RHODE ISLAND ECONOMIC DEVELOPMENT CORPORATION

MEETING OF THE SCIENCE & TECHNOLOGY ADVISORY COUNCIL

PUBLIC SESSION

May 9, 2012

The Rhode Island Science & Technology Advisory Council ("STAC") met on Thursday, May 9, 2012 in Public Session at the offices of the Rhode Island Economic Development Corporation, Providence, Rhode Island pursuant to notice of the meeting to all Members and public notice of meeting, a copy of which is attached hereto, as required by applicable Rhode Island Law.

The following Members were present and participated throughout the meeting as indicated: Clyde Briant (Co-Chair), Peter Alfonso (Co-Chair), Thomas Rockett, Peter Snyder and Donald Stanford. Members absent were Pierre Corriveau, David Hibbitt, Saul Kaplan, Margaret Leinen, Anthony Pankau and Jeffrey Seemann.

Also present during the meeting were Governor Chafee, Lt. Governor Roberts, and RIEDC staff. Co-chairs Briant and Alfonso presided over the meeting assisted by Christine Smith.

Welcome

Co-chairs Briant and Alfonso welcomed everyone and noted that the agenda would feature announcement of the recipients of the 2012 RIRA Collaborative Research Grant awards. This is the 6th year that STAC has awarded these funds and they have become an important part of efforts to build the RI research infrastructure, nurture new ventures and assist companies develop innovative products. As seed funds they play a critical role in making it possible for researchers from different institutions and disciplines from across the state to work collaboratively as a team to achieve together what each cannot accomplish alone. The Co-Chairs added that following the announcement, three teams that received awards last year will present on how the funding has helped them develop new innovative products and become more competitive to other funders. Governor Chafee noted the importance of small, seed investments and noted his hope that the $13M in recent powerball tax proceeds could be used as a one-time investment to do something to support the start-up sector of our economy.

STAC Collaborative Grant Awardees

The Governor joined the Co-Chairs in recognizing the following awardees who received a total of $1,419,271:

New Tools and Mechanisms to Combat Aquaculture Diseases

Building on recent discoveries of marine bacteria that demonstrate impressive protective properties against disease, this project will develop new tools to promote

animal health in aqauculture and develop new commercial products to promote fitness and prevent disease for finfish and shellfish in aquaculture facilities.

Collaborators: David Rowley, David Nelson and Marta Gomez-Chiarri, University of Rhode Island; Dale Leavitt and Roxanna Smolowitz, Roger Williams University

Revealing Active Responses of the Ocean State's Marshes to Climate Change with Biogeochemistry & Environmental Genomics

The project will study if changing environmental conditions due to human activities are changing the ability of salt marshes to store carbon at the highest rates per area of any ecosystem, changing their role from net "sinks" to "sources" of gasses.

Collaborators:
Serena Moseman-Valtierra, University of Rhode Island
Breea Govenar, Rhode Island College

Understanding Coastal Environmental Change, Past, Present and Future: A Novel Approach Combining Algal Physiology, Genetics and Lipid Biomarkers

The project will study an important class of organic biomarker produced by algae that are thought to record past sea surface temperatures to produce a marine-based, local climate history of Narragansett Bay against which future patterns and rates of modern global change can be compared.

Collaborators:
Timothy Herbert and Linda Amaral-Zettler, Brown University
Tatiana Rynearson, University of Rhode Island

Lab-on-Paper Technology for Immunodiagnostics

This is an academic-industry collaboration to accelerate development of an enzyme based diagnostic device on paper that will produce new point-of-care immunodiagnostic devices to perform multi-step tests that are easier to read and can be used by a wider patient population.

Collaborators:
Mohammad Faghri, University of Rhode Island
Constantine Anagnostopoulos, Labonachip, LLC

Climate-Driven Impacts on the Formation and Persistence of Macroalgal Blooms: Bringing UlvaBloom Biology into the Genomics Era

This project will assess the econological and genomic aspects of the formation of harmful macroalgal blooms in response to climate change in Narragansett Bay.

