



Private Company

Potentiators to enhance fungicide performance

Background

Fungal pathogens pose a persistent challenge in both pharmaceutical and agricultural sectors, particularly as resistance to broad-spectrum fungicides continues to rise. Traditional fungicides, while effective, are increasingly met with resistance mechanisms that reduce their efficacy and longevity. This creates an urgent need for alternative strategies that can extend the utility of existing treatments. Natural and synthetic-derived chemistries can be potentiators for fungicides. These compounds exhibit anti-fungal activity only in combination with a fungicide but have no fungicide activity alone. Furthermore, each potentiator increases the potency of its respective fungicide against its fungal target(s), by possibly improving the bioavailability of the fungicide to the pathogen, offering another mode of action, and extending the window of disease protection.

What we're looking for

We are looking for potentiators that can provide the “second knockout punch” by improving the bioavailability of the fungicide, offering another mode of action, disabling a known resistance mechanism, and/or inhibiting cellular stress responses. Specifically, we want potentiators discovered through your chemical library screens combining sub-lethal doses of a fungicide against a laboratory fungal pathogen or a fungicide-resistant strain. We want to collaborate with you to produce or synthesize these potentiator candidates and determine their efficacy combined with our proprietary fungicides, which fall within the chemistry and/or mode-of-action groups outlined below.

Solutions of interest include:

- Potentiators intended for use in combination with fungicides from the following chemical classes: triazole, strobilurin, carboxamide, and phenylamide
- Potentiators intended for use in combination with fungicides from the following mode-of-action targets: C14-demethylase in sterol biosynthesis (erg11/cyp51), quinone outside site inhibitors (QoI), succinate dehydrogenase inhibitors (SDHIs), or RNA polymerase I inhibitors

Our must-have requirements are:

- Shows no fungicide or toxic activity independently, only in combination with a fungicide
- Reduces minimum inhibitory concentration of the fungicide in checkerboard assays
- Mode-of-action can be predicted or defined

- Can be detected and quantified using an analytical method
- Non-toxic to human cell lines
- Ability to supply a minimum of 10 mg of sample upon request

Our nice-to-have's are:

- Non-toxic to animal models
- Viably produced via scale-up bioprocessing or chemical synthesis

What's out of scope:

- Volatile or unstable compounds

Acceptable technology readiness levels (TRL): Levels 1-9

1. Basic principles observed
2. Concept development
3. Experimental proof of concept
4. Validated in lab conditions
5. Validated in relevant environment
6. Demonstrated in relevant environment
7. Regulatory approval
8. Product in production
9. Product in market

What we can offer you

Eligible partnership models:

- Sponsored research
- Co-development
- Supply/purchase
- Licensing
- Material transfer
- Consulting project
- Capstone project

Benefits:

Sponsored Research

Funding is proposal dependent and could be in the range of \$50-150K total for 6-12 months. Licensing of promising potentiators may be negotiated.

Expertise

Partners will have access to internal team/experts as appropriate.

Compounds and Reagents

Partner will be provided the relevant fungicides for evaluation under MTA.

Data

Partners can leverage the data set for additional insights regarding the solution.

Facilities and Services

Partners can send samples for analysis at our facilities.

Please contact the University of South Florida Technology Transfer office representative for submission – Karla Schramm at kschramm@usf.edu