



Economic Development Strategy for K-State  
Research Park

**KANSAS STATE UNIVERSITY**  
**FOUNDATION**

January 8, 2014

**CBRE**



# CONTENTS

- 1. Life Science Overview ..... 3
- 2. Local Real Estate Market..... 5
- 3. Development Strategy ..... 6
- 4. Summary and Recommendations..... 18
- 5. Case Studies ..... 23

*CBRE © 2013 All Rights Reserved. All information included in this proposal pertaining to CBRE—including but not limited to its operations, employees, technology and clients—are proprietary and confidential, and are supplied with the understanding that they will be held in confidence and not disclosed to third parties without the prior written consent of CBRE.*

*This letter/proposal is intended solely as a preliminary expression of general intentions and is to be used for discussion purposes only. The parties intend that neither shall have any contractual obligations to the other with respect to the matters referred herein unless and until a definitive agreement has been fully executed and delivered by the parties. The parties agree that this letter/proposal is not intended to create any agreement or obligation by either party to negotiate a definitive lease/purchase and sale agreement and imposes no duty whatsoever on either party to continue negotiations, including without limitation any obligation to negotiate in good faith or in any way other than at arm's length. Prior to delivery of a definitive executed agreement, and without any liability to the other party, either party may (1) propose different terms from those summarized herein, (2) enter into negotiations with other parties and/or (3) unilaterally terminate all negotiations with the other party hereto.*

January 6, 2014

Mr. Greg Lohrentz  
Chief Operating Officer  
Kansas State University Foundation  
2323 Anderson Avenue, Suite 500  
Manhattan, KS 66502

Re: Development Strategy for Kansas State University  
Foundation Research Park

Dear Greg,

CBRE is pleased to submit our draft report on the bioscience assessment and economic development strategy for a KSUF Research Park adjacent to the K-State Campus in Manhattan, Kansas.

The Foundation seeks a third party strategic assessment of the opportunities for growth. Through local CBRE office market knowledge combined with economic development consulting expertise and CBRE's international Life Science Group, we have brought a unique combination of skill sets to develop a long-term strategy.

We appreciate the opportunity to assist you on this project and look forward to implementing our recommendations to strengthen the long-term potential for the KSU Research Park and the Foundation.

Sincerely,

Michael Klamm



Patricia Ardigo

## ACKNOWLEDGEMENTS:

---

CBRE wishes to thank the following individuals and organizations that contributed to our fact finding sessions.

---

Kim Young – Kansas City Area Development Council  
Kirk Schultz – President Kansas State University  
Dr. Kelly Lechtenberg – Veterinary Biomedical Research Center  
Ron Fehr – Manhattan City Manager  
Jason Higers – Deputy City Manager  
Tim Barr – Project Manager NBAF  
Lyle Butler – Manhattan Chamber of Commerce  
John Floros – Dean College of Agriculture and Grain Science  
Roger Fingland – College of Veterinary Medicine  
Scott Rusk – Biosecurity Research Institute  
Ron Trewyn – Vice President Research Kansas State University  
Duane Cantrell – President Kansas Bioscience Authority  
Kent Glasscock – President KSU-IC

## Life Science Overview

---

### NATIONAL LIFE SCIENCE MARKET

America has long relied upon innovation technology to drive our economy. Basic investment in science and technology will take center stage as a cure for both economic and environmental ills. For the first time, a professional scientist will craft our energy policy, as we expand investment in clean, affordable, renewable energy. An eight-year ban on the use of federal funds in embryonic stem cell research has recently been lifted.

The economic stimulus package has injected money into basic R&D, biomedical research facilities and essential broadband infrastructure, as well as into federal labs and research universities. Economic development organizations will strive to capture these investments in ways that promote sustainable clusters and that can be innovative to create value and jobs over the long term.

Over the past 50 years research parks and incubators have been the common strategy for turning science and technology into local economic growth. However, tectonic shifts in the way scientific research and technological innovation happen will require pioneering new models of collaboration, where we rethink how we develop places for these activities. Future technology-based development strategies will need to address different models.

Anthony Townsend's Institute for the Future, and the Research Triangle Foundation hosted a series of workshops that were designed to engage a broad group of experts from different countries and different professions in brainstorming important trends and scenario elements for research parks. The model of self-contained research parks that have dominated the landscape for the last 50 years is being challenged by major shifts in the global economy, science and technology. The Institute for the Future believes we have reached an important moment in history for technology-led development. The Research Triangle Park is 50+ years old, and over 40 other research parks are 25 + years old. The next few years may very well be a period in which some parks fail.

Existing research parks can be challenged from the emergence of entirely new models for building and organizing spaces for R&D. "The Rise of "Research Clouds" and digitally connected networks of small spaces challenge existing parks by providing more collaborative, more flexible and less costly work spaces for inventors.

Despite these differences, one common element remains: regions will play a more important role than ever, as it has become pivotal to utilize life science synergies, rather than be isolated within the market. Science and technology research is too complex for any one campus, firm, or research park to tackle in isolation.

## Life Science Overview

---

### CURRENT LIFE SCIENCE TRENDS

As the U.S economy recovers from a severe economic recession, the bioscience industry is drawing strong interest from investment community, as well as political leaders.

Research in bioscience industries is a major economic driver of innovation and new product development throughout the U.S. and the world. Although bioscience industry has suffered through the global recession, it has managed to grow high paying jobs, at a pace well above the national average over the past decade. Other knowledge based industries such as IT Services and Computer Equipment saw significant declines between 2001–2010.

Wages in bioscience industry are substantially higher than the national private sector wages. According to Battelle's 2012 Bioscience Industry Development Report, average wages were \$82,697 in 2010, almost 80% higher than the national average for private sector workers. This wage differential trend has been steadily increasing with bioscience workers receiving a 13% increase in real inflation adjusted wages since 2001, versus 4.4% for private sector industries.

There are five major subsectors of the bioscience industry according to Battelle and BIO International:

1. Agricultural Feedstock and Chemicals
2. Drugs and Pharmaceuticals
3. Medical Devices and Equipment
4. Research, Testing and Laboratories
5. Bioscience Related Distribution

### KANSAS BIOSCIENCE INDUSTRY

According to Battelle report, the Kansas Bioscience industry employed over 13,000 workers in 2010 spread over 760 different companies/organizations. Kansas has a specialized employment concentration in agricultural feedstock and chemicals. Research, testing and medical labs had the highest location quotient and represented 1/3rd of total bioscience employment. The 2010 average bioscience salary in Kansas was \$62,000, a 10% real increase from 2001, while overall private sector wages increased only 5% over the same period.

## Local Real Estate Market

---

INSERT KSUF OFFICE BUILDING ANALYSIS HERE ?

## Development Strategy

---

### DEVELOPMENT STRATEGY INTRODUCTION

CBRE participated in a multi-day series of meetings and telephonic conference calls to interview key local government officials, university leaders, business leaders and industry contacts to understand the type of research being done by the various institutions to identify the scientific strengths and possible collaboration with companies or industry organizations.

CBRE also interviewed key contacts in other industries, local government, institutions to identify potential synergies and opportunities.

CBRE evaluated local economic and demographic conditions and their potential impact on the development.

- Review existing market data and analyze the demand/supply conditions and absorption potentials for office and industrial uses.
- Analyzed the key facilities, land use, and building characteristics of the park.
- Analyzed case studies of research parks for insights on success and failures.
- Prepared strength, weakness, opportunities and threats (“SWOT”) analysis
- Look at strengths and weaknesses of the local and regional economy for possible implications for the Research Park

### CASE STUDIES

Our analysis benchmarks research and technology real estate initiatives across the U.S. CBRE has identified several projects that provide insights for KSU. The analysis explores and documents key characteristics of these projects, as well as lessons learned. The research resources included the websites, related news articles, and primary phone interviews with relevant administrative personnel of the individual research parks.

