Approved: June 11, 2004
Date

MINUTES OF THE SENATE COMMERCE COMMITTEE

The meeting was called to order by Chairperson Karin Brownlee at 8:30 a.m. on March 15, 2004 in Room 123-S of the Capitol.

All members were present except:
Senator David Kerr- excused
Senator Pete Brungardt- excused

Committee staff present:
Kathie Sparks, Legislative Research

Conferees appearing before the committee:
Dr. Julie Edge, Ph.D. , KTEC
Janice DeBauge, Chair, Kansas Board of Regents
Dr. Jim Guikema, Associate Vice Provost for Research and Associate Dean of the Graduate School, Kansas State University
Dr. Barbara Atkinson, Executive Dean and Vice Chancellor for Clinical Affairs, University of Kansas

Others attending:
See Attached List.

Chairperson Brownlee continued the hearing on:

Sub HB 2647–An act concerning bioscience; creating a Kansas bioscience authority and providing for the powers and duties thereof; providing for bioscience development and funding

Dr. Julie Edge, Ph.D. made a presentation to the committee entitled "Kansas Economic Growth Act" including descriptions of the goals of the bill and the "10-Year Bioscience Roadmap" (Attachment 1) In terms of research, the presentation stated that goals included recruiting eminent scholars and Kansas rising star scholars, creating state-of-the-art bioscience research laboratory facilities, increasing the amount of matching funds available from the state for federal grants, and encouraging research collaboration between industry and academia through a research and development voucher program. In terms of commercialization, the presentation stated that the focus would be on technology transfer, business assistance and acceleration, seed funding, and business attraction. Dr. Edge stated that this is an investment that would result in high quality jobs, reduced brain drain, healthier economy, and innovative products, all of which would result in a better overall quality of life. She stated that potential cumulative outcomes from the investment over the next 10 years, would be more than $1 billion in research expenditures, more than 100 potential new start-up companies, more than 23,000 anticipated new bioscience jobs, and more than 20,000 projected new non-bioscience industry jobs as an indirect result.

Senator Barone asked if the terms eminent scholars and rising scholars were defined, and Dr. Edge stated that eminent scholar is a known term with parameters, and rising star is a new term.

The committee discussed the number and definition of staff involved in biosciences in Kansas. Senator Barone stated that this information would be important in order to know from where the state is starting. Tracy Taylor stated that unlike Missouri, Kansas does not include hospital staff in its estimates.

Dr. Edge stated that the long term game in the state would include benefits in the areas of human and animal health through improved medicines and gene therapies, and that the short term game would include plant science (food safety, higher yields, drought resistance, farm-a-ceuticals), industrial/environmental applications, and homeland security. Acts within the bill includ the Bioscience Authority Act, the Emerging Industry Investment Act, Bioscience Development Financing Act, Bioscience Tax Investment Incentive Act, Bioscience Research and Development Voucher Program Act, and the Bioscience Research Matching Funds Act.

Senator Steineger asked about the use of eminent domain to obtain land for bioscience facilities. Dr. Edge

stated that she believed the cities would still have this ability, but this was consistent with existing language for universities.

Senator Barone expressed interest in the definition of a bioscience corporation and the percentage of business that would need to be bioscience related to qualify. Dr. Edge stated that this would be defined according to SIC codes. Mr. Taylor stated that incremental growth would go toward bioscience if the majority of the company is bioscience related. Dr. Edge stated that while this was not exact, the bill was breaking ground by establishing a boundary-less TIF, and this seemed to be the best method currently.

The committee discussed funding and Mr. Taylor concluded that the primary component is witholding tax.

Senator Wagle asked if this bill would also raise the tide in our public schools through creating research and development projects that have effects in unmeasured ways. Dr. Edge stated that all boats rise together, and the added emphasis on science and techology should have a good effect, as she has seen in other states.

Chairperson Brownlee thanked Dr. Edge for the excellent overview.

Ms. DeBauge, presented testimony in favor of the bill. (Attachment 2) She stated that the bill not only fits the strengths of our system, but it addresses some of our weaknesses. In addition to the Regents Universities, she emphasized that community colleges that train support staff will also benefit. Concerning weaknesses, she stated that our most significant gaps in Kansas higher education is in research, and this bill directly addresses that need. She stated that another gap is in federal research dollars. She stated that they have two concerns with the bill: the need for a nurturing environment for attracting eminent scholars, and a desire to make the two non-voting members of the board voting members.

Dr. Guikema presented testimony in favor of the bill. (Attachment 3) He stated that he appreciated the chance to add his voice in support of the Kansas Economic Growth Act. Kansas State University has a presence in animal, plant, and homeland security, and this act will help assist the transfer of intellectual property from the laboratory into the Kansas workforce and economy. The committee discussed K-State's recent addition of a noted scholar on homeland security issues.

Dr. Atkinson presented testimony in favor of the bill. (Attachment 4) She stated that this bull is a way to build bioscience research at an opportune time for the state. She stated that this is a good investment and directed the committee's attention to a document about the economic impact, stating that for every dollar invested in a medical faculty, four dollars are brought in. She referred to the possibility of creating a cancer center in Kansas as one possibility, and emphasized that this bill would be very helpful in recruiting the scholars Kansas needs to create such things. She stated that we have the structure here to work in the state, and adding additional eminent and rising scholars would create a legacy for us all. Dr. Atkinson stated that she had a couple issues with the bill. She encouraged the committee to consider particular areas in which to get a critical mass of scholars, such as cancer research. She stated that it would also be important that scientists will be part of the authority board so that they might bring important concerns to the table. She stated that they were concerned about potential amendments to the bill and unintended restrictiveness that might result.

In response to a question from Chairperson Brownlee, Dr. Atkinson stated that currently the amendments from the House do not include language that protect nuclear transfer from somatic cells. She stated that stem cells can come from fertilized eggs, and the piece that needs to be resetriced is the cloning of humans, not taking an adult fat cell that can be made into a stem cell that can then make cartilage. She stated that there are kinds of this work that need protections and other that do not. Senator Brownlee pointed out that according to the AMA website, somatic cell nuclear transfer is defined as human cloning.

The committee discussed the bill in further detail. Chairperson Brownlee adjourned the meeting at 9:30 a.m. The next meeting will be at 8:30 a.m. on March 16, 2004 in Room 123-S of the Capitol.

Senate Commerce Committee
Guest List

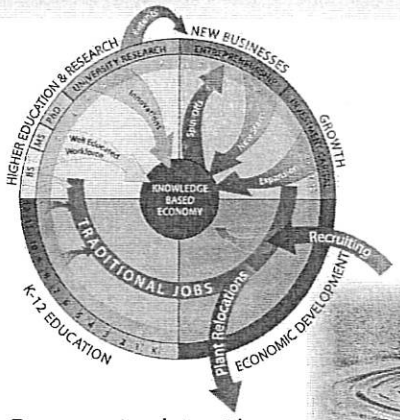
Date: March 15, 2004

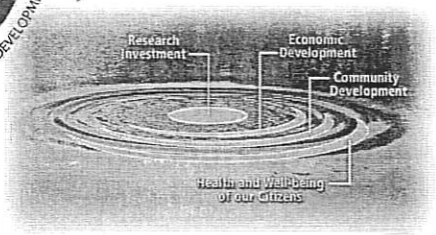
MC Ponnath	PSU
Kip Peterson	Board of Regents
Jamie DeBarge	Board of Regents
Scott Heidner	KS Consulting Engineers
Jeremy Aaron	Com Inst of Architects
Barbara Atkinson	University of Kansas
Matt Bowman	KS Chamber of Commerce
Sandy Braden	Civic Council
Renee Van Eys	University of Kansas School of Medicine
Eric Collins	KS Governmental Consulting
Robert Hill	Hein Law Firm
Pat Lehman	GKCCF
Mike Farmer	Kansas Catholic Conference
Mike Hutfles	Ks. Gov't. Consulting, LLC
Paul Johnson	PACK
Sheila Frahm	KACCT
Matt Jordan	Commerce
Stephanie Buchanan	DOB

