

# **LIFE TECH FLORIDA COMBINED WHITE PAPER DRAFT**

## **Mission**

Beginning on August 17, 2010, with the leadership of President Mark Rosenberg of Florida International University and Frank Nero of the Beacon Council, a work group of public and private university presidents, CEOs of economic development agencies, and the presidents of Enterprise Florida, the Florida High Tech Corridor, and the Florida Network of Research, Science and Technology Parks have gathered together to propose a regional economic development initiative called the Life Sciences Corridor.

From the outset, the mission of the Life Sciences Corridor is to grow the life sciences in the South Florida region through research, workforce development, and marketing. The plan is to partner with and build upon the advances made through the Florida High Tech Corridor and pivot initiatives around the significant efforts already underway at public and private universities and state colleges in the region, as well as the research laboratories and economic development agencies throughout central and south Florida. The initiative is consistent with the long term innovation and high technology growth strategy being deployed in Florida – including the New Florida initiative of the State University System. It builds upon the significant investment in the life sciences that Florida has made during the past decade, draws upon the high tech and innovation initiatives of key drivers of the Florida economy, such as Enterprise Florida and the Florida Chamber of Commerce, and focuses its efforts on innovation and job creation to ensure enhanced economic well-being in the face of a continuing economic recession.

The Life Sciences Corridor draws inspiration from successful regional economic development clusters such as the I-Four Corridor in Central Florida, Silicon Valley in California, and the Research Triangle in North Carolina. The history of these productive clusters points to a number of critical factors:

- 1) Regionalism
- 2) Presence of a connecting culture
- 3) Committed university leadership
- 4) Key individual leaders
- 5) Entrepreneurial culture, and
- 6) Availability of capital resources.

Assembling these ingredients synergistically to leverage existing regional life sciences assets in South Florida with state, federal, and private investment opportunities will be key to developing a more resilient economy that will generate more stable, sustainable jobs, and high-paying jobs.

## Statement of Purpose

The Life Sciences Corridor aims to establish an industry cluster in South Florida focused on biotechnology, pharmaceuticals, diagnostics, and information technology. Biotechnology is defined as "any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use (United Nations Convention on Biologic Diversity, 1992)." By definition, the initiative does not exclude other forms of economic and technological growth, but means to address the growing relationship between life sciences and technology.

An industry cluster is "an agglomeration of interrelated industries that foster wealth creation in a region, principally through the export of goods and services beyond their borders . . . Cluster members usually include governmental and nongovernmental entities such as public/private partnerships, trade associations, universities, think tanks and vocational training programs, venture capitalists, patent attorneys, and even accounting and auditing firms . . ." (Milken Institute, 2004).

Currently, pharmaceutical and biotechnology companies demonstrate interest in the South Florida region, and the state has invested over a billion dollars in life sciences. Furthermore, businesses and corporations seek a strong interdisciplinary workforce among the life sciences, engineering, and computing. High performance computing and information technology have merged with biotechnology through informatics, drug design, image analysis, and clinical records. These new developments further expand opportunities for the Life Sciences Corridor to develop partnerships between the public and private sectors and across educational institutions, economic development agencies, and entrepreneurial organizations.

The mission of the Life Sciences Corridor is as follows: *Educational institutions including universities, state colleges, and general academic institutions will utilize our collective assets and facilitate collaborations with regional, state, national, and international industries, governments, and communities to promote innovation, investment, entrepreneurship and economic growth in biotechnology, pharmaceuticals, diagnostics, and information technology to promote high-technology and high-paying employment.*

High-technology and high paying job opportunities will arise from educational institutions' research creations, which will be commercialized through the universities' technology transfer infrastructure and supported by capitalization from the private sector. The Florida Legislature will encourage and promote investment and business relocation to Florida, thus enabling the region to benefit from the state's geographical propinquity to Latin America. Legislation may also yield venture capital funds for development that may be utilized by the Life Sciences Corridor.

