IGEM Grant Report

☐ Progress (due January 1) ■ Annual (due July 31) ☐ Final (due August 31)

IGEM Grant # IGEM25-008 Principal Investigator Marty Ytreberg

Submission Date 03/15/2024 Primary Institution University of Idaho

*Instructions: Complete each section of this report directly on this template. Completed reports must be limited to **1 page for Progress Reports and 2 pages for Annual or Final Reports in 12 pt Arial or similar font**, excluding the expenditure report. Simple and concise answers will be appreciated, and even bullet lists of information will be sufficient. Reports that do not follow these requirements will be returned for revision. Submit reports by the appropriate due date to HERC@edu.idaho.gov.*

Section 1: Summary of project accomplishments for the reporting period and plans for the upcoming reporting period.

Our primary outcome is that, to date, we have identified 12 compounds that have shown the ability to kill fungal infection in the lab. To accomplish this outcome, we used bioinformatics to identify fungal proteins that could serve as potential targets for fungicides. We then used molecular modeling to screen over 20 million chemical compounds for binding to 4 different fungal protein targets. We purchased 148 compounds based on our simulations and have tested over half of these for their ability to inhibit fungal infection. We are currently testing the remaining compounds and testing toxicity of any antifungal compounds on potato plants.

Section 2: High-level summary of budget expenditures for the period just completed. If budget is underspent at time of report, explain why and plans for expending funds.

Funds were used to purchase compounds for testing as potential fungicides ($4,075.50) and to support personnel salary ($53,864.28) and fringe ($19,377.46). David Condon performed bioinformatics to identify fungal protein targets, Hannah Biehn performed experiments in the Schroeder lab, and Marty Ytreberg performed molecular modeling and supervised the overall project.

Remaining funds will be expended by August 31, 2025 for the following items: (1) $7,969.30 will cover the cost of a shipment of new compounds to test in the lab that is currently in U.S. Customs with an anticipated arrival date by end of July, 2025. (2) $7,421.00 salary and $2,352.46 fringe will be used to cover a portion of Marty Ytreberg's summer salary to continue with molecular modeling simulations and project supervision. (3) Approximately $500 will be spent airpore strips for the Schroeder lab to continue their assays testing compounds against potato fungal infection.

Section 3: Demonstration of economic development/impact, including the following as applicable: patents, copyrights, plant variety protection certificates received or pending; technology licenses signed, start-up businesses created, and industry involvement; private sector engagement; jobs created; external funding; any other pertinent information.

Our team has been awarded an Idaho State Department of Agriculture Specialty Crop

Block grant (starting fall 2025) to continue this work by testing against a broader range of fungal pathogens for potatoes.

Section 4: Number of faculty and student participants as a result of funding, and brief description of student efforts.

A total of 7 faculty and 4 students were engaged in the project; 2 students performed experiments (1 in Schroeder lab, 1 in Rowley lab), and 2 performed molecular modeling in the Ytreberg lab.

Section 5: Updated details and/or progress on the long-term sustainability plan for the project and description of future plans for project continuation or expansion.

We will seek funding to continue our work with a focus on ensuring that the fungicidal compounds are targeting the desired fungal proteins. Long-term designing fungicidal compounds that we will patent and license to Gowan Company or other agricultural companies develop products for the market.

Section 6: Expenditure Report – Attach an expenditure report as a separate document showing expenses toward the original budget submitted for this project. The expenditure report does not count toward the page limit. A written summary of budget expenditures should be provided in section 2 of this report.

See attached PDF.

University of Idaho

Itemized Expenditures

From 7/1/2024 through 8/31/2025

Grant: SH7835 - ISBOE HERC IGEM Potato

Index: 772837 - ISBOE HERC IGEM Potato
Fund: 227835 - ISBOE HERC IGEM Potato

Salaries					
E4106 Staff					
		Condon, David	690.47	Hours	$37,660.07
E4108 Summer Salary					
		Ytreberg, Frederick	215	Hours	$13,755.70
					$51,415.77
Temporary Help					
E4135 Temporary Student					
		Biehn, Hannah	186.25	Hours	$2,448.51
					$2,448.51
Fringe Benefits					
		E4280 Faculty CFR Benefit Expense			$4,226.84
		E4281 Staff CFR Benefit Expense			$15,101.65
		E4282 Student CFR Fringe Expense			$48.97
					$19,377.46
Operating Expenses					
E5724 Research Supplies					
9/2/2024	I2326035	Ytreberg, Frederick Martin.			$174.50
9/23/2024	I2327153	Ytreberg, Frederick Martin.			$1,926.40
11/25/2024	Z1086400	Chemical Compounds for DDWG funded	Doc Ref:		$104.00
5/7/2025	I2337095	Ytreberg, Frederick Martin.			$1,870.60
					$4,075.50
		Totals for 227835			$77,317.24
		Totals for SH7835			$77,317.24