Kansas Economic Growth Act

Testimony on Substitute House Bill No. 2647

March 12, 2004



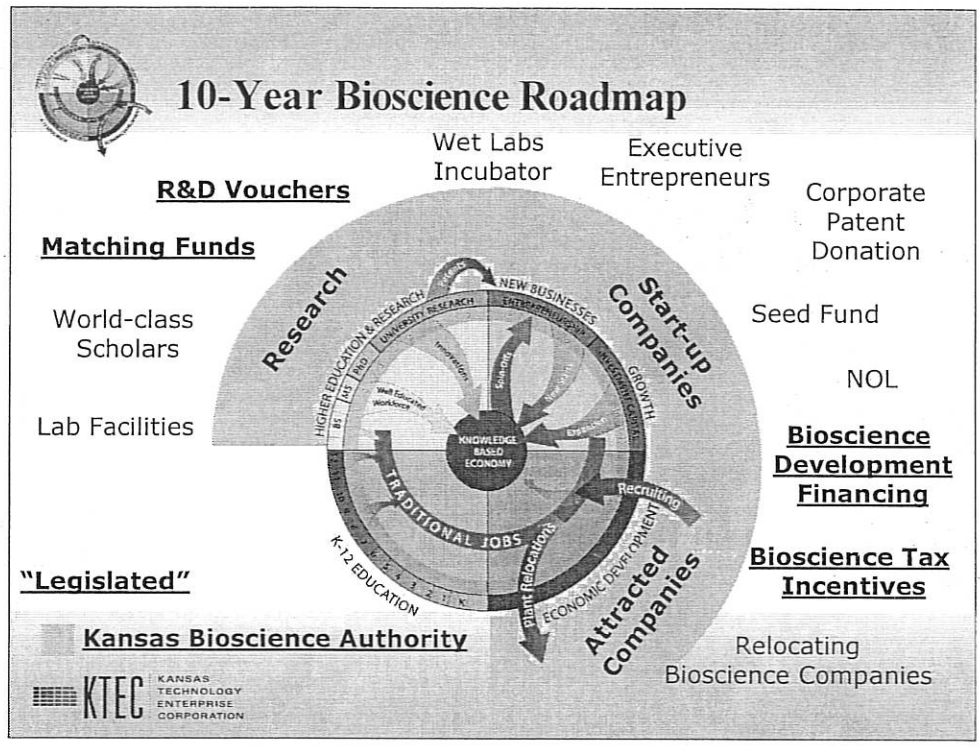


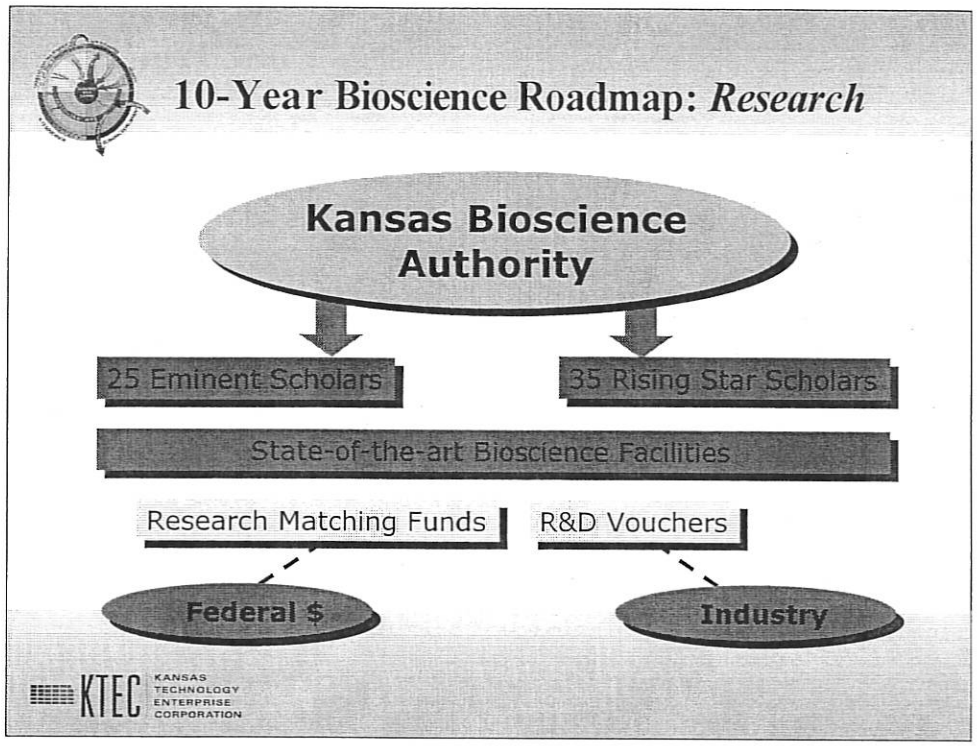
Presented to the Senate Commerce Committee

Tracy Taylor
Julie Edge, Ph.D.

KTEC KANSAS TECHNOLOGY ENTERPRISE CORPORATION

Senate Commerce
03/15/04
Attach #1


10-Year Bioscience Roadmap
Wet Labs
Incubator
Executive
Entrepreneurs
R&D Vouchers
Corporate
Patent
Donation
Matching Funds
Seed Fund
World-class
Scholars
NOL
Lab Facilities
Bioscience
Development
Financing
Bioscience Tax
Incentives
"Legislated"
Kansas Bioscience Authority
Relocating
Bioscience Companies
KTEC
KANSAS
TECHNOLOGY
ENTERPRISE
CORPORATION
Research
Start-up
Companies
Attracted
Companies
NEW BUSINESSES
HIGHER EDUCATION & RESEARCH
UNIVERSITY RESEARCH
GROWTH
KNOWLEDGE
BASED
ECONOMY
TRADITIONAL JOBS
Recruiting
Plant Relocations
ECONOMIC DEVELOPMENT
K-12 EDUCATION



Eminent Scholars

Goal: Recruit 25 over 10 years

Expectation: Provide competitive salaries and start-up packages

Characteristics

- •World-class, distinguished and established investigators; recognized nationally for research
- •Garner significant funding annually from federal sources
- •Noted for scientific and entrepreneurial spirit
- •Members or likely candidates for National Academy of Sciences (NAS) or similarly distinguished academic society

Will be employees of the state universities or the Authority or both

Kansas Rising Star Scholars

Goal: Recruit 35 over 10 years

Expectation: Provide competitive salaries and start-up packages

Characteristics

- •Up-and coming distinguished investigators
- •Growing in national reputation
- •Active and demonstrating leadership in academic societies
- •Attracting significant federal research support
- •Likely future eminent scholars and NAS members

Will be employees of the state universities or the Authority or both

State-of-the-art Bioscience Research Laboratory Facilities

Goal: Add enough research space to house the eminent and rising star scholars and their staffs