### Factors for Consideration

To establish a productive environment for the growth of a life sciences cluster, Florida needs to evaluate existing assets and competitiveness with other biotechnology corridors in the country. The close proximity of life sciences assets raises the likelihood of knowledge-based innovations in a particular geographic area because of the efficiency with which new knowledge or research

can be transmitted and shared (Milken Institute, 2004, p. 2). Florida has value propositions attractive to entrepreneurs and industries, but not a secure economic environment to encourage business relocation. Value propositions include Florida's geographic proximity to Latin America, which offers ample opportunities for international trade; as well as sunny weather, ocean access, wind, and agriculture, which may be harnessed for biotechnology. One important role of the state government, in collaboration with the Life Sciences Corridor, is to encourage other state, national, and international businesses to transplant to Florida to help develop the economic ecosystem to drive further entrepreneurial growth.

## Composition

The Life Sciences Corridor currently includes participating members from educational institutions including four-year public and private universities, state colleges, economic development councils, Florida High Tech Corridor, Enterprise Florida, Florida Network of Research, Science, and Technology Parks, South Florida Regional Planning Council, and other organizations. To successfully achieve the Life Sciences Corridor mission, new educational, economic, and financial institutions need to be recruited.

### Legislative

Predictions allude to another difficult budget year in 2011. State government involvement in the Corridor will most likely occur through direct investment of dollars or tax breaks. The Florida government also acts as a recruiter and must collaborate with business owners and CEOs to encourage business relocation. As more industries move to Florida, other entrepreneurs will follow, taking advantage of the promising ecosystem developed from Florida's geographic location, existing value propositions, and other surrounding life sciences businesses. The Florida Legislature and the Life Sciences Corridor can unify strategies to further entrepreneurship in Florida to strengthen high-technology, high-wage employment.

### Chambers of Commerce

The region's chambers of commerce are one primary group not represented now in the Life Sciences Corridor. Many locations have multiple chambers of commerce. To avoid confusion, the Corridor needs to invite the largest established chambers:

#### 1. Broward County

- a. Greater Fort Lauderdale Chamber of Commerce
- b. Greater Hollywood Chamber of Commerce
- c. Southeast Broward Regional Chamber of Commerce

#### 2. Collier County

- a. Eastern Collier Chamber of Commerce
- b. Greater Naples Chamber of Commerce

#### 3. Lee County

- a. Greater Fort Myers Chamber of Commerce

4. Martin County
  - a. Stuart/Martin County Chamber of Commerce
  
5. Miami-Dade County
  - a. Greater Homestead/Florida City Chamber of Commerce
  - b. Greater Miami Chamber of Commerce
  - c. Miami Beach Chamber of Commerce
  - d. Miami-Dade Chamber of Commerce
  
6. Palm Beach County
  - a. Chamber of Commerce of the Palm Beaches
  - b. Northern Palm Beaches County Chamber of Commerce
  - c. Palm Beach Chamber of Commerce
  
7. St. Lucie County
  - a. Indian River Chamber of Commerce
  - b. St. Lucie County Chamber of Commerce

#### Economic Development Organizations

Currently, the Life Sciences Corridor includes several economic development organizations that plan and aid businesses and economic development initiatives within their given areas. The participating institutions have been a vital resource for information and organization within the Corridor. However, other existing councils need to be considered for the Corridor's further enhancement in the region.

Other organizations, such as incubators and research parks, facilitate the development of biotechnology and information sciences that will improve commercialization and economic transactions. Incubators nurture new businesses to succeed, particularly if affiliated with universities and other educational institutions, and thus must be recruited.

1. State-wide
  - a. South Florida Community Development Coalition
  
2. Broward County
  - a. Greater Fort Lauderdale Alliance
  - b. Metro Broward Economic Development Corporation
  - c. Broward County Office of Economic Development
  
3. Martin County
  - a. Business Development Board of Martin County
  
4. Miami-Dade County
  - a. City of Miami Economic Development

- b. Coral Gables Economic Development
- c. Economic Development Council of South Miami-Dade

5. Palm Beach County

- a. Boca Raton Economic Development
- b. Business Development of Palm Beach County
- c. Economic Development Research Institute
- d. Enterprise Development Corporation
- e. Plantation Economic Development

6. St. Lucie County

- a. St. Lucie County Economic Development Council

Incubators and Research Parks

- 1. Florida Atlantic University Research Park
- 2. Incubate Miami
- 3. Technology Business Incubators (several locations)
- 4. University of Miami Research Park

Private Contributors

Florida has some wealthy and successful entrepreneurs who play a role in the economic growth of the region. The Life Sciences Corridor needs to collaborate and consult with these individuals to solicit funding and technical advice to further the Corridor's mission. Although state funding may be available, financial support from the private sector will be another vital source of funding. Private individuals may also have personal insights and connections that may prove useful to the development of the Corridor.