Any case study analysis of this nature has important limitations, all of which are driven by the central precept that the each venture is unique in its specific characteristics, including its location, physical components and, perhaps most importantly, its potential participant partners. It is challenging to identify a truly comparable research park whose experiences include all of the same components as relevant to KSU. However, it is possible to identify similar initiatives that, to a greater or lesser extent, share many of the similar fundamental characteristics. Important criteria utilized in identifying case study candidates included any or all of the following:

- Joint venture approach to governance/operation and/or funding
- Local and state agency involvement in funding, development and marketing
- Public-private partnerships
- Research university involvement – Physical science/life science research focus
- Participation by regional technology innovation/transfer entity
- Second or third tier regional economy/real estate market
- Presence of a business incubator

### STRATEGIC ELEMENTS

## Development Strategy

---

Following section summarizes the key characteristics of research and technology park case studies, which share a number of common themes that have been instrumental in their implementation.

### VISION:

**Shared Vision among Multiple Entities** – Successful parks involved multiple entities and public-private partnerships. They demonstrate that it is possible to develop collective goals for the project that are consistent with those of the partnering entities. Amalgamating what are oftentimes competing interests of the various entities involved in the initiatives to a coherent and lucid vision for the park can be a lengthy process, but ensures commitment from a broad base of stakeholders.

### LEADERSHIP:

**Strong Research University Presence** – The central involvement of a research university has been pivotal to the viability of almost every successful park. The proactive involvement of a research university committed to the commercialization of intellectual capital was the key driver. The technology transfer and commercialization emanating from this research base is the key to leveraging intellectual capital, job generation and financial performance.

### FUNDING:

**Broad Variety of Funding** – The parks relied on a broad base of funding sources. They include grants and loans by federal, state and local government agencies, investment from private research foundations, investment by local and regional business and economic development organizations, and private sector investment and angel investors. Many projects have stalled due to inadequate financial support.

### COMMERCIALIZATION:

**Regional Technology-Transfer Anchors** – The involvement of regional technology commercialization organizations is important in generating venture capital funding for start-ups and product development, and assistance in marketing new technologies, and grant funding applications assistance with patenting and licensing new discoveries.

### INCUBATORS:

**Business Incubators and Accelerators** – Almost all case study projects included a start-up incubator that act as a conduit for technology transfer from intellectual property to commercialization. The inclusion of shared facilities and space creates an environment conducive to scientific interaction, cooperation and knowledge-sharing.

## Development Strategy

---

### ADMINISTRATION:

**Governance Structure** –Governing bodies typically take the form a non-profit 501-(c)(3) research park corporation under the control of the research foundation, with a board comprised of individuals from the university, the park director, state and local government, private sector business, regional economic development and technology commercialization entities, and business leaders. In several of the initiatives, a major private corporation acted as a key driver.

### SUPPORT:

**State and Local Government Involvement** – State and local government agencies have played key roles in both the planning and establishment and funding of all of these initiatives. Their role has proven to be particularly important through investment in site development and infrastructure costs, business and workforce development and funding key facilities, such as business incubators and accelerators.

### RESOURCES:

**Adequate Operational Resources** – The provision of adequate operational resources for ongoing park operations is important. The most successful parks include a full-time experienced director, and with responsibilities ranging from site development planning, park management oversight, preparation of budgets and marketing strategies.

### STRATEGY:

**Long-Term Strategic Planning** – All of the projects have been the subject of strategic planning studies, and most have engaged land use planning firms to prepare site master plans. These plans provide a clear framework for a phased development strategy in a coordinated manner, and provide the basis for the budgeting, financing and implementation of key capital expenditures. In addition, it is important to develop flexible plans that can adapt to changes in the research and development focus over time. Marketing plans need to be dynamic and evolve to reflect changes in economic conditions and research funding resources.

### TIMELINE:

**Potentially Long Gestation Period** – While establishing any industry cluster takes time to achieve critical mass, biotechnology is a slow and expensive process. Biotechnology firms may have a growth period of up to 10 or 15 years. The large up-front funding requirement and long product development to market timeframe presents unique challenges. To mitigate such concerns, access and involvement of venture capitalists and angel investors' who understand the biotech industry growth model and its inherent risks, is crucial for sustained viability of the park.

## Development Strategy

---

### SPECIFIC CASE STUDIES:

While we have studied dozens of research parks, the following three projects are identified highlighted with more detailed case study analysis in the Appendix:

- North Carolina Research Campus, Kannapolis, NC
- Coldstream Research Park, Lexington, KY
- University of Iowa – Oakdale Research Park, Coralville, IA

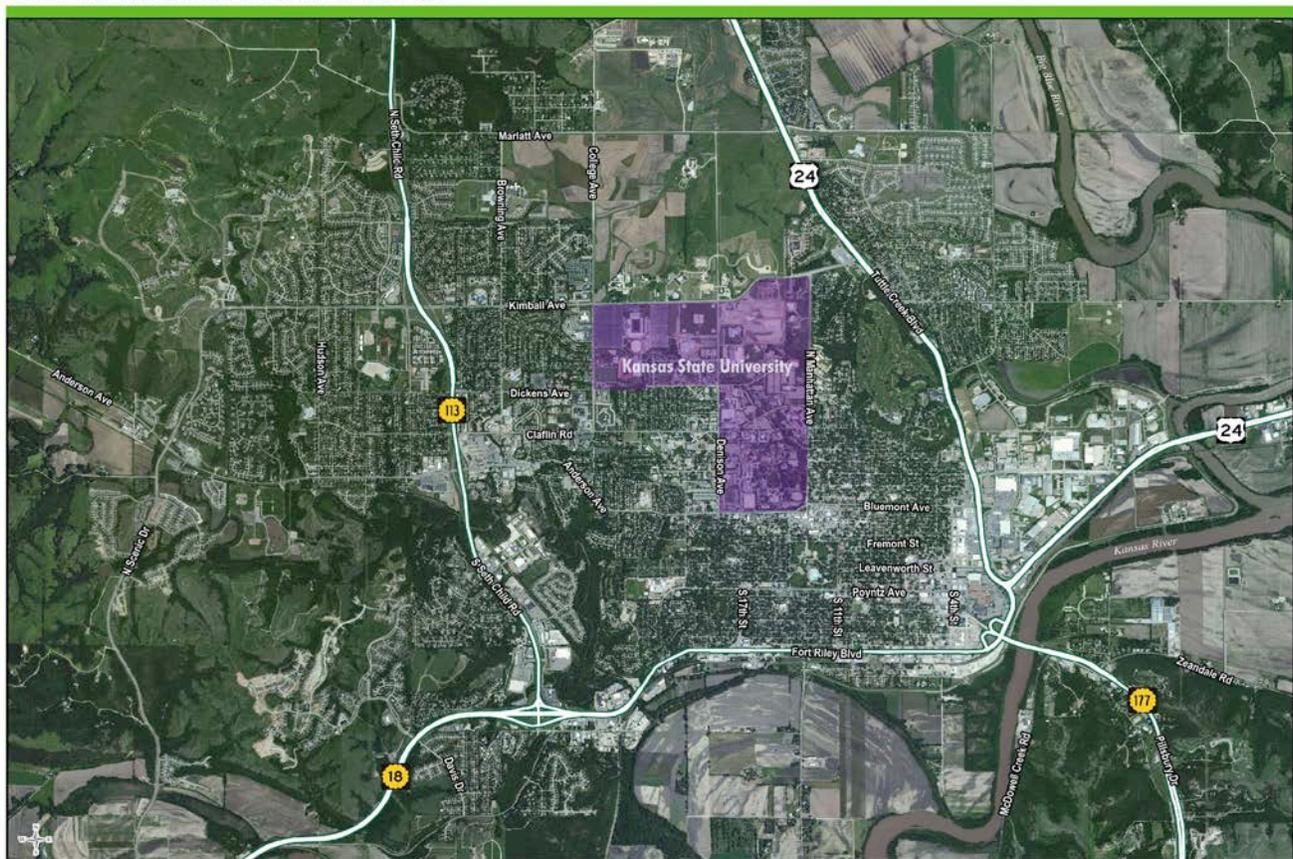
# Development Strategy

## SITE AND LOCATION ANALYSIS

The City of Manhattan Kansas is county seat of Riley County and is located in the eastern part of the state, approximately 120 miles west of Kansas City. The City is located at the junction of the Kansas River and Big Blue River. As of the 2010 census, the City population was 52,281, while the Manhattan metropolitan area has an estimated population of 97,810.

