

# UMS Research Reinvestment Fund (RRF) Annual Report of Activities

## UMS Board of Trustees Meeting March 19, 2018



## **Charter and Scope**

The purpose of the Research Reinvestment Fund (RRF) is to strengthen research and development activities that are tied to Maine businesses, and to industries that are critical to the future of Maine. The Board of Trustees (BOT) committed an initial \$10.5M (2.1M/year for 5 years) through FY 2019

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RRF activities fall under three major initiatives:

- I. Competitive/Seed Grant Funding to UMS Researchers**
- II. Infrastructure Support for Business Development**
- III. Infrastructure Support for Research**

# I. Competitive Grant Funding to UMS Researchers:

- Since 2015, RRF program has received **389** proposals from researchers at all **7** UMS campuses.
- Funded **133** highly competitive projects.
- Awarded a total of **\$5.1** million in grants.

*Undergraduate bioengineering students Abby Weigang (left) and Chloe Lilly (right) conducting experiments as full time co-op students supported by RRF-funding.*

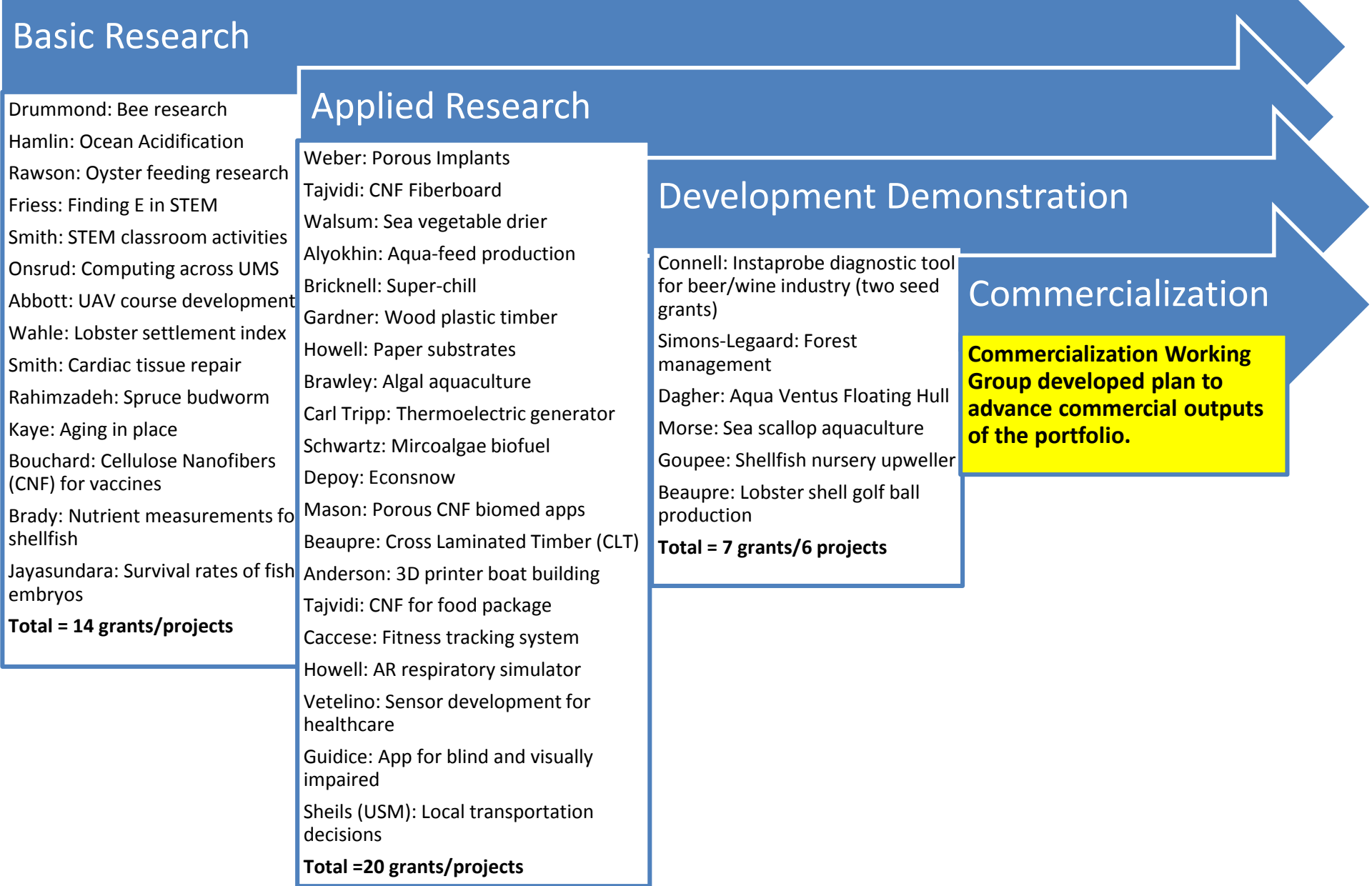
## RRF-Funded Grantees have:



- Submitted **131** follow-on grant applications, of which **49** were funded.
- Brought in a total of **\$14,758,416** in external funding.
- Collaborated with **151** external organizations on their projects.

## Private sector relationships stimulated by RRF program support

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"><li>• Sappi North America</li><li>• IDEXX</li><li>• Hodgdon Yachts</li><li>• Lyman Morse</li><li>• Hinckley Yachts</li><li>• Saber</li><li>• Thermwood Corporation</li><li>• Elder Technology Labs</li><li>• Mobility Technologies</li><li>• Specialty Materials</li><li>• Pemaquid Oyster Company</li><li>• AquaLine</li></ul> | <ul style="list-style-type: none"><li>• Constellation Consortium</li><li>• Fiberlean Technologies</li><li>• Betulium</li><li>• Acadia Harvest</li><li>• Maine Coast Sea Vegetables</li><li>• Maine Fresh Farms</li><li>• Cooke Aquaculture</li><li>• American Unagi</li><li>• Mook Sea Farm</li><li>• Thermoelectric Power Systems LLC</li><li>• Maine Marine Composites,</li><li>• Stryker Orthopedic</li></ul> | <ul style="list-style-type: none"><li>• Ready Seafood Company</li><li>• Innovation Natural Resource Solutions LLC</li><li>• General Dynamics Bath Iron Works.</li><li>• Stora Enso</li><li>• Innovasea Systems Inc.</li><li>• Beacon Analytical Systems</li><li>• Twin Rivers Paper Company</li></ul> |
|---|--|---|



## Basic Research

- Drummond: Bee research
  - Hamlin: Ocean Acidification
  - Rawson: Oyster feeding research
  - Friess: Finding E in STEM
  - Smith: STEM classroom activities
  - Onsrud: Computing across UMS
  - Abbott: UAV course development
  - Wahle: Lobster settlement index
  - Smith: Cardiac tissue repair
  - Rahimzadeh: Spruce budworm
  - Kaye: Aging in place
  - Bouchard: Cellulose Nanofibers (CNF) for vaccines
  - Brady: Nutrient measurements for shellfish
  - Jayasundara: Survival rates of fish embryos
- Total = 14 grants/projects**

## Applied Research

- Weber: Porous Implants
  - Tajvidi: CNF Fiberboard
  - Walsum: Sea vegetable drier
  - Alyokhin: Aqua-feed production
  - Bricknell: Super-chill
  - Gardner: Wood plastic timber
  - Howell: Paper substrates
  - Brawley: Algal aquaculture
  - Carl Tripp: Thermoelectric generator
  - Schwartz: Mircoalgae biofuel
  - Depoy: Econsnow
  - Mason: Porous CNF biomed apps
  - Beaupre: Cross Laminated Timber (CLT)
  - Anderson: 3D printer boat building
  - Tajvidi: CNF for food package
  - Caccese: Fitness tracking system
  - Howell: AR respiratory simulator
  - Vetelino: Sensor development for healthcare
  - Guidice: App for blind and visually impaired
  - Sheils (USM): Local transportation decisions
- Total = 20 grants/projects**

