

**LIFE SCIENCES
BUSINESS DEVELOPMENT ROADMAP
FOR THE GRAND FORKS REGION**

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EXECUTIVE SUMMARY

The science and business of the life sciences directly affect how we grow and harvest our crops, how we prevent and treat sickness and disease, and how we power our vehicles and communities.

States and cities throughout the United States, indeed the world, are competing for the business revenues, research dollars and thousands of life science jobs expected over the next decade. In 2001, 14 states were trying to grow life sciences industries. Today over 40 states have invested significantly in the life sciences and all 50 states are offering economic incentives for bioscience companies as part of their economic development plans.

Internationally, the life science industry is extensive and is growing at twelve percent annually. This growth is expected to continue as new technologies and platforms are developed to meet the growing need nationally and internationally. This growth provides opportunities for small firms with growth in intellectual property.

The region, and state, should continue to focus on this industry sector for several reasons including new wealth generation and related growth opportunities for small firms and the research universities within the state (University of North Dakota, North Dakota State University).

These opportunities are not without risk, and the length of time for new and emerging technologies and products to come to market is often long with extensive capital requirements that can be daunting. Products and technologies that are developed in the industry space often take years to develop, pass testing and enter the marketplace and (potential) revenue generation.

Places where life science initiatives are taking off share a few key characteristics, including strong academics, vigorous local networking and collaboration, connections and partnerships with other life science centers, and mechanisms for translating research into products. Once concentrated in large metropolitan areas, life science research and business activity is now making moves to smaller, less costly and more manageable metropolitan areas – places like Grand Forks.

This document outlines a strategy for the Grand Forks region to create a competitive life sciences sector that will lead to the creation of higher value economic opportunities and higher-paying jobs. Innovation is the key to achieving both of these goals.

A recent edition of *The Economist* (October 13, 2007) highlighted two fundamental driving forces in today's economy – innovation and the conjunction of globalization and information technology.

Globalization and information technology – enables the diffusion of competitiveness, productivity, growth and rising standards of living across the planet like never before. The life sciences have undergone dramatic transformations because of this technological and economic interaction.

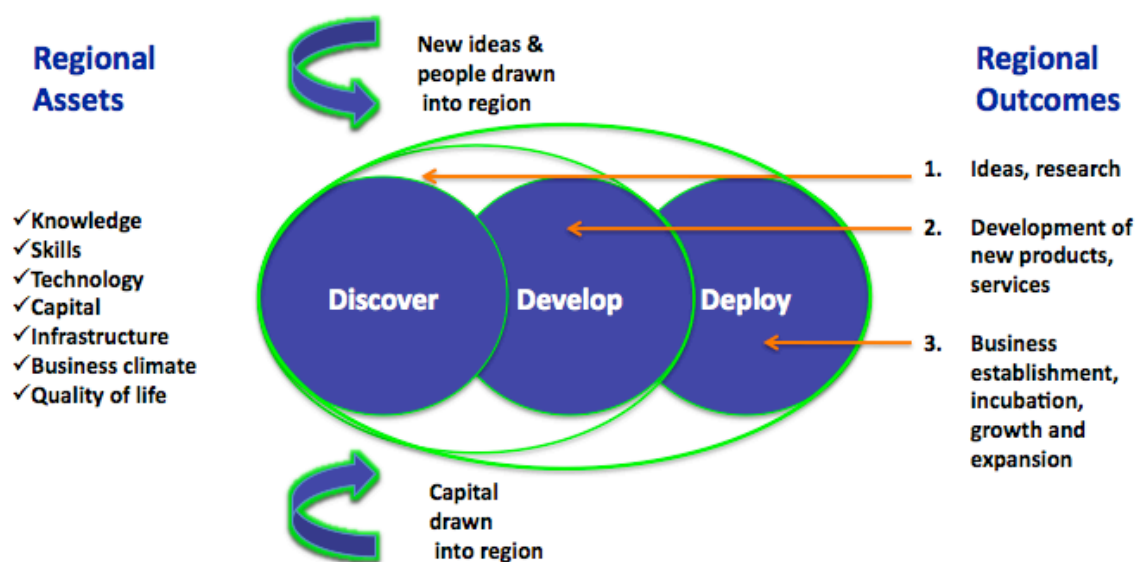
Innovation – fresh thinking that creates value in the form of new products, business processes and organic changes that create wealth or social welfare – is what makes the world go around. And nowhere does this hold more true than in the life sciences.

Innovation is the key to growth today, oftentimes at the intersecting segments of the life sciences industry. Biology, genetics, microbiology, biophysics, biochemistry, chemical engineering and computer science have, in the past decade, re-defined science output, offering almost endless applications in the marketplace. More than half of the top 30 Dow Industrials companies are now involved in biology-based research and development (R&D), ranging from biofuels and household cleaners to drugs, medical devices and fabrics.

There is no single formula for success but Grand Forks will succeed if it takes

full advantage of its unique combination of infrastructure, core competencies and human capital and positions itself for future opportunities by putting in place the new tools and resources that it needs. Equally important is to create a culture of, and mechanisms for, collaboration wherein opportunities can be captured or created quickly and repeatedly. Figure 1 on the next page provides an overview of the process by which communities and regions can build on their existing assets, accelerate local momentum, leverage trends that play to their strengths, and mobilize quickly and collaboratively to achieve common, long-term goals.

Figure 1. Regional Innovation and Its Outcomes



The Grand Forks region has significant assets and strengths in the life science industry sector and several robust technology platforms that the community can leverage to “jumpstart” life science economic development. Nonetheless, significant effort is needed to advance the life science industry sector as a key driver of the regional economy.

