

# UMass Lowell New Venture Initiative (NVI)

## Program Summary

The University of Massachusetts Lowell has a well-established history as an innovative research institution that contributes to the economic growth of northeastern Massachusetts and beyond. More recently, the University and the Commonwealth have made significant investments in state-of-the-art research facilities (i.e., Emerging Technology and Innovation Center) that will expand the conduct of industry-sponsored research in the areas of advanced materials, the life sciences and defense-related technologies. While this research will directly benefit the companies sponsoring these efforts, it will also likely lead to the development of new technologies and new business opportunities. In order to encourage and support the development of new industries and new ventures in the region, the University proposes the development of a New Venture Initiative.

Drawing on the successful development and operation of the University's Massachusetts Medical Device Development Center (M2D2) and the entrepreneurial culture enhancements being encouraged by DifferenceMakers, NVI will provide venture development services and a rich network of resources needed to grow a venture from concept to company as well as physical space, both lab and office, that meet the needs of early stage technology companies.

Even without these support mechanisms in place, UMass Lowell technology has enabled several start-ups—demonstrating again our strong core intellectual property and inherent entrepreneurship.

<b>Company Start</b>	<b>UMass Lowell Technology</b>	<b>License Date</b>	<b>Lead Faculty</b>	<b>Description</b>	<b>Status</b>
Anterios (formerly Encapsulation)	Composition of methods for making and using nanoemulsions	2006	Robert Nicolosi, Steve McCarthy	Nanotech based delivery system	Venture-backed
Sevo Neutraceuticals	Memory improvement	2012	Thomas Shea	Over the counter product for memory improvement	Early sales
Dartmouth Medical Research	Novel biodegradable bone plates and bonding systems; polyactic acid-based blends	2010	Steve McCarthy	Polymers for bone replacement	Active, seeking financing
Konarka	Photovoltaic cell	2002	Sukant Tripathy (deceased)	Cleantech	Bankrupt June 2012
Universal Sequence	Formulations for reducing neuro-degeneration; OTC vitamins	2009	Thomas Shea	Over the counter product for memory improvement	Failed

The New Venture Initiative is a new model for university cultivation of start-up activity. Not only does it provide a path for university owned innovation to become a start-up, but additionally we will provide enhanced mechanisms, support and resources for external start-ups seeking to do business with the University. This in turn grows the overall number, quality, and culture for start-ups at UMass Lowell. Additionally, this enhancement to entrepreneurial culture creation efforts will further shift the start-up philosophy and practice within the technology transfer office. NVI will introduce a willingness to defer short term licensing income and expense mitigation, suggesting instead that the University evaluate all UMass Lowell inventions for their potential to support start-ups, with a greater potential upside on fewer 'wins'. This shifts the philosophy to a position that it is in the University's best interest to defer short term gain, and that resources should be supplied to these new company start-ups as opposed to "extracting" from them.

Heavy emphasis will be placed on the necessity and development of strong teams coupling with experience and a strong market potential to justify the start-up path. This premise empowers hands-on entrepreneurs and pairs them with strong intellectual property, speeding early commercialization efforts and better preparing our start-ups for further financing.

It is important to note that this task will require more resources than the University can provide alone. A partnership with Alumni investors and outside third party traditional angel and venture investors will be necessary to ensure university inspired start-ups receive the complete support they need to succeed. To that end, UMass Lowell has developed a menu of ways our alumni and network can get involved in the NVI.

### **A Healthy and Growing Pipeline of Start-up Opportunities**

NVI understands that IP can come from a variety of sources, UMass Lowell labs, an entrepreneur's own ideas, or from other universities. Cultivating IP from multiple sources expands our potential start-up pipeline to include M2D2 companies, start-ups utilizing UMass Lowell research, and entrepreneurs working with the university to further their own concepts and, as a result, generating joint IP.

We have identified a core group of 34 commercially-focused faculty members and an additional 23 faculty with strong industry ties and expertise that falls within emerging business sectors. NVI has already begun to initiate outreach to this core group with the support of the CVIP case managers to make them aware of the University's start-up focus and interest in their specific research for that purpose. It is expected that with more frequent interaction with this core group and the ability to support translational and prototyping activities we will be able to increase the number of opportunities coming from this key group.

We are in the process of identifying patterns that correlate to key areas of expertise where faculty and university ties to industry are strongest through licensing revenue, sponsored research, service agreements, and grants. With this information we will be able to identify core competencies, or innovation clusters, where start-up resources and investment opportunities are likely to be most appropriate. To date, there are trends in cyber security, big data, robotics, flexible and printable electronics, and sensors.

Other pipelines exist within our well established medical device incubator that currently houses about a dozen companies with obligations to work closely with the University and no fewer than eight additional companies' currently seeking association with M2D2.

Additionally, NVI has fielded unprompted inquiries from independent start-ups and individuals seeking stronger relationships with the University and/or licensing options.

These start-up pipeline opportunities are summarized below and include estimates on Year 1 opportunities for the NVI effort.

<b>Start-up Source</b>	<b>FY 2013</b>	<b>Anticipated FY 2014</b>
Invention Disclosures	26	36
Commercialization Grant Awards (TDF, I-Corp., CVIP Translational)	5	8
Incubator-related Events (Financings, Agreements, New Tenants)	~5	~8 (contingent on accelerator expansion)
Outside Start-up Requests	4	8
Entrepreneurs Seeking Options	2	5 (with implementation of New Venture Fellows and Mentor Program)

### **Mechanisms and Tools for Start-up Creation**

NVI continuously triages the existing portfolio of UMass Lowell related intellectual property, on-going commercially-related grant activity and invention disclosures. This process will be supported by key faculty members of the Manning School of Business who will utilize student teams to provide SWOT analysis of said IP. Additionally, more detailed technical and business due diligence will be the responsibility of NVI staff and dedicated consultants, or New Venture Fellows. This team will also be responsible for expanding faculty relationships where additional commercial innovation is anticipated.