Nicknamed "The Little Apple", Manhattan is best known as being the home of Kansas State University, providing a special college town atmosphere.

### MANHATTAN KANSAS



© 2013 CBRE. All the information contained herein is confidential and intended for the use of the individual or entity to whom it is addressed. It is not to be distributed, copied, or otherwise used by any other person or entity. The information contained herein is for informational purposes only and does not constitute an offer of any financial product or service. The information contained herein is not to be used in any way to solicit a sale of any financial product or service. The information contained herein is not to be used in any way to solicit a sale of any financial product or service. The information contained herein is not to be used in any way to solicit a sale of any financial product or service. The information contained herein is not to be used in any way to solicit a sale of any financial product or service.



Manhattan's economy is heavily based on public institutions. K-State is the largest employer in town, and its 24,000 students help support the retail and entertainment venues in the city. The second-largest employer in Manhattan is the City school district. Military personnel employed at Fort Riley, located 8 miles west of town, also live in Manhattan and support its economy. Large private employers in the City include the Mercy Regional Health Center and the Farm Bureau. Manhattan also supports a small industrial base.



## Development Strategy

---

Manhattan has a strong economy with a peak unemployment rate of only 5.8% in 2010 compared to 9% unemployment nationally. Unemployment is now near 5.0% and per capita income in Manhattan is \$43,600, above median levels in the U.S. Housing prices held steady during the recent financial crisis as compared to 20-30% declines across the U.S.

Manhattan has seen steady growth over the past 50 years, with population consistently increasing almost 20% every decade. More growth is assured, following the 2009 announcement that the U.S. Homeland Security Department had selected Manhattan as the new home for the National Bio and Agro-Defense Facility.

### KEY EVENTS

The Arthropod-Borne Animal Disease Research Unit, or ABADRU, which specializes in animal and plant diseases transmitted by insects, relocated from Laramie, Wyoming to K-State, in order to fully realize its research mandate.

In 2010 The Center of Excellence for Emerging and Zoonotic Animal Diseases (CEEZAD) was established at K-State, which will research foreign animal, zoonotic and newly discovered pathogens that can have a consequential economic impact on U.S. agriculture, homeland security and human and animal health.

In 2012 the Kansas Department of Agriculture decided to move the majority of its offices to Manhattan, to capitalize on synergies with Kansas State University and complement the K-State 2025 master plan to increase research efforts.

Dr. Kelly Lechtenberg, a K-State 2005 Alumni Fellow and owner of Nebraska based Midwest Veterinary Services invested \$10 million to build the Veterinary and Biomedical Research Center (VBRC) along the Highway 24 corridor near Manhattan, Kansas. The company created 18 new jobs at the new 20,000-square-foot facility in Valley Business Park. The VBRC will design and conduct research that guides potential products through the FDA and USDA regulatory approval pathway for vaccine and pharmaceutical manufacturers, in addition to collaborating with academic research institutions like Kansas State University, the University of Nebraska and the University Medical Center.

### KANSAS STATE UNIVERSITY (K-STATE)

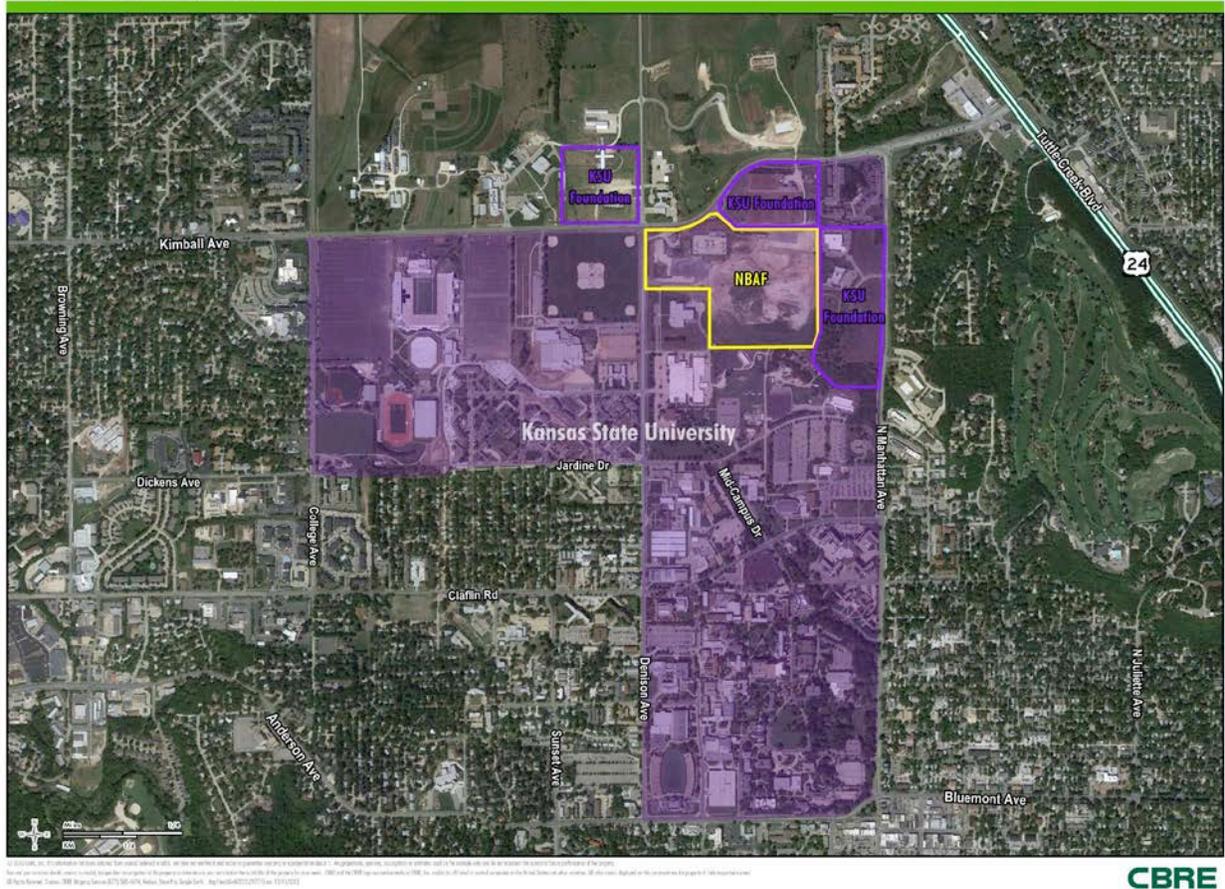
K-State is a Land Grant University celebrating its 150th anniversary. It is nationally renowned for its interdisciplinary capabilities in animal, plant, veterinary, and agricultural sciences; strong institutional commitment; and forward thinking as a leader in animal health and food safety.