- 1. Dr. Phillip Frost

**External Success Factors**

Throughout the last forty years, industry clusters have flourished in many regions of the United States. Each region contained strengths that enabled specific economic initiatives to develop and expand through universities, research parks, or life sciences companies. From these successful models, the Life Sciences Corridor can glean lessons to be learned and pathways to be created.

Illustrative Successful Corridors

*Silicon Valley:* Lying southeast of San Francisco, the Silicon Valley is the oldest example of an industry cluster in the United States. Its origin owes to Stanford University's Electrical Engineering Professor Fredrick Terman for his innovations in electronic devices. In the late

1930s, Stanford University and the Palo Alto region began constructing the first modern electronic equipment that later led to the development of the television electron tube. During World War II, the United States government acted as a major advocate of rising technology. As a result, California's plant and defense contracts thrived because the U.S. government funded the state at almost \$40 million. The funds and technological focus in the state contributed to state prosperity throughout the 1950s, as more electronic companies established facilities in Palo Alto and the surrounding areas.

With the establishment of the Stanford Industrial Park and further development of a conglomeration of interrelated companies, Silicon Valley continues to expand in the twenty-first century. Some studies have shown that rather than using tax breaks or government assistance to prosper, Silicon Valley has experienced a steady, predictable growth by remaining small and flexible. Through avoidance of government's intervention in the industries, Silicon Valley companies are not restricted by inspections, regulation, and bureaucracy. The lack of government support has increased the fierce competition among businesses, resulting in the birth of new companies, which very often coax other companies' employees to join competitors.

*North Carolina Research Triangle:* Established in 1959, the Research Triangle Park (RTP) began as an initiative from business, academic, and industry officials throughout the state. At first, the RTP proposed to attract companies interested in global research and development in major science fields. The state's three major universities, Duke University, North Carolina State University, and University of North Carolina in Chapel Hill, acted as resources for the newly established companies. In 1965, IBM and the National Institute of Environmental Health Sciences (NIEHS) relocated to the research park, thus beginning exponential growth for the research triangle that continues even today. The Research Triangle Foundation of North Carolina owns and develops the Research Park, which is now home to large employers such as IBM, GlaxoSmithKline, Cisco, Fidelity Investments, and a broad spectrum of companies.

*San Diego:* Unlike the North Carolina Research Triangle and Silicon Valley, San Diego is a more recent recognized industry cluster, focused on the life sciences and nuclear research. The cluster began in 1978 with the construction of the Torrey Pines Mesa area that allowed the region to become one of the world's pre-eminent biotech hubs. The area utilizes existing industries for the life sciences cluster. For example, the Scripps Institution of Oceanography was first established in 1903, but has become one of the first instances of organized life-science related research in the region. The Scripps Research Institute established itself as the world's leading center for biomedical research in 1961, partly due to the recruitment of immunologist Frank Dixon. The region has also flourished because in 1960, the city of San Diego awarded the Torrey Pines ocean-facing land to polio vaccine inventor Jonas Salk. The Milken Institute ranked San Diego the first in the nation, among a roster of 12 successful regions, in the biotech overall composite index. The biotech overall index measures research and development, risk capital and entrepreneurship infrastructure, biotech and life science human capital, and biotechnology and life science workforce.