Collaborators:
Carol Thornber, University of Rhode Island
J.D. Swanson, Salve Regina University

Enhancement of Chronic Wound Healing with Non-invasive Local Skin Vibratory Stimulation

The project will test the effectiveness of a medical device that uses mechanical vibratory stimulation to increase blood flow and tissue oxygenation to improve wound healing and decrease the pain and suffering of burn patients.

Collaborators:
John Reichner, Rhode Island Hospital
Shai Schubert, Perfuzia Medical Inc.

Characterization of Novel Anaerobic Nitrogen-Fixing Bacteria Isolated from Narragansett Bay Sediments that Respond to Human-Induced Climate Change

The project will determine the environmental factors that control Nitrogen fixation within the sediments of Narragansett Bay and predict how microbial activity in bay sediments will respond to future environmental impacts.

Collaborators:
Bethany Jenkins, University of Rhode Island
Chris Deacutis, Narragansett Bay Estuary Program

Graphene-Polymer Composite Materials

The goal of this project it to improve practical use of graphene in order to develop uniquely functional graphene-polymer composites that will lead to commercial opportunities and establish Rhode Island as a leader in this field.

Collaborators:
Robert Hurt, Brown University
Arijit Bose, University of Rhode Island

Economic Impact of Collaborative Grant Program

Co-chair Alfonso reported that with this 6th cycle of grant funding, the State has now invested nearly $8 million in 46 teams representing 125 researchers from 43 public and private institutions conducting multi-disciplinary, multi-institutional research with great promise for follow-on funding. To date, awardees have attracted nearly $36 million in follow-on funding from public and private sources. Co-chair Alfonso then introduced three teams that were funded last year to talk about how their collaborations are developing new commercial products. Awardees included a team from RiteSolutions and URI who collaborated to develop technical solutions to classify, manage and search both video and audio marine scientific information to make it more accessible to researchers, educators and students. With access to a state-of-the-art STEM education facility at the University of Rhode Island, this team is developing an on-line database of ocean exploration information and portal for the education of scientists and the

broader K-16 community in the ocean State and beyond our borders. The second team represented a collaboration between Brown University and Cytosolve to bring together academic and industry expertise to advance preclinical studies that will serve as the basis for an investigational new drug application to the FDA for a naturally occurring regenerative product for faster, more effective topical wound repair. This new product would be especially useful in treating the growing diabetic population which suffers from chronic ulcers. The third team represented a collaboration between Ametek and URI Graduate School of Oceanography. Marine biofouling is a detriment to the structure and function of submerged surfaces and a recent international ban on a leading biocide has created the need to develop new environmentally friendly protective coatings. This academic-industry collaboration is working to gain a better understanding of the complex biofilms mechanism of settlement, adhesion and growth in order to help a Rhode Island company develop the next generation of anti-fouling coatings for underwater cables and connectors. The new coatings will be relevant to both commercial and military use.

RI NSF EPSCoR Director's Report

Co-chair Alfonso briefed the Council on the current status of Rhode Island's NSF EPSCoR activities. He noted we are completing the second year of a five year, $20 million grant that will help Rhode Island become an international leader in understanding and predicting the response of marine organisms and marine ecosystems to climate variability He noted a panel led by Dr. Rieko Yajima, AAAS Research Competitiveness Service, will visit in June 2012. This year, they will focus their evaluation on the sustainability of funding, the mentoring of undergraduates in scholarly pursuits in our primarily undergraduate institutions and on the integration of art and design into our research and education programs. The panelists are Gunalan Nadarajan, Diana Husic, and Jeff Osborn. Both Professors Husic and Osborn are former presidents of the Council on Undergraduate Research. He also noted each of our core research facilities continues to develop strategic business plans with the aim of sustainability and that scientists working on the key questions of this Collaborative Agreement published 85 papers in Year 2. Most are co-authored with colleagues and with students. For broader impacts, over 200 underserved students from Gr 6-12 were transported to core facilities and, in many cases, were guided through the discovery process and conducted their own research. The NSF EPSCoR Academy Director teamed up with the Rhode Island STEM Center Executive Director to build programming that would help teach teachers. Sixty undergraduates, the largest number for NSF EPSCoR so far, were paid to conduct research.

Adjournment

There being no further business Co-Chair Briant adjourned the meeting.

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Christine M.B. Smith
Secretary