In the first six months of 2013, NVI engaged two Fellows. As a result, NVI has identified seven immediate projects that it will work to drive to start-up phase. A New Venture Fellow job description defining this process is available. NVI will utilize fellows going forward on an as needed basis to help identify new project opportunities, provide technology commercialization support, and act as in-house executives for university cultivated start-ups.

Additionally, the NVI open door policy is encouraging other network experts to drop in for informal mentoring and feedback. We anticipate this activity will expand as the program matures.

At this stage, each project will be assessed to identify additional and specific resources needed to achieve external start-up status. These resources may include any of the following:

- Development of a mentor team
  - UML inside mentoring
  - Outside/ 3<sup>rd</sup> party programs
- Market research and analysis
  - In-house (CVIP and Manning School of Business)
  - Contract-based
- Grant identification and application support working closely with the Vice Provost Research staff

- I-Corp
- SBIR/STTR
- Mentor Protégé
- UMass Translational and Commercialization Grant particularly for proof of concept and prototyping
- Commonwealth of Massachusetts
- Business model, plan and pitch development
- Financing network introductions and facilitation
- Technical and prototype milestone and development work
- Clinical and regulatory path due diligence
- Underwriting UMass Lowell and UMass system-wide resources that can be better used by start-ups to achieve early milestones
  - Core Research Facilities
  - Design, prototyping, and testing services

### **Entrepreneurial Culture Cultivation**

The University understands the importance of a campus culture that encourages entrepreneurship. This process has begun on several levels. The appointment of an Associate Vice Chancellor for Entrepreneurship and Economic Development (Dr. Steven Tello) communicates the importance of entrepreneurial activity on a campus and regional level. The Center for Innovation and Entrepreneurship houses several programs geared toward encouraging student and community entrepreneurship efforts (e.g., DifferenceMaker, Merrimack Valley Sandbox). As noted above, M2D2 has created a physical space on campus and an international reputation for its efforts to encourage and support medical device entrepreneurs. NVI will focus specifically on engaging graduate students and faculty members in entrepreneurial activities. Simply increasing on campus and off campus industry and start-up interactions will improve the entrepreneurial culture throughout the University. NVI will occasionally underwrite and support on-campus events to this end.

Additionally, NVI may encounter potential University start-ups where better utilization of an outside entrepreneur program or competition is the most appropriate path. In these instances, we will support the entrepreneur in their application and milestone achievement—strengthening their overall capabilities to compete.

Finally, as NVI and CVIP adopt more start-up friendly terms and increasingly focus on start-up opportunities, it is within all our best interests to ensure this knowledge is widely and aggressively circulated both within and outside the University community. This function will be key in attracting the necessary industry, angel, and venture-related contacts necessary to fulfill the financing component of the NVI program.

### **Alumni Angel Network**

Finally, NVI will initiate the development of an initial funding mechanism for the UMass Lowell related start-up pipeline.

This effort will have two main pieces: first, NVI is establishing an investment advisory board made up of alumni donors who have made a \$50k commitment to NVI. NVI will utilize the donated funds, along with University match funds to make direct seed investments in UMass Lowell-related companies that have been selected with the advice of the Advisory Board.

Additionally, NVI will establish an Alumni Angel Network to co-invest in these seed rounds on equivalent terms, extending the reach and ability of NVI to accelerate the selected companies.

These angels may also choose to invest independently with their own terms in subsequent investment rounds. The investment advisory board will select the projects offered for investment to the Alumni Angel Network. These investments will be managed by the investment advisory board made up of Alumni donors, along with an UMass Lowell NVI representative.

We anticipate that no more than 10 UMass Lowell alumni will be selected to participate on the Investment Advisory Board, and approximately 20, with accredited investor status, will participate in this Angel Alumni Network. As with other angel networks, each investor will hold shares corresponding to their investment—and the Alumni investor may choose a philanthropic or return on investment strategy. Investment Advisory Board members may participate as angel alumni investors, subject to conflicts of interest and other relevant policies and procedures.

The network and the University as an investor will receive “up-side” equity/convertible debt for the funded start-up and an additional equity/royalty stake if the IP came from the University.

Pooling these efforts will allow NVI and the Network to creatively manage each investment opportunity—at times and when appropriate incurring related licensing and patent fees as well as other start-up related costs, then driving those expenses into a convertible debt investment at the initial ‘internal’ financing round.

Again, it is important to note that not all investment opportunities will be traditional University lab single IP position spin-outs. Our goal is to diversify the pipeline pool with spin-ups where the opportunity can include a mix of internal and external patents, other UMass IP, no UMass IP or no patent position at all (as is increasingly common in software plays). Decisions regarding investment opportunities in start-ups not based on University IP will be evaluated based on the potential for engagement between the non-University based entity and University researchers, students and facilities.

Once an NVI financing occurs, staff and/or investment advisory board members will take active board roles at each of the start-ups and rapidly facilitate related milestone achievement to enable the first ‘outside’ financing round. At this point, NVI and the Network’s shares will price, and NVI will assume a more passive investor role.

At exit, NVI will be responsible for related asset distribution to the NVI Match Fund and any other UMass Lowell internal parties.

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