Strategic Initiatives to Stimulate Research, Development, and Commercialization

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Objective

The objective of the UMS Research Reinvestment Fund is to strengthen **research**, **development** and **commercialization** activities tied to Maine industries that are critical to the future of the state. In the first three years the program focused on creating an **innovation pipeline** by establishing a portfolio of R&D projects with strong commercialization potential. In its fourth year of funded activities the RRF program has placed a far greater emphasis on **accelerating research commercialization**.

By the Numbers

After nearly four years of operation, the RRF program has:

Received **389** proposals from UMS researchers spanning all **7** campuses.

133 projects have been competitively selected for award totaling **$5.1M** in grant funding.

Key outcomes include:

131 follow-on grants submitted to external sponsors requesting **$72,527,657**

49 were funded for a cumulative total of **$14,758,416** in follow-on grants.

A return on investment of **3:1**.

Project partnerships with **169** external organizations.

Stimulation of Grant Activity

Year	Submitted	$Submitted	Awarded	$Awarded	$Matched	Planned	$Planned
1	3	$7,175,212	1	$9,948	-	-	-
2	63	$23,599,816	17	$8,402,299	$8,050,000	7	$4,450,000
3	65	$41,752,629	31	$6,346,169	$2,071,124	62	$18,335,227
Total	131	$72,527,657	49	$14,758,416	$10,121,124	69	$22,785,227

Seed Grant Project Portfolio: Research Reinvestment Fund Continuum

Basic Research Projects

Beehive Colony Collapse Monitoring
Ocean Acidification Effects on Lobsters
Development Tools for Oyster Feeding
Engineering Instruction in K-12 Schools
Preparing Students for Science Careers
Revolutionizing Computing across UMS
UAV Course Development
Study of the Lobster Settlement Index
Microfluidic System for Cardiac Tissue Repair
Development of Forest Management Tools
Detecting and Assessing Spruce Budworm
Aging in Place Collaborative
Novel Adjuvant Therapies from CNF*
Coastal Waters Nutrient Measurements

Total Projects: 14

*CNF=Cellulose Nanofibrils

Applied Research Projects

CNF Porous Implant Medical Device*
Fire Resistant CNF Fiberboard*
Sea Vegetable Processing System
Aqua-Feed Production
Preventing Super-Chill in Atlantic Salmon
3D Printed Marine Tooling
Novel Paper Substrates for Biomedical Apps
Advancing Algal Aquaculture
High Efficiency Thermoelectric Generators
Biofuel Production from Algal Biomass
Eco-Sno Rehabilitative Device
Porous CNF Biomedical Applications*
Cross Laminated Timber Building Design
3D Printer for Boat Building
Use of CNF for Renewable Food Package*
Fitness Tracking System
Development of Respiratory Simulator
Sensor Development for Healthcare
App for Improving Navigation for Blind
Local Transportation Decisions

Total Projects: 20

Development Demonstration Projects

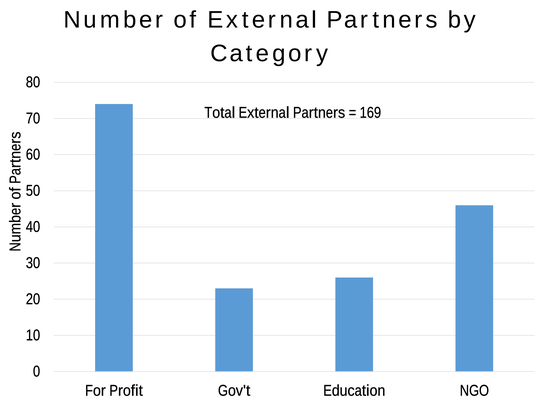
Instaprobe Prototype Development
Forest Management App
Aqua Ventus Floating Hull
Sea Scallop Aquaculture Development
Shellfish Nursery Upweller
Lobster Shell Golf Ball Production

Total Projects: 6

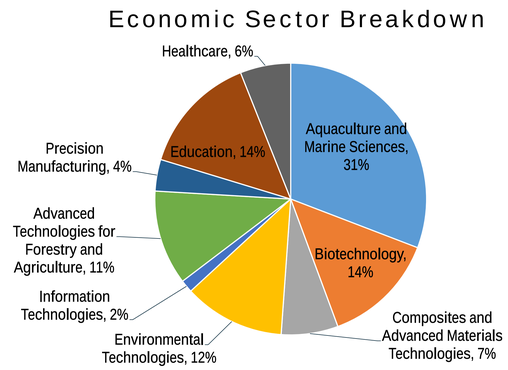
Commercialization

Efforts underway to advance commercial outputs of the portfolio.

Private Sector Engagement



Private Sector Advancement

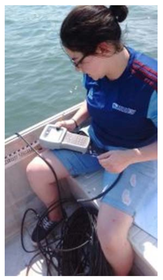


Examples of the 169 External Partners

THERMWOOD, storgenso, HINCKLEY, HODGDON, LYMAN-MORSE, sappi, stryker, IDEXX, MOBILITY TECHNOLOGIES, InnovaSea, Cooke, BIW, MOOKSEA FARM, FiberLean Technologies, BETULIUM, Acadia Harvest Inc., TWIN RIVERS PAPER COMPANY

Examples of Successful RRF Projects

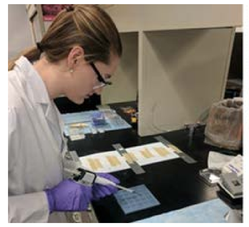
Modeling Bacterial Circulation on Maine Mudflats

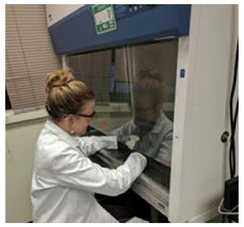


- Round: Graduate Assistant
- PI: Damian Brady
- External Partner: NOAA
- Outcomes: Tide measuring drifter development, student and commercial fishing engagement

Liquid-Infused Paper Substrates for New Biomedical Applications

- Round: Seed Grant
- PI: Caitlin Howell
- External Partners: Adaptive Surface Technologies, SAPPI Paper
- Outcomes: Funding commitment from Sappi; An invitation for proposal submission from the DoD; Manuscript preparation





Prototype Development for Detection of Wine and Beer Spoilage Yeasts

- Round: Accelerator, Seed
- PI: Laurie Connell
- External Partner: Constellation Consortium
- Outcomes: License agreement and beta testing

Future Plans

- Increase support for commercialization, industry partnership, and large center grants.
- Continue competitive grant programs to support new research, commercialization, and workforce development projects.
- Compete an additional round of Phase II Accelerator Grants in AY 18-19.