## Development Demonstration

- Connell: Instaprobe diagnostic tool for beer/wine industry (two seed grants)
  - Simons-Legaard: Forest management
  - Dagher: Aqua Ventus Floating Hull
  - Morse: Sea scallop aquaculture
  - Goupee: Shellfish nursery upweller
  - Beaupre: Lobster shell golf ball production
- Total = 7 grants/6 projects**

## Commercialization

**Commercialization Working Group developed plan to advance commercial outputs of the portfolio.**

## II. Infrastructure Support to the Business Development Enterprise

- In its fourth year of funded activities the RRF program has placed a greater emphasis on accelerating research commercialization.
- **Maine Innovation, Research and Technology Accelerator (MIRTA).**
  - Intensive 16-week program guides participants through customer discovery, market analysis, IP analysis, and business model development.
  - Spring 2018: Five projects involving 14 faculty, staff and students
  - These projects have high potential for successful commercialization as start-ups or licenses to existing Maine companies.
  - Each project will develop a commercialization plan with a strategy for bringing their research to market.



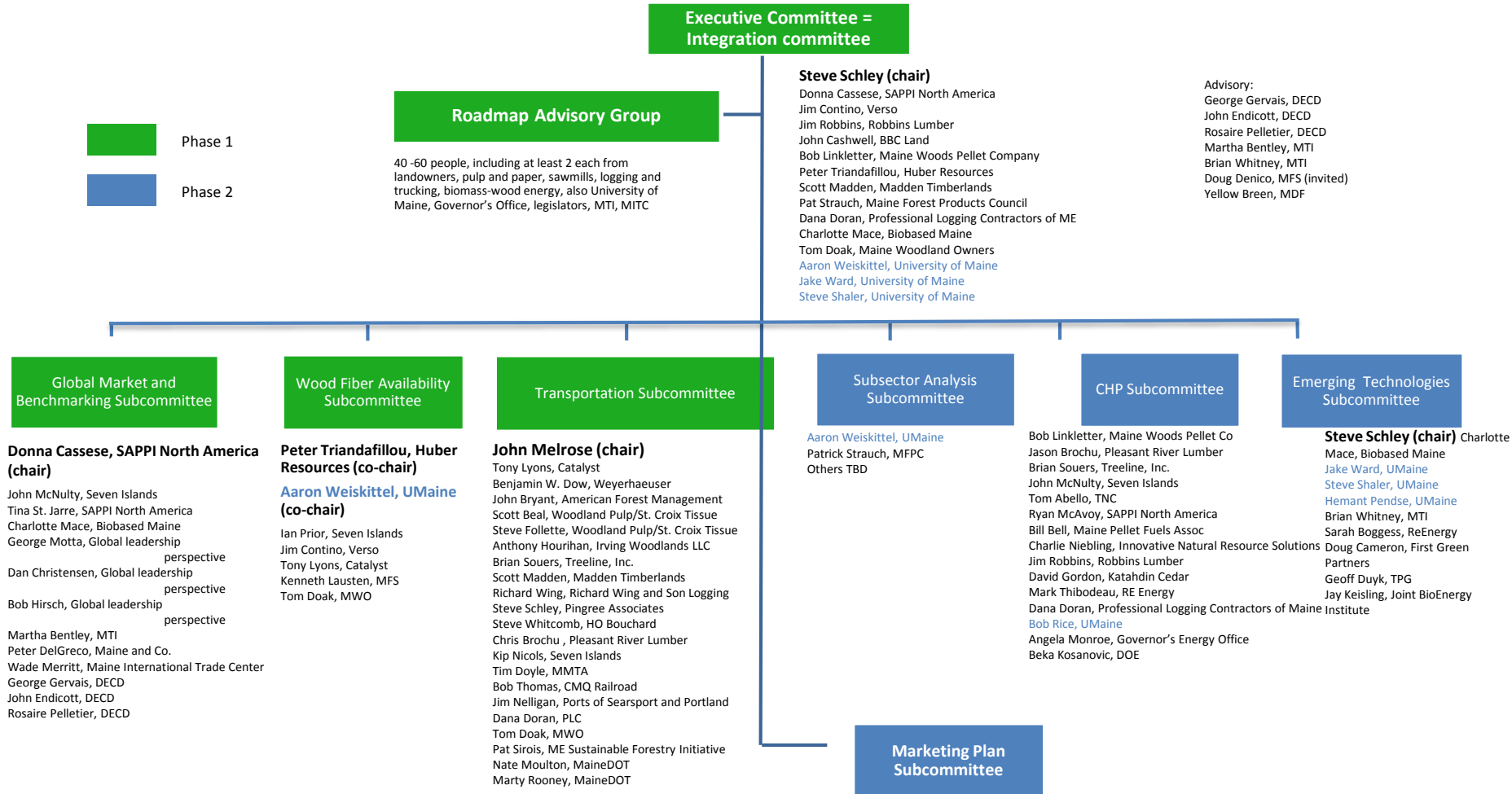
The Office of Innovation and Economic Development (OIED) has focused its business development activities on sector specific strategies for the **forestry** and **marine/aquaculture** industries.