The University offers hundreds of under graduate and graduate programs in wide range of fields, with several notable specialties in the College of Agriculture, College of Engineering and College of Veterinary Medicine.

K-State students rank at the top of all state universities in Truman, Goldwater and Rhodes scholars over past 25 years, trailing only Harvard, Yale, Princeton, Stanford and Duke among all U.S. Universities.

## Development Strategy

### KSU CAMPUS



K-State is a nationally recognized leader in agricultural research. Recently, that reputation has grown with several new research initiatives.

In August, 2013 the National Science Foundation named Kansas State University its lead institution for the world's first NSF-established Industry/University Cooperative Research Center on wheat. The premier center, named the Wheat Genetics Resource Center, focuses on improving food security through research that improves wheat's grain production and disease resistance. "Typically these National Science Foundation centers are devoted to engineering or electronics," said Bikram Gill, university distinguished professor of plant pathology and center director. "This will be the first such center for any crop plant." The center will be a collaborative effort between academia, industry and government.

## Development Strategy

---

Gill is an internationally decorated wheat scientist, who directs the university's wheat research center that contains a wheat gene bank comprised of about 14,000 wild wheat species strains and about 10,000 genetic stocks. The databank and its research lab is being incorporated into the NSF center.

In July, the U.S. Agency for International Development, or USAID, awarded Kansas State University a \$13.7 million competitive grant to establish the Feed the Future Innovation Lab for Collaborative Research on Sorghum and Millet. The lab is part of the federal government's Feed the Future initiative, which seeks to end poverty and increase food supplies in semiarid Africa.

As the initiative's lead institution, Kansas State University is coordinating the research efforts of partnering U.S. universities and research centers that specialize in sorghum and millet science with universities, research centers and nongovernmental organizations in the countries of Ethiopia, Senegal and Niger.

An Australian research center has recognized K-State's potential in agricultural security, as the only U.S. university partner in the Australian Plant Biosecurity Cooperative Research Centre.

The center is a consortium of Australian and international governmental research institutions and universities. Researchers develop new defensive strategies for emerging plant diseases and insect pests that threaten agricultural systems, according to Michael Robinson, the center's chief executive officer and director. "Kansas State University has strong ties in agricultural research, and there is much we can collaborate on."

Since Australian policy prohibits many foreign pathogens and organisms from entering the country — even for research — the university is able to further aid the center. "We can do work at Kansas State University that cannot be done in Australia," Robinson said.

In December, Dirk Maier, professor and department head of grain science and industry and director of the university's international grains program, was awarded a five-year, \$8.5 million grant from the U.S. Agency for International Development, or USAID, to establish the federal government's new Feed the Future Innovation Lab for the Reduction of Post-Harvest Loss at Kansas State University.

### BIOSCIENCE ORGANIZATIONS

There are dozens of animal health and agricultural science research and organizations in Manhattan and surrounding counties in eastern Kansas that have developed into a major scientific cluster known as the KC Animal Health Corridor. K-State is uniquely positioned to take advantage of these assets and build research partnerships with organizations around the world.



## Development Strategy

---

### NATIONAL BIO AND AGRO-DEFENSE FACILITY (NBAF)

In 2008 Manhattan was selected to be the new home of a state of the art bio-containment facility (BSL-4) for the study of zoonotic and animal diseases that are a major threat to U.S. food supply and public health. The Central Power Plant for the research facility is under construction on a 46-acre site located in the northeast section of the K-State campus, as shown on the map above.

The facility will replace the current research facility located on Plum Island in New York. The 570,000 square foot \$1 billion facility is expected to be substantially completed by 2019, followed by 2-3 years of lab commissioning and accreditation. Full operation is not expected until 2022.

NBAF will attract several hundred scientific researchers to Manhattan over the next decade. With an expected workforce of approximately 325 employees, average salaries are estimated at \$50,000 plus benefits. Annual non-payroll operating budget is estimated at \$20 million per year. According to an economic impact report by Impact DataSource in 2012, this new economic activity will support 200 additional jobs in the Manhattan area.

### BIO SECURITY RESEARCH INSTITUTE/ROBERTS HALL (BRI)

The BRI at Roberts Hall is a 113,000 square foot BSL-3 research facility on the K-State campus just south of the NBAF facility site. The BRI has 30 full time employees, but houses up to 140 researchers per year.

The BRI offers highly advanced laboratories, training areas and educational space to a wide range of collaborating organizations including: ABADRU, National Institute of Health, CEEZAD, KBA, various university colleges and departments and the National Agricultural Biosecurity Center.

The BRI focuses research on infectious diseases for both livestock and humans, pathogens and diseases that threaten food crops and arthropod borne diseases. The priorities of this research are vaccine development, pathogen detection, models of disease development in plants and animals, food safety protocols to name just a few.

The facility has 14 BSL-3 research labs and support space plus three BSL-3 large animal holding rooms and support spaces.

### NATIONAL AGRICULTURAL BIOSECURITY CENTER (NABC)

Located on the campus of Kansas State University, NABC is an integral part of the Midwest's expanding animal health corridor. NABC contributes to and accesses a vast network of interdisciplinary research and resources in areas such as animal disease, food-borne pathogens, plant pathogens and environmental changes affecting agriculture and human health.

The National Agricultural Biosecurity Center (NABC) was formally established in 1999 at Kansas State University (K-State) building on existing strengths inherent to the institution.

In partnership with state and federal elements, the NABC manages relationships and collaborations with on-campus centers, institutes, external contractors, and other

## Development Strategy

---

organizations to meet the challenge of protecting the American public and the domestic food supply chain from biological threats.

The NABC contributes to homeland security initiatives through: response planning and exercises; lessons learned analysis; agricultural disease risk and threat analysis; education and awareness; international initiatives; and support for the Biosecurity Research Institute.

### KSU – INSTITUTE FOR COMMERCIALIZATION

Founded in 1994. The Institute for Commercialization is located northeast of the KSU campus in a \_\_\_\_\_ square foot facility. KSU-IC has had limited success in developing commercialization and royalty revenues, as compared to other universities. The KSU-IC website notes that in the **past decade** they have helped startup companies get a total of only \$30 million in financing and generated \$12 million in revenue to the University.

A leading example of successful commercialization is the Office of Technology Licensing at the University of Florida run by David Day. By aggressively reaching out to the various departments in the University to understand their research, and working with industry to understand their needs, Dr. Day transformed the University of Florida in less than a decade to being consistently ranked in the top 5 ranking in the U.S.

### KANSAS BIOSCIENCE AUTHORITY (KBA)

The KBA was established by the State Legislature in 2004 to help Bioscience become a major pillar of the Kansas economy. It has substantial funding, estimated at \$30 million per year, coming from a portion of state income tax paid by employees of companies in the Animal Health Corridor. KBA has already pledged \$216 million toward bioscience economic development efforts, including the successful effort to attract NBAF. More recent activity has been focused on providing equity funding for start-up companies, which if successful can help generate a long-term source of funding for future investment.

### KANSAS BIOSCIENCE PARK AND VENTURE ACCELERATOR

Kansas Bioscience Park is a 92-acre park developed by the KBA. It is home to K-State Olathe and the new Venture Accelerator, a 39,000 square foot LEED Gold incubator facility with wet labs, office space, conference facilities, shared equipment labs and hoteling space for visiting researchers. The KBA is also offering 42 acres of land at no cost for development by eligible companies in the bioscience industry.

