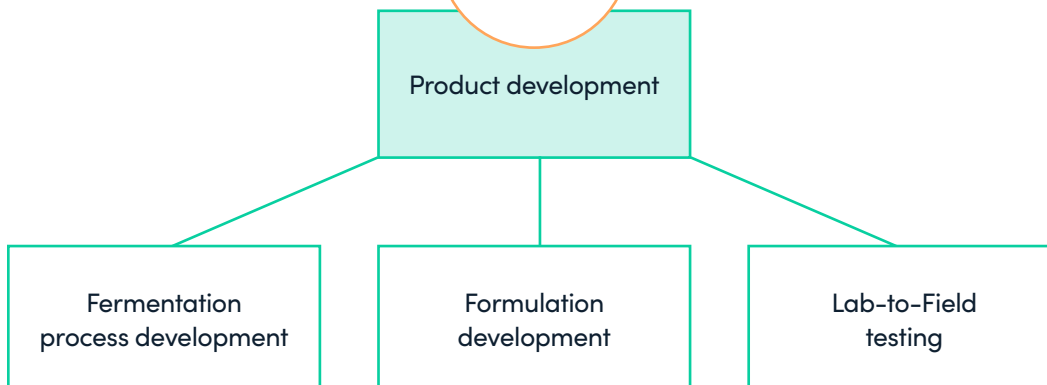


Shave years off of Discovery with our lead candidate strains

Lead candidate strains emerging from *in silico* screening, *in vitro* testing and *in planta* assays address multiple product applications across crop protection and nutrient use efficiency.

Access our world-class 200,000+ member strain library, sourced from diverse soil and plant-associated environments, to nominate additional candidates for *in vitro* and *in planta* characterization.

Product development



PRODUCT DISCOVERY HEADSTARTS

		Discovery Stage			
Application	Lead Candidate Type	<i>In silico</i> hits	<i>In vitro</i> leads	<i>In planta</i> leads	
Crop Protection	Bionematicides	Novel active ingredient	✓	✓	✓
	Biofungicides - Row Crops	Novel strains	✓	✓	✓
	Biofungicides - Specialty Crops	Novel strains	✓	✓	Not tested
	Bioinsecticides	Novel strains	✓	✓	✓
	Nitrogen fixation	Novel strains	✓	Not tested	Not tested
Crop Nutrition	Phosphate solubilization	Novel strains	✓	Not tested	Not tested
	Plant growth regulators	Novel strains	✓	Not tested	Not tested
	Carbon sequestration	Novel strains	✓	Not tested	Not tested

OUR PLATFORM

Leverage our end-to-end platform to progress candidates through product development

Achieve target COGS with our Fermentation Process Development services

- Optimize process requirements for manufacturing with predictive fermentation tools (e.g., Sartorius Ambr250 ml reactors)
- Test at scale with 3000L pilot plant facility

Improve product efficacy and stability with our Formulation Development services

- Industry leading formulation expertise across a range of product concepts - liquid suspensions, dry format formulations, foliar and seed treatment formulations, and adjuvants to enhance bioactives

Go to field trials with confidence with our Lab-to-Field Testing services

- 175k ft² plant science facility with growth chambers, greenhouses, micro plots and rapid phenotyping (multispectral 3D imaging) capabilities
- Robust platform of efficacy and stability assays to validate biological products in formulation

Learn more about accessing our lead candidate strains - Schedule a meeting today!

agriculture@ginkgobioworks.com