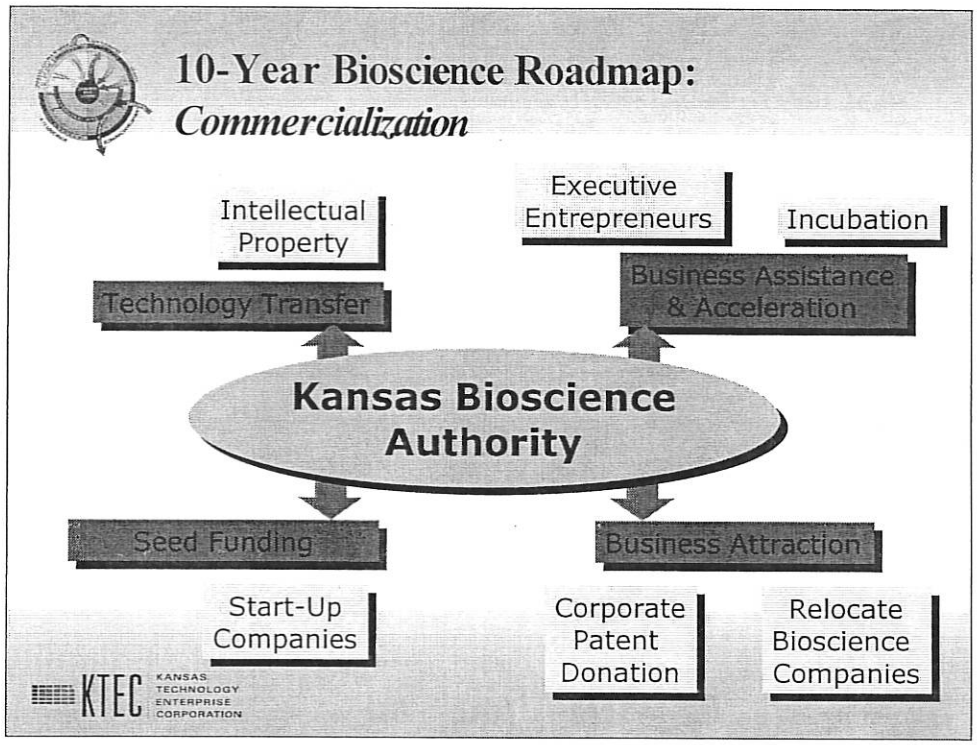
Expectation: Add approximately 500,000 sq. ft. in the first 5 years of the program

Research Matching Fund Program

Goal: Increase amount of matching funds available from the state for federal grants (See slide 19)

R&D Voucher Program

Goal: Encourage research collaboration between industry and academia (See slide 20)



Technology Transfer

Goal: Increase the number of technology transfer agents and lawyers working to identify and evaluate university-based research discoveries for commercial potential

Business Assistance and Acceleration

Goal: Bring experienced executive entrepreneurs to run start-up companies and ensure success

Goal: Enhance KTEC's nationally recognized incubation system

Seed Funding

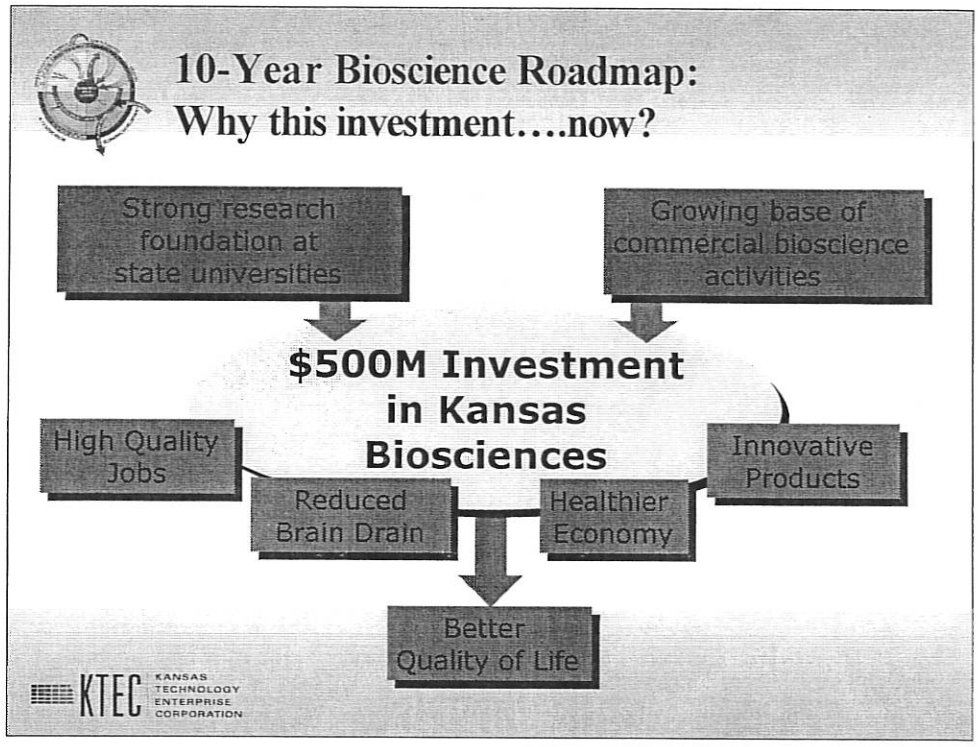
Goal: Increase available seed funding for start-up ventures

Expectation: Fund 10-15 start-up companies annually

Business Attraction

Goal: Identify viable patents available for corporate patent donation (short-term strategy) to jump start bioscience start-up companies

Goal: Recruit bioscience companies interested in expanding their operations (e.g., manufacturing)



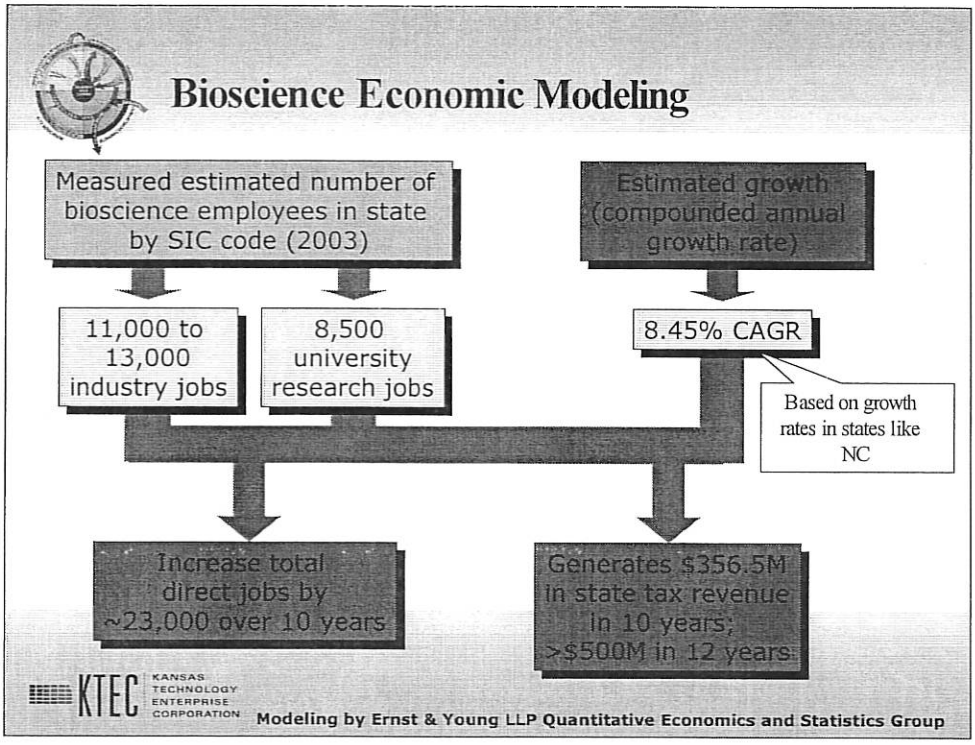
- Strong foundation in research
- A growing base in commercial activities focused on the biosciences
- Need for further investment to succeed in the 21st century
- Investing in the biosciences brings high paying jobs and innovative commercial products
- Research, development, manufacturing, licensing, and commercialization of products benefit the state's economy