### K-STATE OLATHE

The 2011 opening of a satellite campus in Olathe at the Kansas Bioscience Park represents a major focus by K-State to expand their scientific research capabilities. The K-State 2025 master plan calls for expanding Olathe to house over 2,000 students and 50 faculty in scientific areas. (They currently have just a handful of students)

K-State Olathe initially landed the International Animal Health and Food Safety Institute to kick-start the campus. They have recently announced a JV with Merck, providing funding for a new Microbial Surveillance lab at Olathe. Initially to be used for benefit of Merck Animal health – it will ultimately be made available to other organization.

## Development Strategy

---

K-State Olathe has also announced receiving an EDA grant of \$250k per year for five years to spearhead the creation of an Olathe Innovation accelerator.

## ECONOMIC DEVELOPMENT AND MARKETING

### KANSAS CITY AREA DEVELOPMENT COUNCIL (KCADC)

The Kansas City Area Development Council is a private, non-profit organization. We are charged with representing the economic interests of the entire two-state, 18-county region of Greater Kansas City. Our mission is to:

- Brand the region as one product to stimulate economic growth.
- Enhance awareness of our metro's assets to create positive perceptions.
- Promote the region as the business location of choice.
- Position the region competitively against other major metros for the retention, expansion and attraction of jobs and investment.
- Equally support all regional communities.
- Assist companies from outside the region to find the best KC location for their needs.
- Facilitate final negotiations between the company and its selected community.

### KANSAS BIOSCIENCE ORGANIZATION (KANSAS BIO)

KansasBio is a unified voice representing the biosciences in Kansas. Across the human, plant, animal and industrial biosciences, Kansas Bio is focused on enhancing the business and research climate and working with leaders across the state to attract and retain bioscience talent, companies and funding.

KansasBio represents the bioscience continuum from the university laboratories to the established pharmaceutical, animal health and crop science companies, and all the entrepreneurial ventures, start-ups and service providers in the heart of the continuum.

KansasBio was founded in 2004 by the [Kansas City Area Life Sciences Institute](#) and the Kansas Technology Enterprise Corporation (which is now the Kansas Department of Commerce), who recognized the need to unify Kansas' bioscience industry, academic research institutions and economic development organizations.

KansasBio is a state affiliate organization of the [Biotechnology Industry Organization \(BIO\)](#). BIO is a national organization representing more than 1,000 biotechnology companies, academic institutions, state biotechnology centers and related organizations in all 50 U.S. states and 33 countries.

## Summary and Recommendations

---

### SWOT ANALYSIS

CBRE has identified the key strengths, weaknesses, opportunities and threats for the development of the K-State Research Park, based on our review of existing conditions, the biosciences industry in Manhattan, the socio-demographic and economic trends, real estate market trends, and the life science specialties.

---

The SWOT analysis provides an understanding of key fundamental opportunities and challenges that will need to be addressed in order to establish and implement a successful bioscience cluster.

---

#### Strengths:

- K-State is one of America's best colleges according to the Princeton Review. It has many major research specialties that utilize Life Sciences including:
  - Agriculture
  - Veterinary Medicine
- K-State is a national leader in animal health and food safety and security
- K-State is home to over 90 separate research centers such as the BRI, CEEZAD ABADRU and the future NBAF.
- College of Veterinary Medicine has developed a strong national reputation for research on infectious diseases in food animals.
- College of Agriculture has a strong national reputation in wheat genetics and genomics. They have collected worldwide sample of wheat varieties and grasses that will enable them to create higher yield and more drought resistant varieties
- KSU Foundation is a major financial resource for the benefit of KSU programs and facilities. The Foundation has seen a 70% increase in outright gifts since 2009, attracting \$86 million last year. Pledges and deferred gifts have increased 160% totaling \$66 million in 2013.
- Abundance of improved land at low cost is available for new business attraction.
- KBA is a major asset that has provided startup funds for several promising companies and has identified several more candidates.
- Manhattan provides an excellent quality of life for businesses, families and retirees. National magazines have rated Manhattan as one of the fastest growing and best small towns in the U.S. In 2011, *Forbes* rated Manhattan as one of the "Best Small Communities for a Business and Career."
- Manhattan has desirable residential neighborhoods and abundant open space. Tuttle Creek Reservoir is located 5 miles north of Manhattan and is now a state park that offers many recreational opportunities.
- KBA and KCADC are important marketing organization that promotes animal health and the life science industry.

## Summary and Recommendations

---

- The State of Kansas strongly supports growth in biotechnology and related industries.

### Weaknesses:

- Location on far western outskirts of 20,000 square mile KC Animal Health Corridor
- CBRE contacted 100 companies located in the Corridor to determine interest in locating in Manhattan to be near NBAF and KSU agricultural research. There was no favorable response.
- KCADC is a regional economic development organization for the Animal Health Corridor that does not include Riley County or Manhattan on their website.
- Manhattan Chamber of Commerce, which acts as Economic Development organization for the City does not understand the life Science industry. KSU needs to create a local economic development group comprised of City, university professors and private industry leaders to attract new industry to Manhattan.
- K-State College of Agriculture has aging building. Systems and infrastructure that needs renovation to keep pace with the growing research efforts.
- Commercial air service to Manhattan is limited. The airport is served by two airlines, American Eagle, which offers multiple daily flights to Chicago and Dallas Fort Worth, and Allegiant, which has twice-weekly flights to Phoenix. Kansas City International Airport is almost 2 hours away.
- The KSU Institute for Commercialization has had very limited success in creating new start-up companies and financially rewarding patents.
- K-State Research Park is relatively unknown with only one building currently in operation.

### Opportunities:

- K-State has announced its long-term strategic plan K-State 2025 with the goal of becoming a top 50 research university. Each department has developed plans to grow their respective fields of expertise.
- The College of Agriculture has unique opportunity to raise the bar of excellency with the development a new research and educational facility.
- Expand intellectual property commercialization (University of Florida)
- The State of Kansas recently reduced state income taxes substantially, including eliminating income taxes for small business owners. This can be a major incentive for start-up companies

## Summary and Recommendations

---

### Threats:

- There is tremendous competition in the Life Science industry from every state economic development organization. “Field to Fork” is a great theme – but there needs to be specific research objectives to attract industry.
- The large up-front funding requirement and long product development to market timeframe presents risks to funding new biotech ventures. To mitigate such concerns, access and involvement of venture capitalists and angel investors’ who understand the biotech industry growth model and its inherent risks, becomes crucial to ensure long-term sustainable viability.
- The challenges facing startup companies do not end after initial rounds of funding have achieved success. Many companies formed in the Kansas City metro area have struggled to get second and third round funding, forcing them to relocate to Massachusetts, New York or California to be near the venture capital sources.
- The state of Kansas falls within an area sometimes called [Tornado Alley](#). The most recent [tornado](#) in Manhattan touched down at approximately 10:30 pm on June 11, 2008. Thirty-one homes and several businesses were destroyed by the [EF4](#) tornado. Additionally, K-State’s campus incurred about \$20 million in damage – a number of university buildings sustained significant damage
- Political battles in Washington threaten near-term funding for the NBAF facility. Further delays in construction will scare potential developers seeking to build ancillary research facilities in Manhattan.

