



Introduction

Over the last several decades the Commonwealth of Massachusetts has built a life sciences cluster that is recognized and respected around the world. Now, with this well developed and rich ecosystem of innovation right in our back yards, we find that an increasing number of regions in this country, and nations around the globe are aggressively trying to replicate the Massachusetts success story. So, the challenge has been issued – the Commonwealth's life sciences community must find new and effective ways to partner, in order to preserve and advance what has been built in this state.

The stakes are high – more than 113,000 Massachusetts residents work in the life sciences and UMass plays a critical role in educating its future workforce. As the state's premiere public research university, with our statewide reach, diverse expertise and sizeable resources, the University of Massachusetts is uniquely poised to drive the advancement of life sciences – and we have a compelling vision to do so.

To continue fueling Massachusetts' innovation and knowledge-based economy, the Life Sciences Task Force calls for the UMass System to renew its commitment to collaboration across the five campuses and strategically evolve to meet changing needs. We must think differently, act deliberately and partner effectively to bring our collective strengths to bear in a sector that promises greater rewards and greater outside competition than ever before.

Our clear path forward consists of three overarching and strategic goals. The first is a commitment to develop a life sciences talent ecosystem within UMass. We know our students are our most important responsibility and our graduates are our most visible and lasting contribution—and they will be prepared to enter, thrive and lead this innovation economy.

Second, we will foster an innovative, complementary and impactful research enterprise, through a series of University-driven initiatives.

And finally, we will position the University as a statewide hub for regional innovation and look for ways to deepen our relationships with external partners in Massachusetts and beyond. We offer an unmatched value proposition to private industry, research institutes and state government agencies, like the Massachusetts Life Sciences Center. Further, we recognize that UMass has a special responsibility to leverage its statewide expertise for the benefit of the entire Commonwealth.

As our initial strategic planning process in 2008 powerfully demonstrated, it is critically important that the University System, state government and other key constituencies align priorities. Doing so in the next five years will help all of us maintain and strengthen the Commonwealth's undisputed leadership position within the world's life sciences ecosystem.

We at the University of Massachusetts look forward to serving as the trusted partner and resource for the Commonwealth's dynamic life sciences community in the years ahead.



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77



The Plan

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Context

During the 2013 – 2014 calendar year, Robert L. Caret, PhD, President of the University of Massachusetts, charged Michael F. Collins, MD, Senior Vice President for the Health Sciences and Chancellor of the University of Massachusetts Medical School, with developing an updated System-wide strategic plan for the life sciences. The decision to launch a new life sciences strategic planning process was driven by a number of important factors:

- As the state's premier public research university, UMass keenly appreciates its central role in helping to fuel the Commonwealth's innovation economy, and strives to increase its impact on the development of life sciences throughout Massachusetts;
- Major changes in the economy, health care sector and R&D funding will require academic institutions to think and act differently;
- The initial life sciences strategic plan, which began in 2008, created a culture of collaboration among the five UMass campuses, which built momentum and led to substantive accomplishments;
- As a result of the successes of the initial planning process, UMass is now poised to provide a framework within the System to promote and sustain external collaborations, especially with industry partners;
- Considering the emerging paradigm shift known as convergence, a way of problemsolving that integrates knowledge, tools and ways of thinking from various disciplines, UMass should proactively develop programs and platforms that enhance collaborative problem-solving across historically siloed disciplines such as the biological, physical, computational, mathematical and engineering sciences;

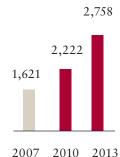


- The importance of translational research and the broader external environment, marked by constrained research funding and other pressures, will necessitate the development of innovative programs and solutions, both inside and outside the University, in order to continue to grow the University's R&D enterprise and take advantage of UMass discoveries; and
- The significant role the University played in helping to implement the vision of the Massachusetts Life Sciences Initiative, now widely viewed as a success story for government investment and economic growth, demonstrates the importance of having a coordinated and targeted planning document that is aligned with state government.