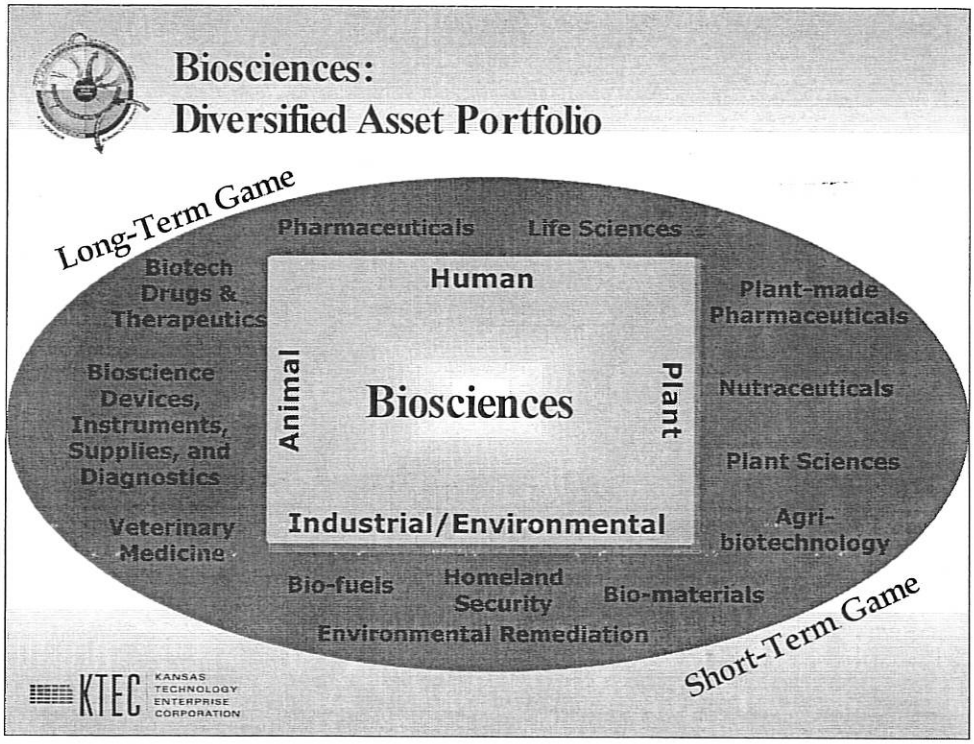
10-Year Bioscience Roadmap: Potential Outcomes

- **Outcomes Modeling**
  - Based on Association of University Technology Managers (AUTM) data; Ernst & Young estimates

Potential Outcomes	Cumulative After 10 Years
Research Expenditures	More than $1B
Potential New Start-up Companies	More than 100
Anticipated New Bioscience Jobs	More than 23,000
Projected New Non-Bioscience Industry Jobs (Indirect)	More than 20,000

KTEC KANSAS TECHNOLOGY ENTERPRISE CORPORATION


Bioscience Economic Modeling
Measured estimated number of bioscience employees in state by SIC code (2003)
Estimated growth (compounded annual growth rate)
11,000 to 13,000 industry jobs
8,500 university research jobs
8.45% CAGR
Based on growth rates in states like NC
Increase total direct jobs by ~23,000 over 10 years
Generates $356.5M in state tax revenue in 10 years; >$500M in 12 years
KTEC KANSAS TECHNOLOGY ENTERPRISE CORPORATION
Modeling by Ernst & Young LLP Quantitative Economics and Statistics Group



Examples of each area

Long-term Game

Human Health

•New drugs and gene therapies that work with the genetic makeup of patients

•New devices, delivery mechanisms

Animal Health

•Improved medicines for livestock to ward off disease

•Longer life for family pets

Short-term Game

Plant Science

•Food safety

•Higher yielding, pest resistant crops like Roundup Ready and Bt insect protected

•Improved nutritional characteristics in crops

•Improved drought resistance in crops

•Pharmaceutical properties grown in crops — Farm-a-ceuticals

Industrial/Environmental Applications

•New carpets, mattresses, polyurethanes, etc. made from soybeans (e.g., Pittsburg State University-Cargill soypolyol joint research venture)

•New fuels made from plant materials

Homeland security

•Combating bio-terrorism

How Do We Get There?

Acts within Substitute House Bill 2647

1. Bioscience Authority Act
2. Emerging Industry Investment Act
3. Bioscience Development Financing Act
4. Bioscience Tax Investment Incentive Act
5. Bioscience Research and Development (R&D) Voucher Program Act
6. Bioscience Research Matching Funds Act

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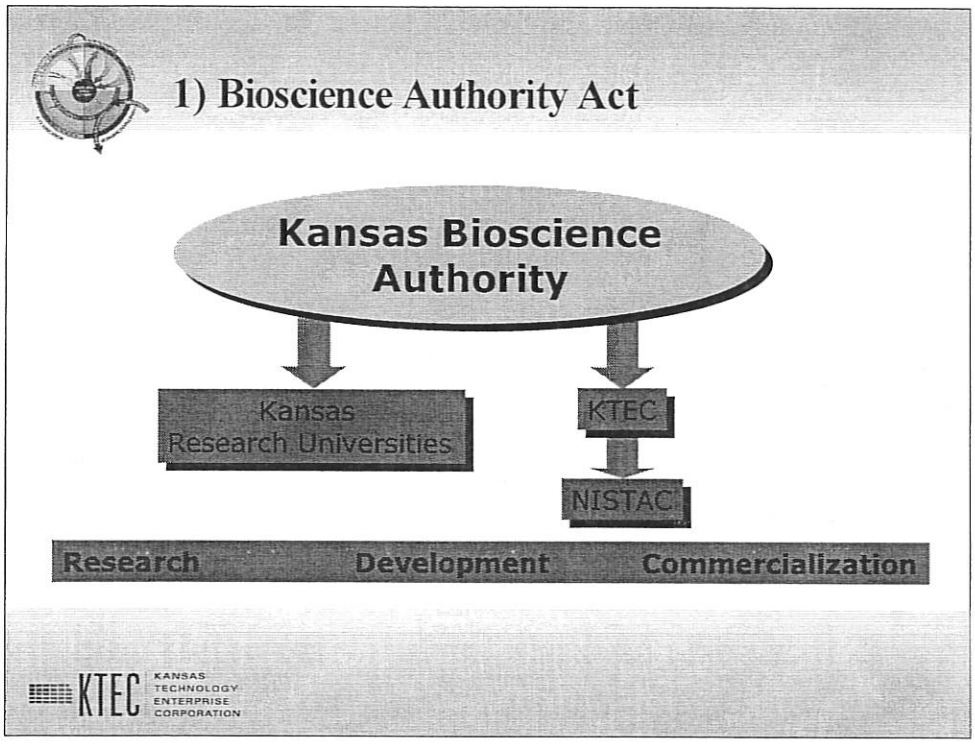
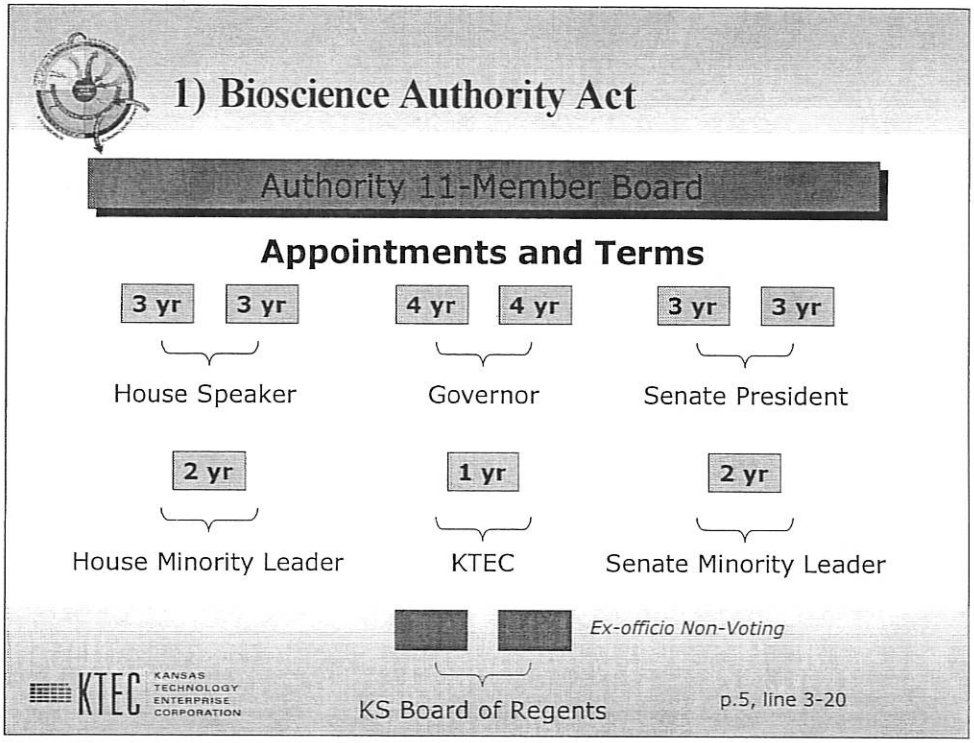