## Summary and Recommendations

---

### RECOMMENDATIONS

- Avoid unrealistic expectations on NBAF attracting large research and development organizations to Manhattan. Full operations are a decade away and indirect impacts are relatively small.
- Long-term partnership prospects with NBAF and the BRI are good – so KSUF should start master planning 50-75 acres contiguous on the north campus area for future private sector R&D and vaccine manufacturers.
- To meet the 2025 goal of a top 50 University requires doubling research dollars at K-State, Based on our interviews it appears that K-State and the College of Agriculture need more BSL-2 lab space, as well as new science based educational facilities over the next decade. According to Dean Floros, a 250,000 square foot facility is needed and should be designed to be built in 2-3 phases, as funding becomes available.
- K-State's Food Science Institute programs in food safety and security can be attractive investment partnerships with private companies, but specific research objectives must be identified.
- Create branding for the K-State Research Park and develop a website that discusses activity in the Park, available sites etc. – and is linked to our economic development websites.
- Form a fund raising committee with key leaders to secure long-term reliable source of funds for the Innovation Center.
- Work with Kansas Bioscience Authority and KCADC to better promote the KSU Field to Fork initiatives in marketing materials and special events.
- Set up a Credit Enhancement Fund to assist new companies.
- Strive to attract other university or specialty schools to establish satellite facilities near K-State and NBAF. Collaboration is the key to building a successful research park

## Summary and Recommendations

---

### CITY ECONOMIC FORECAST

Based on our analysis of the scientific research specializations and existing bioscience assets in the Manhattan region, and assuming KSU and the City follow our recommendations, CBRE projects the following Life Science related real estate demand in Manhattan from third party entities over the next 20 years.

#### LIFE SCIENCE OFFICE/R&D DEVELOPMENT

<u>Timeframe</u>	<u>Sq. Ft. Absorption</u>
Years 0-5	30,000 – 50,000
Years 6-10	50,000 – 100,000
Years 11-15	150,000 – 200,000
Years 16-20	250,000 – 400,000

No University development is included in this forecast. As noted in the report, NBAF is non-operational for the next decade. However, there are likely to be several more agricultural and/or animal health research organizations seeking to locate in Manhattan over the next five to ten years.

Long-term we would expect the majority of private development to be in the form of R&D type facilities, with a 20-30% office component. The vast majority of development should be from private sector companies seeking to develop relationships with K-State Food Science Institute and BRI/NBAF related research.

#### Employment

Office employment is typically based on a ratio of 3 employees per 1,000 square feet of space, while R&D employment is more likely to be 1 job per 1,000 square feet. Salaries for office users would range between \$40,000 and \$50,000, while R&D staff salaries would likely range from \$50,000 to \$100,000.

#### Development Value

The value of office development is approximately \$200 per square foot, while R&D space can easily exceed \$400 per square foot.

## Case Studies

---

### NORTH CAROLINA RESEARCH CAMPUS KANNAPOLIS, NC

#### Challenge

The North Carolina Research Campus (NCRC) is a biotechnology research park envisioned and funded by David H. Murdock, owner of Dole Foods Company, Inc. The “Biopolis” Campus is located in Kannapolis, approximately 20 miles north of Charlotte, 50 miles southwest of Greensboro, and 100 miles west of Research Triangle Park in the Raleigh-Durham area<sup>0</sup>. Eight universities, including three University of North Carolina (UNC) institutions, have established their presence in the park:

- Duke University
- UNC-Chapel Hill
- North Carolina State University (NCSU)
- UNC-Charlotte
- North Carolina Central University
- North Carolina A&T State University
- UNC-Greensboro
- Appalachian State University

The Campus is planned as live/work community and will cover 350 acres when completed. Plans include one million square feet of office and laboratory space, 350,000 square feet of commercial space and approximately 700 residential units. The NCRC is planned to form a biotech corridor that links the Research Triangle Park, the Triad, Asheville and Charlotte.

#### *Conception*

David H. Murdock invested close to \$1 billion of his own funds into developing the campus, and hired Castle and Cooke, a Dole Foods company, as developer. In 2004, Murdock purchased a 250-acre former Cannon Manufacturing Company Mills site in Kannapolis, and in 2005, announced plans to build the \$1.5 billion NCRC. February of 2006 marked the groundbreaking for first building at the Campus. The campus now also includes the 100-acre historic retail village.

## Case Studies

### Governance and Funding

The NCRC is primarily governed by the board of the David H. Murdock Research Institute (DHMRI). Members of the board include Murdock, as well as representatives from Duke University, UNC Chapel Hill, NCSU, and private industry. Castle and Cooke manages and markets the Campus. The tenant universities provide human and intellectual capital, and manage their own research programs. The State of North Carolina has also contributed funding.

### Technology Transfer and Innovation Activity

With the presence of eight universities, research and technology transfer covers a wide span of the biotechnology spectrum. At the UNC Nutrition Research Institute, UNC-Chapel Hill's research focuses on the relationship between nutrition and cancer, obesity and the brain; at the Institute for Fruit and Vegetable Science, NCSU researches and develops technologies that improve the nutritional content of fruits and vegetables and increase agricultural production; UNC-Charlotte expertise in bioinformatics helps processes the research data generated at the campus; and the North Carolina Community College System provides work force training.

#### *Incubator*

The DHMRI is located in 105,000 square feet of the David H. Murdock Core Laboratory Building. The DHMRI houses over \$150 million in laboratory equipment that is available for use by tenants and university partners. Here, members of academia and industry collaborate on advancements in health-related R&D. Research at the DHMRI is currently focused on several disciplines, including nutrition, wellness, obesity, heart disease, diabetes, cancer, osteoarthritis, medical devices, and agriculture. Research at the DHMRI is funded by a grant from Murdock.



#### *Anchor Tenants and Space Concept*

Anchor tenants at the NCRC include the DHMRI and the University partners. The DHMRI is the anchor tenant in the David H. Murdock Core Laboratory Building, which is also home to UNC Charlotte's campus operations. NCSU is the anchor tenant in the Plants for Human Health Building, which also houses the Research and Development arm of Dole Foods and Appalachian State University. UNC Chapel Hill is the anchor tenant in the Nutrition Research Building, which also houses UNC Greensboro, NC A&T University, and NC Central University. Other tenants include medical device developers, biotechnology and advanced technology companies, angel investment funds.

## Case Studies

---

Other tenants include Anatomics, a privately held medical devices company, the publicly-owned Carolinas Healthcare System, Inception Micro Angel Fund (IMAF), LabCorp, one of the world's largest biomed clinical laboratories that pioneered in genome testing, as well as other biomedical research and advanced technology companies.

### *Development Patterns*

Currently, a little over half of the planned million square feet of office and laboratory space, has been completed. The first building, the 311,000 square foot Core Laboratory, was completed in August 2006 and houses the DHMRI. The 130,000 square foot Nutrition Research Building was constructed in 2007, and is home to NC State University, Appalachian State University, and Dole Foods, while the 110,000 square foot Institute for Plants for Human Health Building was constructed in 2008, and is home to the UNC, NC A&T University, and NC Central University. The university tenants occupy a majority of space in each building.

The campus continues to expand, with the 70,000 square foot Rowan Cabarrus Community College. A fifth building, which will primarily be occupied by Duke University, is in the design process.

### **Lessons Learned**

The North Carolina Research Campus benefitted greatly from the vision and funding of David H. Murdock. The campus is planned to employ 5,000 scientists and up to 30,000 other auxiliary personnel at completion. A key idea has been the notion of a 'biopolis', with a comprehensive mixed use development including residential, office, retail, and public uses.

## Case Studies

### COLDSTREAM RESEARCH CAMPUS LEXINGTON, KY

The Coldstream Research Campus (CRC) was originally conceived to take advantage of the University of Kentucky’s advanced pharmaceutical research focus. It has since evolved to include tenants related to biosciences, technology manufacturing and hospitality.

