The Business of Marine Biotechnology Program

Steven Fontana, Senior Technology Development Officer
based on NOAA Presentation
by Dr. Elizabeth Skellam
With Contributions from
Drs. Md. Alam Shaw and Jennifer McCall
Crossroads of Science and Business

Post Doctoral Research
  • Translational development of new marine-based technologies

MBA
  • Broad-based business skills applied to real-time scenarios
Cross Discipline Alliance
Public – Private Partnership

- Cameron School of Business
- MARBIONC
- SBTDC
- Regional Businesses
- MBA Student Teams
Program Accomplishments

- Developed eco-friendly fish feed to produce high quality flounder and black sea bass at competitive prices
- Studies on Brevenal – a cystic fibrosis drug candidate
- User-friendly test for oyster diseases that reduce harvest
- Creation of an online catalog of natural products
Dr. Md Shah Alam
Research Assistant Professor (CMS, Mariculture)

Academic Background:
MS, Ph D and Postdoc: Kagoshima University, Japan (1997-2005)
  (Fisheries Science, Aquaculture Nutrition and Feed Technology)
MBA: 2007, UNCW, Cameron School of Business (1st year of the Business of Biotech Program)
B Sc (Honors, 1993) and MS (1996): Bangladesh Agricultural University.

Publications: 30 international peer reviewed journals related to aquaculture.
Conference Presentation: USA, Japan, Australia, Greece, China, Malaysia and Thailand.
Grants at UNCW: Received approximately $1.5 million in research grants from NOAA, NC Sea Grant, NCBC and USDA with Dr. Wade Watanabe and other scientist in mariculture and business.

Current Focus at UNCW Mariculture and MARBIONC Program:
Formulation and development of eco-friendly, cost-effective and sustainable diets for mariculture and ornamental fish
*Replacement of fish meal in the diets by alternative protein sources (e.g. soybean meal, poultry meal),
*Developed UNCW formulated soybean based eco-diets for black sea bass and flounder collaborating with local (NC) fish feed manufacturer, supplier, grants agencies and fish farm.
Dr. Elizabeth Skellam
Visiting Research Assistant Professor (CMS)
MARBIONC Business of Biotech Fellowship: 2011-2013

Academic Background:
PhD: University of Bristol, UK, Department of Chemistry (2005 – 2008)
MBA: University of North Carolina Wilmington, Cameron School of Business (2011 – present)
MChem: University of Wales Swansea, UK, Department of Chemistry (2001 – 2005)

Publications: 4 peer reviewed journals related to natural product biosynthesis
Conference Presentation: UK, USA
Poster Presentations: UK, Finland, Antigua, Croatia, USA,

Current Focus at UNCW MARBIONC Program: Genome mining for novel natural products from marine bacteria
* Development of systems to over-express or delete genes of interest to modify specific natural products
Jennifer Rettew McCall

- Visiting Research Assistant Professor
- Education:
  - PhD in Biology from UNC-Charlotte
    - Dissertation Title: Sexual dimorphism in sepsis susceptibility: effects of reproductive hormones on microbial pattern recognition receptor expression
  - MS in Biology from UNC-Charlotte
  - BS in Biology from UNC-Chapel Hill
Research Summary*

- Development of Fluorescent Binding Assays to detect marine neurotoxins
  - cause gastrointestinal and neurological dysfunction
- Replacement for traditional radioactive assay
  - faster, safer, less expensive, greater utility
- Future use for determining toxin concentrations in environmental and seafood samples

* reviewed by NOAA 10/2/2012 as “outstanding”
Business Plans

- Startup company to market this assay and develop different assays for other marine toxins
- Partnerships with MARBIONC and UNCW
- Small Business Innovation Grants (STTR)
  - Goal is commercialization
  - Capitalize on the translational potential of fluorescence-based assays as a service or as a kit
Summary

- Lockstep program designed by CMS and the Cameron School---first in the USA
  - Combines formal MBA with Translational Research
  - Yields trained Ph.D. individuals with business acumen
- Benefits UNCW
  - First foray into economic development training
  - Expanding education to meet 21st century needs
CMS Post Doc/MBA program

Peter Schuhmann, Professor of Economics
Department of Economics and Finance, UNCW

CSB faculty mentor for Jennifer McCall (Brevetoxin assay commercialization), Hugh Crews (Business Analytical Consulting), Susanna Lopez-Legentil and Patrick M. Erwin (The Pharmaceutical Value of Marine Natural Products).

10/15/2012
Impetus for the program

- Natural science post-docs may face challenges in their efforts to incorporate their knowledge into commercial ventures.
- Teaming with CSB faculty facilitates knowledge transfer of the post docs’ research to other potential stakeholders
- MBA practicum project serves as the platform.
What is a practicum?

- A practicum is a two-semester project, which allows students to use the knowledge gained in the MBA program through a hands-on work experience with an organization.
- There is much latitude in the way the practicum can be defined.
- Teams of 2-4 students (self-selected) work with private or public sector stakeholders on a particular business problem or new venture.
Examples

- Developing a business plan for a start-up company
- Analyzing strategic options for a growing company
- Creating an international marketing plan
- Assessing production options for a firm
- Financial assessment of a public sector project
- Creating an accounting system for a new company
- Developing a brand introduction plan
- Conduct a financial and management assessment for a potential acquisition
How does the program add value?

- Operationalize the MBA learning experience.
- Students gain valuable experience that can lead to career enhancement and/or career redirection.
- Improved problem-solving through interdisciplinary teamwork & knowledge transfer:
  - Mentor ↔ post-doc
  - Student ↔ student
  - CMS ↔ CSB
  - UNCW ↔ private/public sector