**Forestry:**

- Two companies announced plans to expand cross-laminated timber manufacturing in Maine, with nearly \$50 million invested, were directly related to this work. These companies are expected to create approximately 200 jobs. (RRF grant supported a demonstration project)
- *Maine Forest Economy Growth Initiative* developed a roadmap for forest economy and implementation of emerging technologies

# Maine Forest Economy Growth Initiative

## Roadmap and Vision for Maine's Forest Sector



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## **Forestry:**

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- Developed a roadmap for forest economy and implementation of emerging technologies.

## **Marine/Aquaculture**

- The *Alliance for Maine's Marine Economy* (formed with RRF planning grant) is a convener of private industry and public sector efforts to develop and implement new technologies and provide infrastructure for growth.
- As a result of winning a \$7 million state bond RFP, the Alliance has recently awarded funds for capital projects for such as seafood and lobster processing, fish aquaculture and seaweed production. These funds also leveraged \$7+ million in additional investment.

## Alliance for Maine's Marine Economy members

- University of Maine
  - Office of Innovation & Economic Development
  - Darling Marine Center
  - Maine Sea Grant
  - School of Marine Sciences
  - Aquaculture Research Institute
  - Cooperative Extension
  - School of Food & Agriculture
  - Lobster Institute
  - Center for Cooperative Aquaculture Research
  - UM-Machias Marine Field Station
- External Partners
  - Maine Coast Fisherman's Association
  - Maine Aquaculture Association
  - Cape Seafood
  - Maine Aquaculture Innovation Center
  - Maine Lobster Dealers Association
  - Maine Lobsterman's Association
  - Downeast Lobsterman's Association
  - Gulf of Maine Research Institute
  - University of New England
  - Maine Department of Marine Resources
  - Maine Technology Institute
  - Bigelow Laboratory for Ocean Science
  - Coastal Enterprises, Inc.
  - Island Institute
  - Maine Center for Coastal Fisheries
  - Downeast Institute for Applied Marine Research and Education
  - Maine Fair Trade Lobster
  - Cooke Aquaculture

## III. Infrastructure Support to the Research Enterprise

### The Grant Development Office (GDO)

- Oversees the RRF Grants program
- Provides grant writing training and support for faculty and students
- Facilitates large center grant teams

### Since FY2015 the GDO

- has had a direct hand in securing **\$24,344,279** in external funding
- conducted **41** grant writing trainings that reached **784** faculty, staff, graduate and undergraduate students.

## III. Infrastructure Support to the Research Enterprise

### The Office of Research Administration (ORA)

- handles grant administration for UMaine, UM-Machias, and UM-Fort Kent

### During FY 2017

- a total of \$56,926,782 was received by UMaine from extramural sponsors, a **13% increase** over FY 2016
- The number of proposals submitted was significantly greater than the previous year (573 vs. 500 a **15% increase**).

## RRF Plans for Year 5 Activities

- Increase faculty education and grant writing support for commercialization, industry partnership, and large center grants.
- Continue competitive grant programs to develop new research, commercialization, and workforce development projects and enhance criteria related to private sector engagement, investment, and advancement outcomes.
- Compete an additional round of Phase II Accelerator Grants that provides faculty release time and funding to accelerate commercialization outputs.
- Continue outreach to University of Southern Maine for research, development, and commercialization collaborations.

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