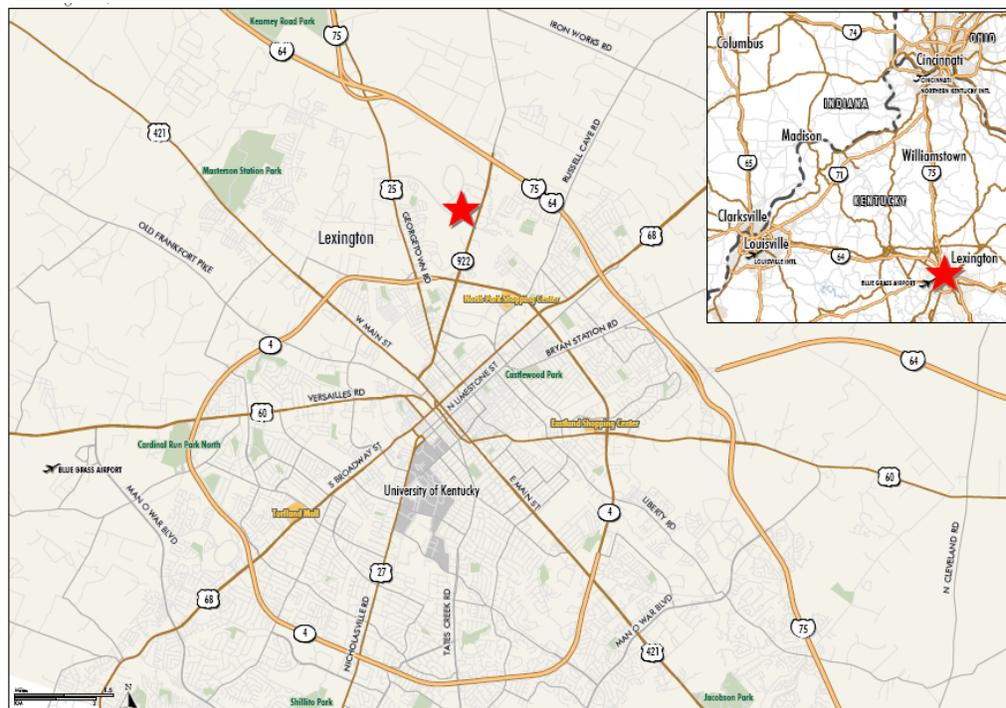
The 510-acre CRC is located on SR 922, in Lexington, just north of the University of Kentucky (UK). Nearby, Interstate 64 provides regional accessibility. Louisville and Cincinnati are located within 75 miles to the west and north, respectively. Blue Grass Airport is located 7 miles east of the site.

#### *Conception*

The Center for Pharmaceutical Science and Technology (CPST), located in the university’s medical campus, is also one of the nation’s top-ranked pharmacy schools. In 1991, Governor Wallace Wilkinson announced plans to take advantage of UK’s drug development expertise by creating a Coldstream pharmacy facility on the former site of the University’s animal research farm.

The park is operated on a ground lease structure. Most of the buildings have been built by private developers, either built-to-suit or as speculative multi-tenant projects. When the CRC was first established, there was no clear vision or development structure in place for the 510-acre site. Key players in the development of the campus include:

**Map of Coldstream Campus**



## Case Studies

---

### Governance and Funding

The CRC is governed by UK, which owns the land and oversees the operation of the campus. The executive director is appointed directly by UK. Key partners in the development of the CRC are the City of Lexington and the State of Kentucky. In 1994, the City invested over \$3 million to install sewer lines, in exchange for 225-acres of land, which the City has dedicated as permanent open space. In 1999, the State contributed \$5.5 million in infrastructure to support a new UK mini-campus, including roads, sidewalks and utilities, and annual funding for full-time executive director position. This infrastructure investment proved crucial in attracting private industry to the campus.

### Technology Transfer and Innovation Activity

Coldstream's main objective is to attract companies that can develop partnerships with the University and foster technology transfer. UK's research strengths are in the areas of agriculture, engineering and robotics, medicine and pharmacy. The CRC houses UK's Center for Aluminum Technology, its Human Development Institute, and its Livestock Disease Diagnostic Center.

With a diverse body of companies, research funding at the CRC comes from various sources. The CRC has six venture capital and angel investor tenants, providing private research funding and business start-up financing. Public technology transfer funding is provided through State programs such as the Small Business Innovation Research program and the Small Business Technology Transfer program.

UK's Office for Commercialization and Economic Development (CED) is responsible for technology commercialization activities and business development. UK receives royalties and license revenues from companies spun out of its incubator, the Advanced Science & Technology Commercialization Center. In fiscal year 2008, 12 patent applications were filed and 19 new licenses contracted through the CED, and the university has received \$1.2 million in gross licensing revenue. As of 2011, the university held 135 active licenses, and 300 total active patents, with a strong portfolio in drug development and design, equine health, materials for medical implants, drug delivery systems, and medical devices.

### *Incubator*

UK operates ASTeCC on the main campus. The \$18 million, 80,000-square-foot building was constructed in 1994, and was funded entirely by grants from the U.S. Small Business Administration and the U.S. Economic Development Administration. ASTeCC currently houses 12 tenants, with research focusing largely on biotechnology and engineering. Each start-up in ASTeCC enters into a three-year lease at below-market rates, ranging from \$10 to \$18 per square foot. This compares to lease rates of \$30 per square foot for similar space at the CRC. A significant portion of ASTeCC, is dedicated to free lab space for 24 faculty-led groups for applied research. The center has graduated a total of 25 tenants since its inception, or an average of 3 per year.

## Case Studies

---

### Park Performance

#### *Development Concept and Activity*

The CRC was developed using long-term ground leases. It was slow to develop, primarily as a result of a lack of a clearly defined strategy, and inadequate infrastructure funding. Development in the park has a requirement that 50 percent of the site be open space. This has resulted in the isolation of buildings from each other and does not foster idea exchange.

#### *Anchor Tenants and Pricing*

The campus is home to 50 companies, anchored by tenants such as HP and Coldstream Laboratories, a pharmaceuticals research and development company. Approximately 450 of the park's 510 total acres been developed. This translates to land absorption averaging approximately 25 acres per year.

Annual ground lease rates currently run \$30,000 per acre, and are priced to achieve 8-10% annual return on land value. Building rents are typically \$15 per square foot for general office space, with laboratory space at \$25 to \$30 psf.

### Lessons Learned

From inception, the campus has benefited from a close cooperative relationship between local and state government agencies and UK. Key lessons learned:

- A lack of a clear vision for the development of the park was a major flaw in the campus's development. With no master plan the campus had developed in a manner that did not result in a sense of place, nor did it provide for the optimal sharing of ideas. Plans of the park now call for a "town-center" environment, involving food service and retail, and possibly residential components, to act as an activity center for the campus.
- A detailed funding plan that explores all infrastructure and development financing. It is important to clearly identify funding responsibilities early in the process.
- Establishing and growing biotechnology companies is a slow and expensive process. Biotech firms can have a growth period of up to 10 or 15 years. The large up-front funding requirement and long product development to market timeframe, can present funding difficulties for biotechnology companies making them high-risk tenants.

## Case Studies

---

The 189-acre University of Iowa Research Park, also known as Oakdale Research Park, was established in 1989. The park's research focus is engineering and information technology, and life sciences.

### *Location*

The park is located in the fast-growing community of Coralville, about 10 minutes from the main University of Iowa (UI) campus. It has direct access to Cedar Rapids, located 20 miles to the north; Davenport and the other Quad cities located 56 miles to the east. The Eastern Iowa Regional Airport, located 15 minutes from the site, provides commercial air service, while the Iowa City Municipal Airport provides charter and corporate air service.

The Park occupies 189 acres in the northern portion of the UI's 500-acre Oakdale campus. UI's research in human health and medicine is world class, ranking 12th among public research universities.

In the 1980's the State of Iowa started to explore opportunities in the technology sector, particularly near its research universities. Initially UI, with State subsidies, developed the Technology Innovation Center (TIC), a business incubator and training facility on the Oakdale campus. The State later encouraged the University to develop a research park in order to retain and attract more technology-based companies. The result was the establishment of the Oakdale Research Park in 1989.