For the life science sector to fully realize its potential as a major economic engine for Grand Forks, the region must simultaneously strengthen existing core competencies in research and facilitate the efficient translation and development of commercial enterprise from research innovations.

Roadmap Strategy One: Build Grand Forks’ life science research and business development capacity around already strong and emerging research and technology platforms.

The Grand Forks region’s point of departure is an existing foundation of expertise and specialty infrastructure in several segments of the life science sector, including:

- Infectious diseases
- Nutrition & food
- Medical devices
- Rural health
- Neurosciences
- Biodefense
- Biofuels

The focus here should be on the infectious disease work at the COELSAT and in the Medical School, the Center of Excellence for Medical Devices, neurosciences, nutrition and food and biodefense.

- The EDC, in collaboration with the UND Research Foundation and the Red River Valley Research Corridor, should develop and implement a marketing plan for the recruitment of businesses and talent that will

strengthen or complement the core areas of expertise and specialized infrastructure located at the University of North Dakota. These key platforms currently have the most local momentum and bolstering their support can and will prove beneficial in the development of new opportunities.

- The EDC, the UND Research Foundation and others should actively participate in activities and events held by the Life Science Association of Manitoba (LSAM) and Minnesota’s LifeScience Alley. These regional organizations hold tremendous potential to identify new technologies, learn about new development strategies, find potential partners and identify emerging business or funding opportunities.
- The UND Research Foundation, the UND Alumni Foundation, private industry and the Grand Forks Region EDC, should encourage and support the Endowed Chair Program at UND, specifically to attract world-class research talent in one or more of the core life science areas of expertise. This will build on efforts by the UND Foundation and the Engelstad Family Foundation to endow a chair in medicine and another in engineering, with gifts totaling \$2 million.
- The EDC and the UND Research Foundation should meet on a regular basis with North Dakota’s Congressional delegation to partner with them in identifying and acquiring federal funding for existing and new research centers and for specific project support. An immediate objective should be for the BRIC to pursue the possibility of significant funding for an institute in advanced therapeutics for infectious diseases.

- The EDC and the UND Research Foundation should advocate for funding support from the City of Grand Forks and the North Dakota Department of Commerce to market the Red River Valley Research Corridor and the life science sector on a national level.
- The feasibility of an industry-university matching grant program should be explored. This program could fund work in life science specialty areas that now exist at the University of North Dakota and at REAC. The Grand Forks Growth Fund may be a possible resource for this program.

Roadmap Strategy Two: Promote and encourage the commercialization of life science research to enhance opportunities for start-up companies and existing firms in the region that wish to expand and/or enter new markets.

- The EDC should work collaboratively with the new Manager of Science & Technology Business Development at the Economic Development & Finance Division of the ND Department of Commerce to provide support for life science initiatives at UND and in Grand Forks. This should include work with UND to develop new proposals for North Dakota's Center of Excellence program.
- UND's Center for Innovation should promote participation by undergraduate and graduate students in STEM and life science related disciplines to participate in course offerings delivered by the Entrepreneurship Program at the University of North Dakota School of Business.
- The University should continue to develop and implement policies and procedures that actively encourage

faculty involvement in developing and disclosing intellectual property and subsequent commercialization activities.

- The University, working hand-in-hand with the EDC, should nurture and provide incentives for the talent that currently exists on campus – focusing on researchers and disciplines that are already leading in cutting edge research and successfully competing for federal research grant dollars.

Roadmap Strategy Three: Support and develop Grand Forks life science talent and expertise.

- The EDC should spearhead the local organization and deployment of the Plus Experience, a North Dakota EPSCoR (Experimental Program to Stimulate Competitive Research) program. This is a customized business and technology course that enriches the skills and career success of students and graduates. Plus it provides businesses with team members who can produce industry-specific results quickly. The Plus Experience is a series of six- to twelve-week courses, available to students with at least two years of college. Teaching and demonstration is be done by a combination of university and industry personnel at sites relevant to the course material.
- The EDC should work with the UND Alumni Association to help reach out to and attract former UND graduates that are currently life science professionals, including entrepreneurs and mid-management professionals with life science experience.

- The University should explore additional opportunities and funding to develop co-op and internship programs for life science and business students, particularly those in STEM disciplines.
 - The University should develop and implement a microbiology focus and degree to ensure a trained workforce and provide employment opportunities for students/graduates.
 - The EDC, the University and technology companies should encourage and support the Grand Forks Public School District in implementing innovations in Science, Technology, Engineering and Math (STEM) education for k-12 students.
 - The EDC should support efforts in the North Dakota legislature to provide incentives for students to enroll in Science, Technology, Engineering and Math (STEM) fields. It should also support initiatives to encourage science and math graduates to stay, work, innovate and grow businesses in North Dakota.
- it is more likely that those emerging opportunities found at the intersection of multiple disciplines, technologies or markets will be identified as early as possible.
- Steps should be taken to involve Altru Health System in regional life science initiatives on a more regular basis to leverage their contacts and networks with pharmaceutical and medical device companies that may be interested in research related to infectious diseases, clinical trials and other related activities.
 - The EDC should work proactively with the UND Research Foundation and the Medical School to plan for future research, development and commercialization facilities. A second REAC may be needed to accommodate future growth and the Medical School could significantly expand its scientific research with a \$10 to \$12 million facility to be used by faculty.

Roadmap Strategy Four: Develop a business culture and environment that supports and sustains the growth of new and emerging life science industry and business in the Grand Forks region.

- The EDC and UND's incoming Vice President for Research and Economic Development should spearhead the organization and operation of a life sciences roundtable. Comprised of leaders and innovators from research, business and government, this group would meet regularly to discuss regional needs and emerging opportunities in the life sciences sector. By involving a diverse group,