Kansas Bioscience Authority

- Create an independent instrumentality of the state
- Work closely with our state research institutions
- Oversee the bioscience research to commercialization continuum
- Facilitate, support, fund, and perform bioscience projects for the benefit of Kansans
- Promote the state's research, development, and commercialization objectives



Board of Directors

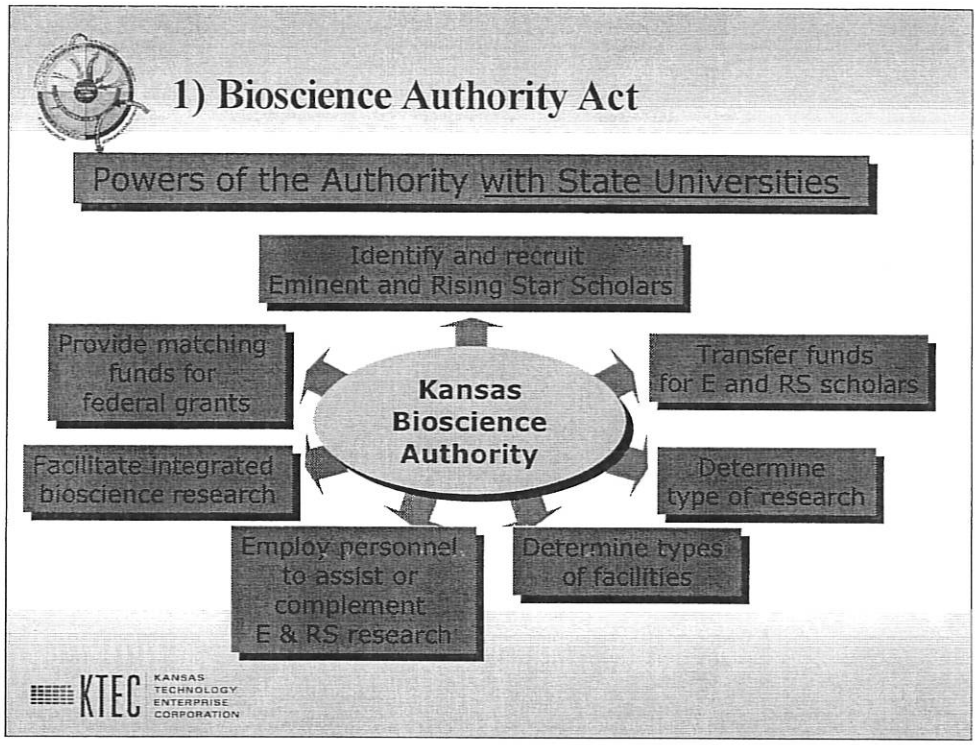
- 11 members
  - 9 voting members
    - 1 — agricultural expert
    - 8 — general public with bioscience knowledge
    - 7 must be state residents
    - No more than 3 members from 1 congressional district
    - Serve no more than 3 consecutive 4-year terms
  - 2 non-voting members
    - Represent the state's research universities
    - Nominated by Kansas Board of Regents
- Serve without compensation
- Meet at least 4 times per year
- Appoint a president to serve as CEO of the Authority
- Establish an executive committee that may transact the business of the Authority

Headquarters

- Located in the county with the highest number of bioscience employees associated with bioscience companies

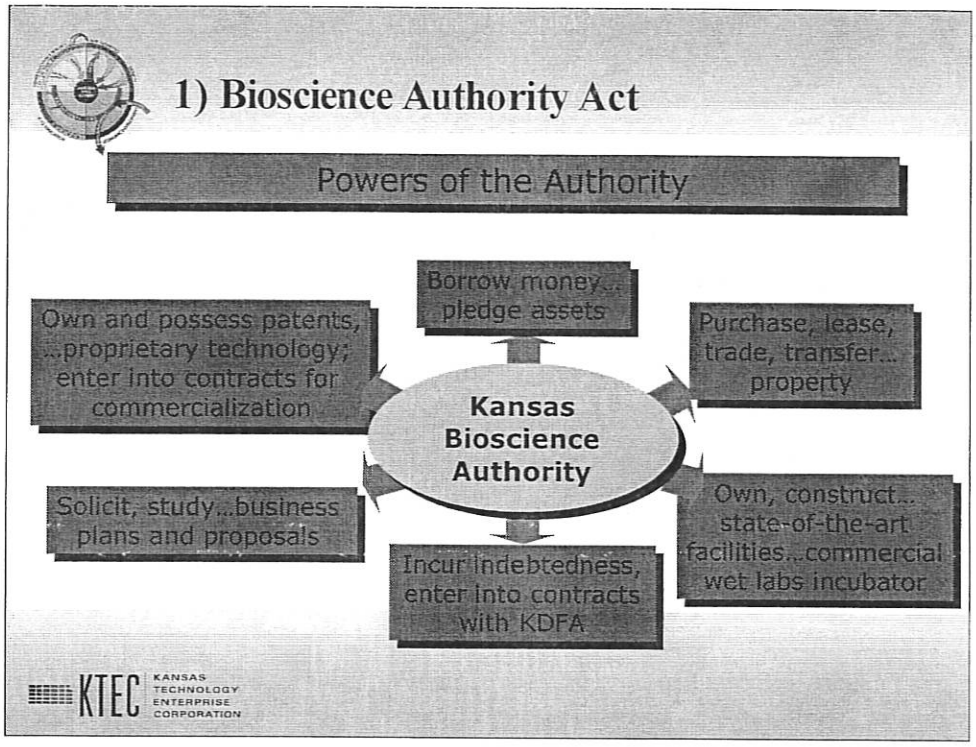
Longevity

- Continue so long as the Authority has bonds outstanding
- Unless adequate provisions are made for the retirement of the debts and obligations



Powers of the BioAuthority <u>with</u> State Universities

- Identify and recruit eminent and rising star scholars
- Transfer funds to state universities to attract and supplement the compensation of scholars
- Determine type of bioscience research
- Determine types of facilities to be constructed to support research
- Employ personnel to assist and complement the research of eminent and rising star scholars
- Facilitate integrated bioscience research activities
- Partner with state universities, colleges, private enterprises to provide matching funds for federal grants



Powers of the BioAuthority

•Borrow money and to pledge all or any part of the authority's assets…

•Purchase, lease, trade…personal property; and to purchase, lease…real property; transfer property to universities, colleges, public institutions, and private enterprises in the state

•Own, acquire, construct…any land, buildings or facilities in the state that can be used in researching, developing, sponsoring, or commercializing biosciences in the state….including a state of the art facility, laboratory, or commercial wet lab space incubator

•Incur or assume indebtedness to and enter into contracts with KDFA, which is authorized to borrow money, issue bonds, and provide financing to the authority