The State established the research park in partnership with the University of Iowa, the City of Coralville and the Iowa Department of Transportation. The strategic development plan for the park involved the creation of three state-funded laboratories that reflected the University's strengths in industrial biotechnology, drug development and driving simulation.

### Governance and Funding

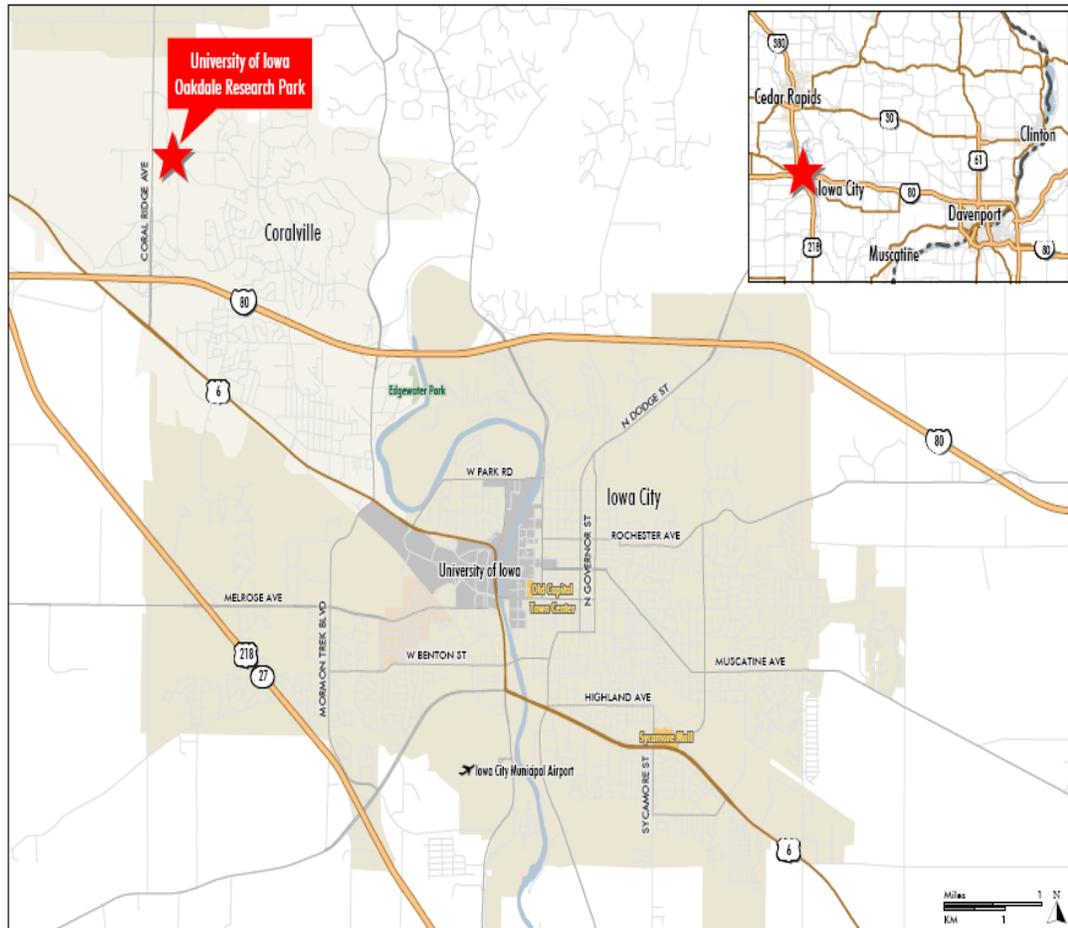
The Oakdale Research Park is owned and operated by the University of Iowa Research Park Corporation (UIRPC). The Park is administered by a board of directors that includes the Coralville City administrator, directors of the park's anchor tenants, deans of colleges and institutes that have established programs in the park, and private companies.

The park is a member of the Iowa Centers for Enterprise, which is an umbrella organization of six members, and acts as a conduit for UI's economic development efforts. The UIRF is responsible for the commercialization of university-developed technologies.

Funding for the park's initial development was derived from various public and private sources. The land for the park was acquired by the State, with management responsibilities transferred to the University through a master ground lease between the Board of Regents and the UIRPC.

### Site Map

## Case Studies



### Technology Transfer and Innovation Activity

Technology transfer and commercialization are central to the Park’s mission. There is a strong University presence in the park. Most important is the Oakdale medical research building, which is a 48,000 square foot laboratory housing the UI College of Medicine with established basic science programs. The UI’s Carver College of Medicine and College of Public Health also have strong, established basic-science programs at the park.

#### *Incubator*

The TIC is an information-technology-based business incubator, and has been a central driver in the park since its formation. Since its inception, the center has accepted 95 startup companies, out of which 40 have graduated. There are currently 16 tenants, although the incubator program houses an average of 14 to 20 companies at any given time, with approximately 3 to 5 companies graduating annually. The incubator offers approximately 40 offices and suites for lease, ranging from 125 to 330 Sq.Ft.

To address the need for a life sciences incubator, a public-private partnership was established between the developer Ryan Companies US, the State, the City of Coralville

## Case Studies

---

and the National Genecular Institute to develop the Bio Ventures Center. The 90,000 square foot center was constructed at a cost of \$26 million. It provides 20 wet laboratory modules with an average rentable space of 785 square feet, 16 office/dry laboratory modules with an average rentable space of 335 square feet, as well as other shared facilities and offices. Rents are approximately \$35 per gross square foot.

### Park Performance

#### *Development Concept and Activity*

The park operates on a long-term ground lease basis. There is over 400,000 square feet of building space in the 189-acre park, totaling an investment of about \$140 million. To date, approximately 60 acres and 10 of the 27 lots have been developed, ranging from 4 to 6.5 acres.

#### *Anchor Tenants and Pricing*

The first multi-tenant facility in the park was opened in 1991, and the University's College of Medicine human health and medicine laboratory became the park's first tenant. In 1993, UI software spin-off CADSI, graduated from the University's TIC and moved to its new headquarter facility in the park, becoming the park's first corporate tenant. The park has been home to 18 companies since its inception in 1991. At present, there are 10 companies located in the park.

The Center for Biocatalysis & Bioprocessing (CBB) is the State of Iowa's primary contract research facility for fermentation and bioprocessing. The 123,000 square foot center houses approximately 60 faculty members and 300 researchers who work in research, development, training and technology transfer.

The Center for Advanced Drug Development (CADD) is an FDA-registered laboratory that performs analytical development and stability testing in the pharmaceutical, biotechnology and animal health industries. The main funding sources of the center are sales and service and the park's general fund.

General office rents in the park range from approximately \$18 to \$22 per square foot on a gross basis. Laboratory rents range from approximately \$25 to \$35 per square foot, with wet-lab space at the high end of the range.

## Case Studies

---

### Lessons Learned

Some of the more important lessons that can be learned from the Oakdale Research Park include the following:

- Shared vision: The State, UI, the City and private sector business have consistently operated in consort in the development of a vision for the Park. All have shared in the funding and risk burden in the joint venture.
- Adequate funding: The State has been proactive in ensuring that the Park has adequate capital and operational funding, including the location of key State-sponsored research anchors in the Park.
- Dynamic growth strategy: The Park follows an adaptive development strategy to reflect changes in the direction of technology sector growth.
- Technology transfer and commercialization: The strong relationships between UI faculty and the private sector have been pivotal in the Park's success. A strong UI applied research presence in the Park has been central to the Park's success since its inception.
- Develop research anchors: The early creation and establishment of a variety of research centers has been pivotal in the Park's success.