Private Company

Uncovering the “perfect” natural product from a specific bacteria

AGRICULTURE

Background

Natural product discovery has been fueled by mounting regulatory pressure on synthetic chemistries and the desire for new mode-of-actions. However, the high rediscovery rates of certain natural products have stagnated our efforts to uncover other underlying actives.

With the recent advancements of microbial sequencing, heterologous strain engineering, and metabologenomics, we have tools that go beyond traditional bioactivity-guided fractionation methodology, allowing for more predictive and targeted discovery of natural products.

We are seeking a partnership with a capable collaborator who can effectively identify natural project actives derived from our proprietary strain. These identified natural products should demonstrate activity against specific pathogens, while not falling under the categories of antibiotics, siderophores, volatile compounds, unstable polyenes, or nonribosomally synthesized peptides.

The identification of these natural products can be achieved through metagenomic and bioinformatic approaches, strain engineering, and traditional activity-based fractionation methods.

What we're looking for

Our ideal partner would possess the expertise to integrate natural product discovery tools with further knowledge and experience on how to develop upscale the production of identified natural product(s). While proposals encompassing all these steps will be given priority, we are open to considering other proposals addressing the individual discovery phase as well (i.e., focusing on natural product discovery only or on natural product scale-up production).

Our must-have requirements are:

- Strain engineering of candidate microbial strains (i.e., knockouts, overexpression).
- Bioinformatics to conduct genome wide analysis and metabologenomics to identify the potential natural product synthesis process for production.
- Leveraging tools and techniques to demonstrate natural product chemistries have robust, specific, and potent bioactivities

Our nice-to-have requirements are:

- Understanding scale-up bioprocessing of natural product, allowing for recovery at an economically viable yield (targeted engineering of heterologous expression strain and secreted into the medium).
- Develop the bioengineered microbe as a stand-alone solution.

What's out of scope:

- Natural product chemistries should not be one of the following compounds: 1) Antibiotics, 2) Siderophores, 3) Volatile compounds (ex. Dimethyl disulfide), 4) Unstable polyenes, 5) Nonribosomally synthesized peptides (ex. Thanamycin)

Acceptable technology readiness levels (TRL): Levels 1-4
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:

- Services agreement

Benefits:

Services Agreement
Funding is proposal dependent, up to $50-125K total for 6-12 months.

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

Compounds and Reagents
Microbial strain (1-2 candidates)

Data
Partners can leverage the data set for additional insights regarding the solution. Protocol for strain cultivation and microbial genome sequence.

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