### Key Findings and Conclusions

- 1) The foundation for a successful life sciences or technology region/hub takes many years/decades to build. It does not happen overnight.
- 2) Regional leadership, commitment and vision are critical to building successful life sciences and technology hubs. The right leaders must be involved.
- 3) The partnerships among educational institutions and educators, researchers, public companies and governmental entities are what make a truly successful region.
- 4) Federal agencies providing significant grants, and a commitment at the state level, are crucial parts of many of the successful life sciences and technology hubs to serve as initial anchor tenants around which the clusters will develop.
- 5) Research parks can play a critical role in the attraction of technology and life sciences industries to a region. They can be in one contiguous location (Research Triangle Park) or spread across the region (Maryland).
- 6) A brand name can be a powerful external success factor and the most well known are branded and globally recognized (i.e., Silicon Valley, Research Triangle Park).

### **Strategies**

The proposed strategies for the Life Sciences Corridor, described below, are matching grants research program, workforce development, entrepreneurship activities, and student focus.

#### Matching Grants Research Program

Drawing on a successful strategy of the Florida High Tech Corridor, we propose the creation of a matching grants research program. This technique is streamlined and distributes research grant funds from the Corridor for partnership projects between businesses and universities in a regional collaboration rather than for individual gains. The program is controlled within each university's Office of Research and Commercialization offices. Funds are distributed to the institutions by the Corridor with the assurance that the funds will be protected. This strategy allows the program and Corridor to utilize the existing accounting and auditing structures within the universities and save expenses rather than building a new infrastructure for a separate office or controller outside the universities. The university's protection also supports recurring funding from the state annually, which in turn is placed back into the Matching Grant Program. Furthermore, university faculty may apply for research funding that supports businesses. With this approach, more entrepreneurs will be willing to partner with universities and faculty because funds will support both institutions. Although some faculty may be unwilling to be involved, professors, associate professors, and graduate students will be given access to corporations that wish to collaborate. The process allows Corridor finances to be

invested in businesses through the universities, thus placing marketing and funds into the region.

### Workforce Development

As contributors, community colleges can educate a properly trained workforce with the skills needed to expand businesses throughout South Florida. Participating community colleges will establish specialized degrees as requested by the emerging industry or business. The company or companies will support the colleges to develop the programs and also the costs of the prospective employees' education. As a result, industries will receive the needed skilled workforce, and employees will be better qualified to fulfill job requirements, with the potential to later enhance the associate degrees to four-year university bachelor's degrees. Training a skilled technical workforce will promote talent retention in South Florida for more high-paying jobs.

### Entrepreneurship Activities

Incubators enable the development of partnerships with communities and promote job creation. Through these partnerships, companies built through mentorship in incubators will be more likely to succeed and to build new jobs within the community. Incubators also protect university patents from being removed and transferred by companies away from the locality where the patents were produced. Companies with a Stage-Two classification hold the most potential for incubators because the incubators can continue the businesses' growth. A geographic region containing incubators will receive increased tax revenues and will yield more community partnerships with universities for project assistance. Although studies have shown that some incubator companies are less successful than companies without incubator assistance, those that originate from university-supported incubators have reported higher success rates.

### Student Focus

Although faculty contribute and drive universities and the economy, students have a direct influence by being leading innovators and future members within the job market. Many strategies utilize faculty involvement for funds, but students can be involved through cluster proposals. Cluster proposals require collaborations between faculty members at two or more institutions and develop communication networks between faculty members in similar fields. Some established institutions have strong faculty and student connections, while new smaller institutions may need assistance to help develop these networks similar to those in more established universities. Following the cluster proposals, Corridor funds will be available to professors and associate professors with a requirement of student participation.

### Outcomes

To achieve the Life Science Corridor's mission goals to promote the creation of high-technology, high-salary employment, the strategy workgroup has proposed strategies that help build partnerships, create jobs, promote further funding, and foster student participation. Each strategy links with another, as noted in the example of the Matching Grant Research program, which ties student involvement and workforce development as a strengthening component in

entrepreneur growth in incubators. Each strategy strengthens participating educational institutions and promotes a beneficial environment that will draw investors and businesses to the region and promote faculty and student collaborations.

## **Student Entrepreneurship**

Illustrative examples abound of how society has benefited from the work of young entrepreneurs. The future depends on young people in their formative academic years to implement new ideas that might address the world's ever increasing health, food, energy, and water needs. Florida's research parks may play a crucial role in student initiated intellectual property-based job creation. Student prospects for internships exist in research park business incubators to assist with grant writing, work in wet labs, or in IT based research in small and large start-up businesses.