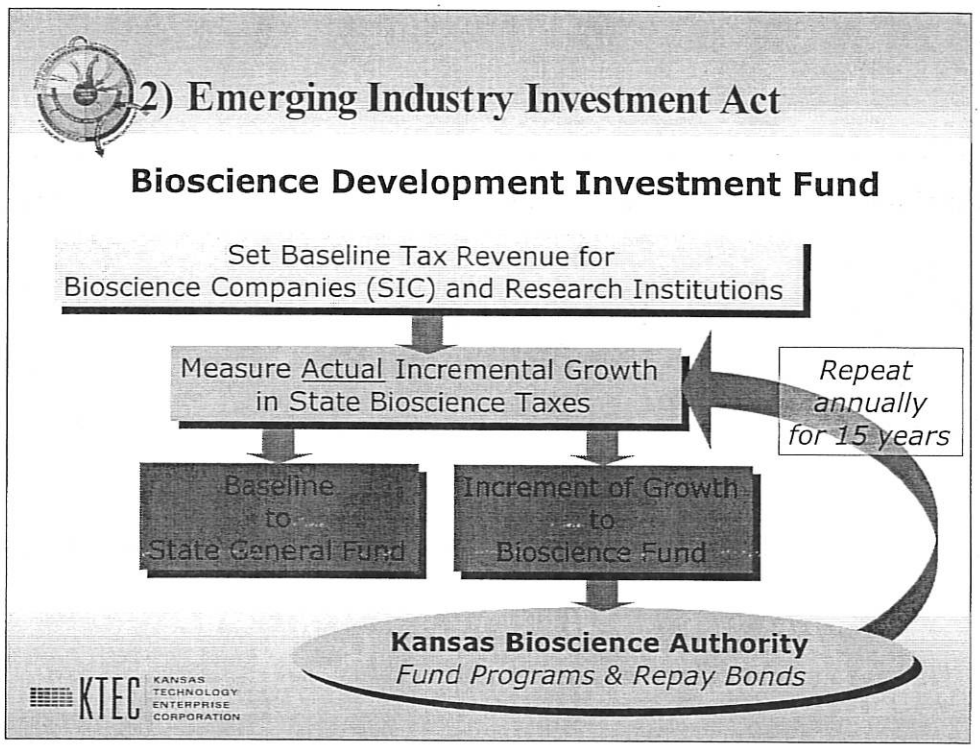
•Solicit, study, and assist in the preparation of business plans and proposals of new or established businesses to advance the biosciences in the state

•Own and possess patents…proprietary technology and to enter into contracts for the purposes of commercializing and establishing charges for the use of such patents…involving bioscience

•Repayment required if a bioscience company receiving grants, awards, tax credits or any other financial assistance relocates operations outside Kansas within 10 years

•Prohibited from creating any political action committee or contributing to one

•Eminent domain shall not be allowed to be used to secure property for a bioscience project



Creates Bioscience Development Investment Fund

•Not part of state treasury

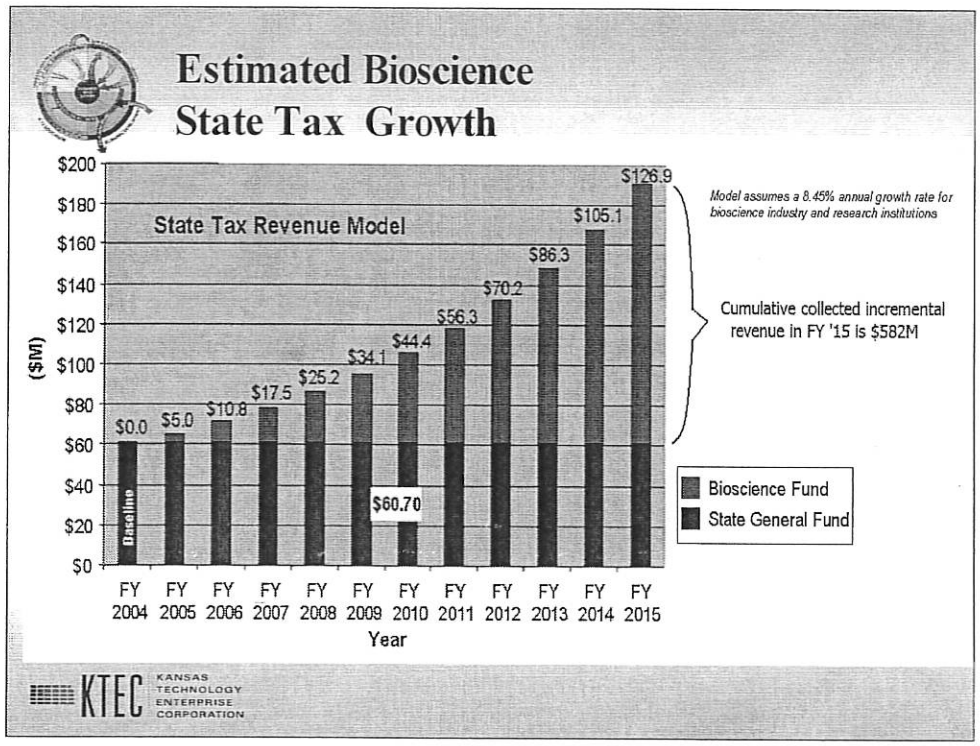
•Fund belongs exclusively to the Authority

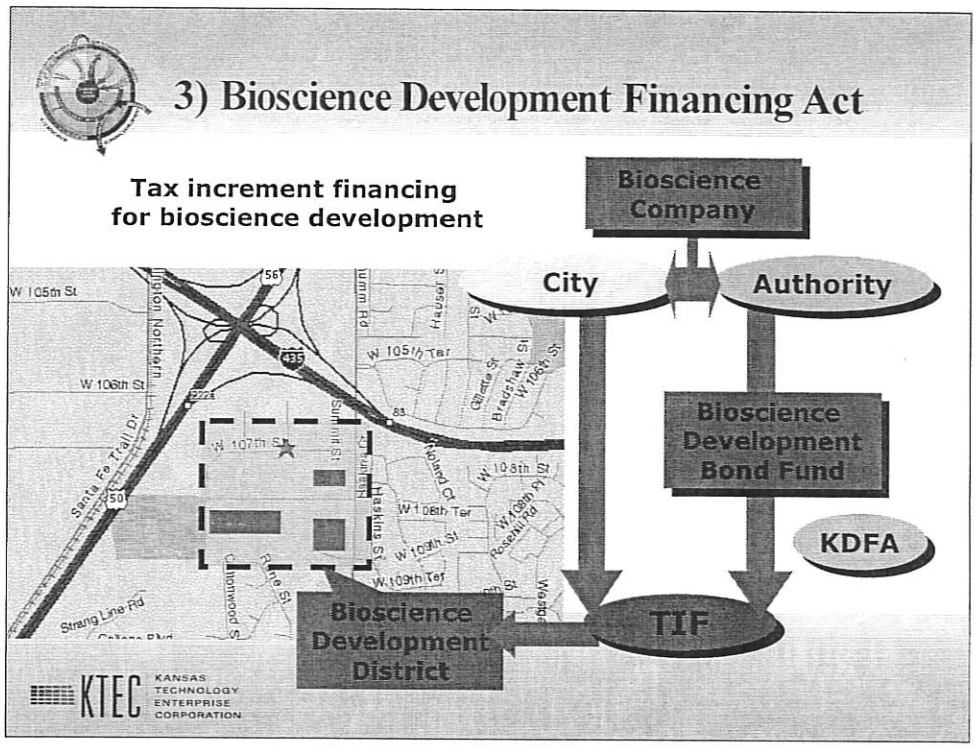
•Base Year of Taxation — set by Sec. of Revenue and Authority

•Applies to all bioscience companies and all state universities conducting bioscience research in the state

•Sec. of Revenue, Authority, and Board of Regents establish number of bioscience employees associated with state universities and base taxation; report annually