Track Record of Success



- Growing life sciences talent across the UMass System: as a result of targeted programs such as professional masters degrees, UMass increased the number of students graduating with life sciences degrees 70 percent, from 1,621 in 2007 to 2,758 in 2013.
- Expanding a robust and impactful life sciences research enterprise: through strategic investments in research programs, such as the CTSA-supported UMass Center for Clinical and Translational Science, UMass grew its life sciences R&D expenditures from \$220 million to \$329 million from 2007 to 2013.
- Advancing the Commonwealth's innovation economy in all regions of the state: approximately \$1.2 billion has been committed across the five UMass campuses in life sciences and related facilities (with over \$250 million having been invested by the Massachusetts Life Sciences Center), which has supported the construction of the Institute for Applied Life Sciences at Amherst, the Integrated Sciences Building at Boston, the MassBiologics SouthCoast Facility in Fall River, the Emerging Technologies and Innovation Center at Lowell, and the Albert Sherman Center at the Medical School.
- Commercializing UMass discoveries: by leveraging University-derived discoveries and resources, such as MassBiologics of UMass Medical School, UMass averaged \$45.5 million per year in licensing income from 2007 to 2013, placing the University among the nation's leaders in generating licensing revenue.
- Leveraging complementary expertise across the University through inter-campus collaboration: through the establishment of life sciences seed funding programs, such as the Life Sciences Moment Fund, which has supported 22 intercampus research projects, UMass encouraged the formation of important and dynamic faculty networks that position the System well for emerging interdisciplinary opportunities.
- Orienting the University toward strategic external partnerships: recognizing the
 increasing value of collaborative partnerships, UMass developed and fostered
 mechanisms for external engagement, including the UMass Innovation Institute and
 the Mass Green High Performance Computing Center, both of which serve as models
 for future engagement strategies.



Growing talent

Number of students graduating with life sciences degrees

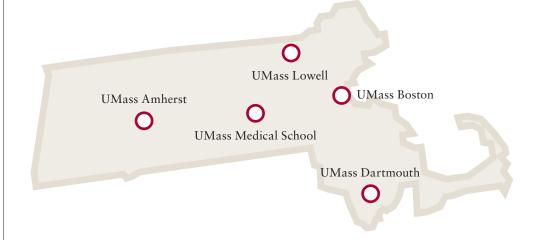


Leveraging UMass

Discoveries at UMass now rank 2nd in Massachusetts, 3rd in New England and 15th in the nation for generating licensing revenue

UMass is driving innovation in all regions of the Commonwealth.





UMass Amherst

Institute for Applied Life Sciences Innovation Institute Pioneer Valley Life Sciences Institute (Springfield) STEM Diversity Institute

UMass Boston

Integrated Science Building Center for Personalized Cancer Therapy Venture Development Center

UMass Dartmouth

Advanced Technology and Manufacturing Center Center for Scientific Computing and Visualization

UMass Lowell

Mass Medical Device Development Center (M2D2) Bio-Manufacturing Center Emerging Technologies and Innovation Center

UMass Medical School

Ambulatory Care Center Albert Sherman Center Biotech Park MassBiologics (Boston) MassBiologics SouthCoast (Fall River)

UMass System

Mass Green High Performance Computing Center (Holyoke) Center for Clinical and Translational Science (Worcester) Mass Tech Transfer Center (Boston)



Talent

Develop a talent ecosystem that encourages interconnectedness among all stakeholders, ensures the highest educational quality at all levels and enables UMass graduates to find success in the state's innovation economy.



Supporting Goals

Increase the number of internships and co-ops

Develop academic programs that meet the future workforce needs of the life sciences sector

Establish a "Commonwealth Fellows" program for doctoral students and associates

Create endowed professorships for junior faculty

Establish the Presidential Scholars Innovation Fund to support novel, high risk/high reward research

Develop a system-wide strategy for undergraduate STEM degrees, focused on improving academic performance, time to graduation, and retention and graduation rates

Medical devices companies have had an effective partnership with UMass over the years thru the Mass Medical Device Development Center — *M2D2* — *and are* truly excited about the prospect for expanding our partnership into new strategic areas important to our industry such as regulatory affairs.