Faculty and business leadership will be required to provide support for student forums linking existing university research parks and regional business development resources in a variety of social, virtual, and physical spaces. The plan for South Florida should be "best in class," offering a world class student entrepreneurship program with expert mentoring, network development, enrichment programs, IT and wet lab resources, special coursework, funding applications and communication support. In developing the student-focused initiative, the project plan will start with a speaker/seminar/workshop, recruiting students to host a regional student event, and development of a newsletter. Scholarship awards may also be made available to provide incentives for young entrepreneurs.

### Objective

The objective is to promote student entrepreneurship through facilitation processes, cultural elements, and environmental elements so that students have the capacity for large scale economic development by developing businesses based upon "disruptive" technologies.

### Plan

Goal: To energize students to solve problems that change the world

Target Audience: 17-25 year olds in STEM disciplines

Mandate: Locate student innovators, recognize and celebrate their example, and inspire others.

Deliverables: Identify program targets, frame key steps and critical timeline required required to spark and sustain ongoing student innovation and new business start-ups.

Identify required and available resources including facilities and people - faculty, support staff, business and student leadership

### Student Innovations

The aim is to energize students in small groups to collaborate with experienced mentors and investors in the development and invention of new products. Useful measures of the vitality of a region's student innovation ecology include the number of the region's students who:

- 1) Enroll in entrepreneurial coursework or special technologically innovative programs
- 2) Compete and rank in state, national and international innovation and entrepreneurial student competitions
- 3) Secure internships in various early stage of product development
- 4) Secure employment upon graduation in regional early stage companies

#### Student Entrepreneurship Programs

There are many existing student- focused entrepreneurship programs in high schools, state colleges, and universities in Florida. These programs nurture entrepreneurship in students of all ages. A few noteworthy programs are listed:

- 1) Entrepreneurship Institute – Broward College
- 2) Young Entrepreneur and Scholarship Program – UCF
- 3) Entrepreneur Development Institute – Indian River State College
- 4) Florida Virtual Entrepreneur Center, Facebook
- 5) Florida Entrepreneur’s Resource Page
- 6) Pino Global Entrepreneurship Center – FIU (business plan challenge)
- 7) Adams Center for Entrepreneurship – FAU (business plan competition)
- 8) Undergraduate Entrepreneurship Major – UM (business plan competition)
- 9) The Launch Pad – UM
- 10) MBA in Entrepreneurship – NSU
- 11) Entrepreneurial Education Center – MDC (Young Entrepreneur of the Year)
- 12) National Foundation of Teaching Entrepreneurship (active in K-12)
- 13) Incubate Miami (Miami Downtown Development Authority)
- 14) Junior Achievement World Huizenga Center in Coconut Creek (8<sup>th</sup> grade)
- 15) Biotech Magnetic Schools in Dade, Broward and Palm Beach Counties

#### Analysis and Conclusions

- 1) Geographic location is not a significant factor in developing student entrepreneurship.
- 2) Readily available large investments are not required to form businesses and develop the economy.
- 3) Young entrepreneurs have ample opportunities to learn about entrepreneurship.
- 3) K-12 opportunities are limited.

- 4) Mentorship opportunities are limited.
- 5) Awareness of these local opportunities is inadequate.

### Recommendations

- 1) Build upon our local collective strengths by developing an awareness campaign targeted at young students. This campaign would feature each center for entrepreneurship and be funded through contributions from each center participating in this initiative.
- 2) Create a central clearinghouse and focal point for young entrepreneurs to call, e-mail and/or visit to obtain guidance and information. All forms of social media will be used to connect young entrepreneurs. This central office would be staffed by an entrepreneur in-residence. Ideally this would be state-funded. The National Foundation of Teaching Entrepreneurship may be the host organization for this component of the plan.
- 3) Collect and maintain information related to funding sources and service providers emphasizing young students.
- 4) Develop a young student business plan competition.
- 5) Develop a young student seminar series and networking event.