•Used to fund programs and repay bonds


Estimated Bioscience
State Tax Growth
State Tax Revenue Model
($M)
$200
$180
$160
$140
$120
$100
$80
$60
$40
$20
$0
Baseline
$0.0
$5.0
$10.8
$17.5
$25.2
$34.1
$60.70
$44.4
$56.3
$70.2
$86.3
$105.1
$126.9
FY 2004
FY 2005
FY 2006
FY 2007
FY 2008
FY 2009
FY 2010
FY 2011
FY 2012
FY 2013
FY 2014
FY 2015
Year
Model assumes a 8.45% annual growth rate for bioscience industry and research institutions
Cumulative collected incremental revenue in FY '15 is $582M
Bioscience Fund
State General Fund
KTEC
KANSAS TECHNOLOGY ENTERPRISE CORPORATION



•Tax increment financing district for bioscience development

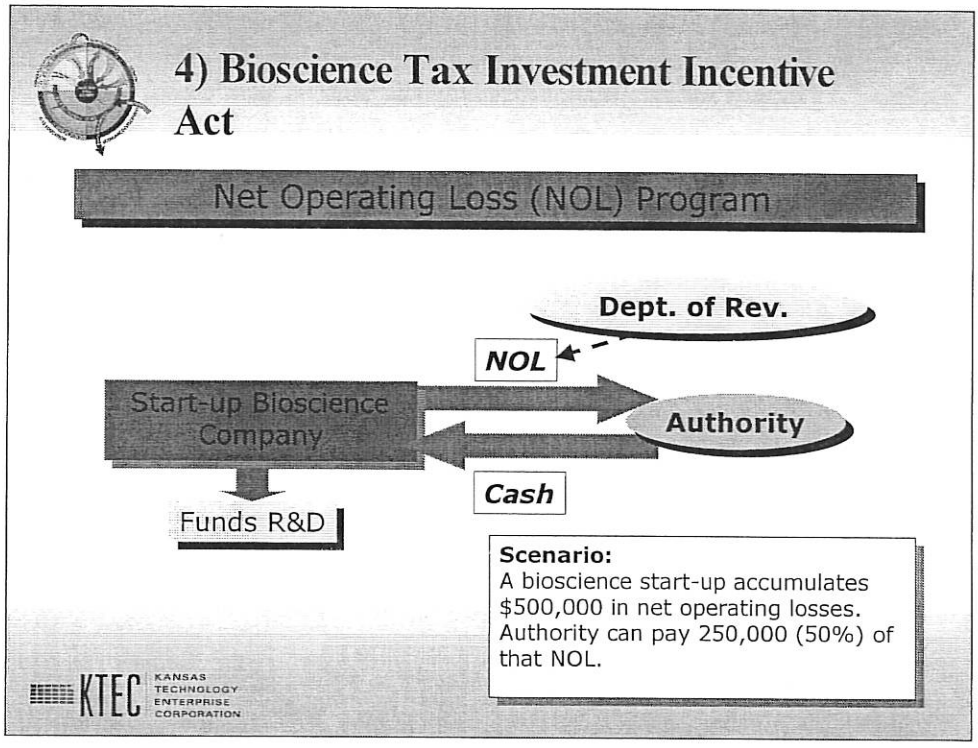
•Utilizes existing tax increment financing law — amended to include bioscience language and provisions

•One or more bioscience development projects can occur within an established bioscience development district

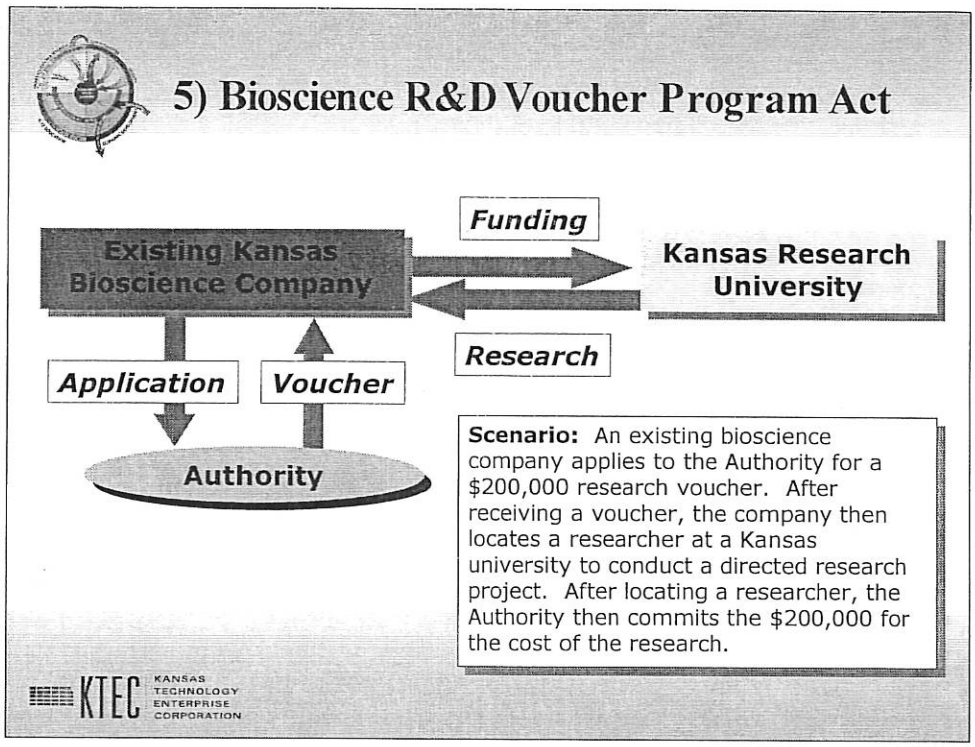
•KDFA may issue special obligation bonds to finance a bioscience development project

•Creation of Bioscience Development Bond Fund

- •Not part of the state treasury
- •Managed by Authority
- •Separate account will be created for each bioscience development district (BDD)
- •Distributions will pay for the bioscience development project costs in a BDD



- Makes additional cash resources available to start-up companies
- Creates the Net-Operating-Loss (NOL) Transfer Program
- Authority can pay up to 50% of a bioscience company's NOL during the claimed taxable year
- Capped at $1M for any one fiscal year
- Department of Revenue certifies the NOL



•Encourage research collaboration between state research universities and bioscience companies

•Provide vouchers to bioscience companies to undertake bioscience research and development work in partnership with universities and colleges in the state

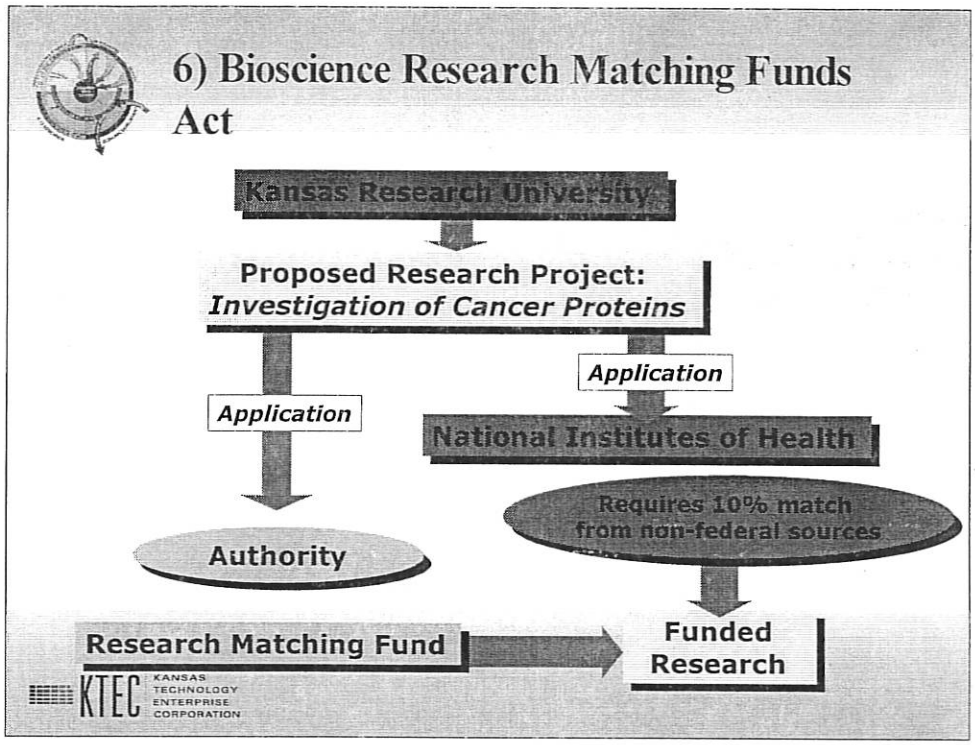
•May contract with KTEC to develop application criteria and application process