> Tom Sommer, President, Mass **MEDIC**

Research

Foster an innovative, collaborative and complementary research enterprise that will enhance the breadth, depth and impact of the University's R&D efforts.



impressed by the industry-friendly culture of UMass. This is both very refreshing and efficient from Cubist's point of view. In a relatively short period of time we have been able to establish collaborations

with groups at both

UMass Amherst as well as at UMass Medical

School that give us access

to outstanding science.

Ronald Farquhar, PhD Cubist Senior Vice President Pharmaceutical Sciences

Head of Research

Supporting Goals

Support renewal of the grants that fund the UMass Center for Clinical and Translational Science

Expand existing research pilot programs

Coordinate faculty recruitment and research investments in areas of strategic importance

Reinvigorate the Commonwealth's R&D Matching Grant Programs

Facilitate large-scale grant proposals

Establish a System-wide Research Cores Coordinating Committee and Core Capital Renewal Fund

Strengthen and promote faculty networks



External Engagement and Innovation

Position the five University of Massachusetts campuses as hubs for industry engagement, technological innovation and regional development that drive the Commonwealth's innovation ecosystem across all regions of the state.



Supporting Goals

Create a five-campus network of life sciences innovation centers

Launch coordinated outreach initiative to communicate and accelerate our impact

Expand campus-based entrepreneurship and commercialization

Create a Life Sciences Investment Fund to support innovative and multi-campus research initiatives

While Massachusetts' life sciences companies have long-standing ties with UMass, we very much appreciate the University's increased emphasis on engagement with industry. The analysis in MassBio's recent Impact 2020 strategic report makes it very clear that the future of the Commonwealth's cluster centers on even closer collaboration between industry, academia and government. We look forward to greatly expanding links with UMass, especially in strategic areas such as life sciences IT.

> Bob Coughlin, President & CEO, Mass Biotech Council



The vision is clear:

to serve as the primary academic partner for the state's thriving life sciences community

Conclusion

The strategic framework put forward in this plan, which spans talent development, research, external engagement and statewide innovation, provides the University with a compelling vision to guide its future direction and offers the Commonwealth's life sciences sector a tremendous value proposition. The vision is clear: to serve as the primary academic partner for the state's thriving life sciences community. The value proposition is unmatched: to leverage the University's diverse and unique capabilities, wide array of resources and statewide presence in order to catalyze the future growth, success and impact of the Massachusetts' life sciences ecosystem.

The University's life sciences vision and its corresponding value proposition recognize that the continued success of the University's research enterprise, particularly in the life sciences, is dependent on and inextricably linked to the continued growth and dynamism of the life sciences sector in Massachusetts. This recognition stems from the initial Life Sciences Task Force planning process five years ago that powerfully demonstrated the critical importance, both for the UMass System and the Commonwealth, of aligning priorities and strategies between the state's premier public research university, state government and other key constituencies in the life sciences sector.

In order to build on the previous plan and chart a vision that benefits the University and, indeed, the Commonwealth's entire life sciences community, the Life Sciences Task Force has identified specific goals and objectives founded on the tenets of shared investment, strategic alignment and mutual benefit. In this model of shared and strategic partnership, the University's life sciences initiatives, investments and improvements will be fully leveraged through targeted support from key external partners, thereby maximizing the benefit to and impact on the broader life sciences ecosystem in Massachusetts.

In this new paradigm characterized by greater cohesion, collaboration and coordination within the UMass System and between the University and external partners, it will be incumbent on the University to operate in a more effective, efficient and entrepreneurial manner. By following the strategic framework outlined in this report, the University of Massachusetts will be poised to become the primary resource for the state's burgeoning life sciences ecosystem, impacting life sciences talent development, research and innovation from Boston to the Berkshires and from Fitchburg to Fall River.

The continued success of the University's research enterprise is dependent on and inextricably linked to the continued growth and dynamism of the life sciences sector in Massachusetts.

Life Sciences Task Force 2014

*denotes members of the LSTF Stewardship Committee



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University of Massachusetts

Executive Summary

Created by the Life Sciences Task Force 2014