•Establish the Bioscience R&D Voucher Fund in the state treasury

- •May receive state appropriations, gifts, grants, federal funds, revolving funds, and any other public or private funds
- •State treasurer disperses funds with the consent of the Authority Chairperson

•Limitations

- •At least 51% of voucher award funds shall be expended with the university in the state under contract and shall not exceed 50% of the research cost
- •The maximum voucher funds awarded shall not exceed $1 million, each year for two years, equal to a maximum of $2 million; not to exceed 50% of research cost
- •Qualified company shall match the project award by a one-to-one dollar ratio for each year of the project



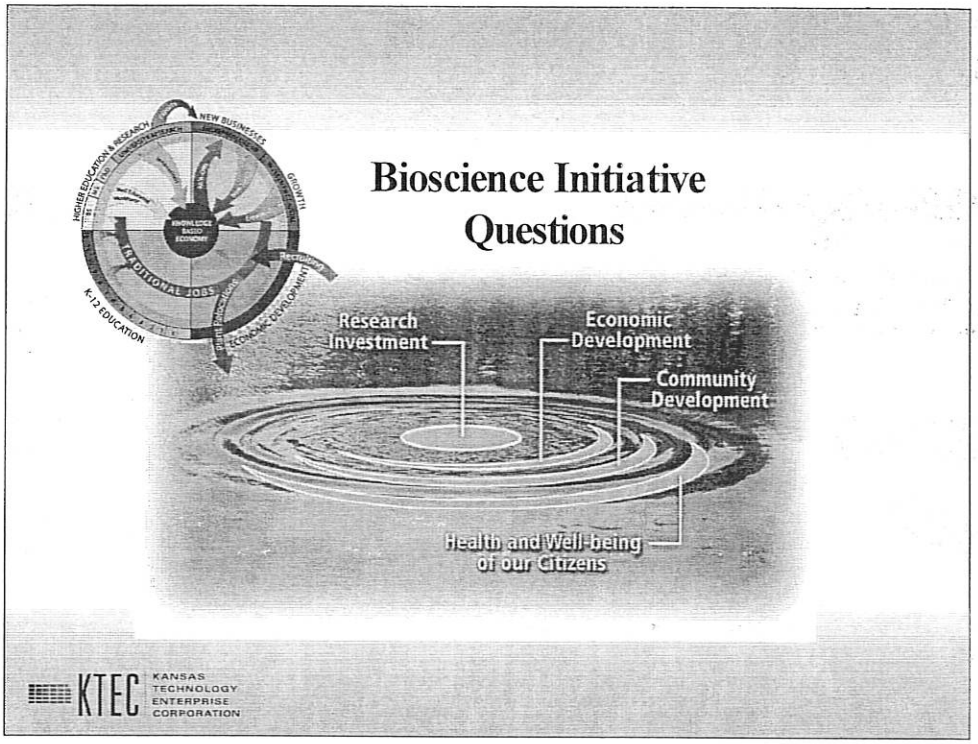
•Establishes Bioscience Research Matching Fund

- •Authority administers Fund
- •Recipients must be a university in the state

•Universities are encouraged to jointly apply for funds

•Used to promote bioscience research and to recruit, employ, fund and endow bioscience faculty, research positions and scientists at universities in the state

•Universities will apply to the Authority for matching funds


Bioscience Initiative Questions
Research Investment
Economic Development
Community Development
Health and Well-being of our Citizens
KTEC
KANSAS TECHNOLOGY ENTERPRISE CORPORATION

KANSAS BOARD OF REGENTS

1000 SW JACKSON • SUITE 520 • TOPEKA, KS 66612-1368

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Testimony on House Bill 2647
Senate Commerce Committee

March 15, 2004

Janice DeBauge, Chair
Kansas Board of Regents

Good morning, Chairman Brownlee and members of the Senate Commerce Committee. It is a pleasure to be here this morning to support the Bio-Science Initiative on behalf of the Board of Regents.

You have heard the concept of the "21st century knowledge economy" mentioned on numerous occasions. Alan Greenspan speaks frequently of the transition from the traditionally acknowledged visible natural resources of minerals, land, and water to the less visible natural resources of the knowledge and skills of our citizenry. Kansas is particularly poised to capitalize on this development because of its 21st century commitment to providing higher education in a diversity of settings, both geographically and by type of institution. We are also particularly poised to grow exponentially in the biosciences. It is a natural fit for our system for three reasons – the foundation in the various disciplines in numerous institutions is in place, the culture of collaboration across the system is unique and pervasive, and the missions of our universities are distinct. This differentiation among institutions is the fundamental strength of the Kansas system and the focus on separate mission for many decades now makes possible the ability for the state to further develop the bioscience industry.

To elaborate on the foundation that exists, we can point to numerous programs and connections: KU is actively engaged in bioscience research and commercialization in cooperation with the Kansas City Area Life Sciences Institute, the Stowers Institute, as well as other Kansas universities. Bioscience is the primary focus of KU Med as well as much of the research activity on the Lawrence campus. Kansas State University has numerous research activities in food safety, crop resistance, plant engineering, industrial processing, etc. that allow farmers to be competitive through value-added harvest. There is much potential in novel products that can transform industries when plants become biosynthetic factories for a wide range of compounds. The potential is enormous for discoveries in the plant and animal kingdom – and we want those discoveries to happen here in Kansas. The discoveries alone are wonderful, but we need these discoveries to be actualized in the marketplace by utilizing commercialization processes that are efficient and timely.

Senate Commerce
03/15/04
Attach #2

Other examples of existing programming include Pittsburg State with its polymer program and partnership with Cargill pursuing renewable resources, and Wichita State University that has faculty engaged in bioscience research in reproductive biology, environmental biology, cancer, bioinformatics, and other pertinent areas. These departments collaborate with colleagues at KU and K-State. The regional universities also have researchers that are connected to colleagues in the three traditional research universities, and the Board is actively engaged in an initiative that was developed by faculty across the system to formalize and encourage research collaboration.

Community Colleges are offering numerous programs for training the technicians that assist bioscience researchers. These include animal technicians and computer technicians as well as persons trained in bioinformatics and biotechnology. The entourage that accompanies a noted researcher is extensive and there are collaborative efforts between community colleges and universities already in place to provide the numerous types of trained individuals required by research teams. This type of program has increased since the opening of the Stowers Institute and we would expect this trend to continue. Additional investment in the infrastructure and recruitment of scholars will have a large and positive impact on the system and the Board of Regents strongly supports this effort and applauds the vision and leadership that brings us here today.

When we look at other states, we are convinced that we have a unique and unusually collaborative higher education culture. We have excellent communication structures and a strong history of constructive problem-solving. What we don't have is adequate research resources to ensure a strong growth engine for the future. Even with the exponential growth in external research funding that the universities have seen in the last few years, Kansas does not receive its fair share of federal research dollars. And, the most recent evaluation of higher education funding in comparison to national statistics shows growing discrepancies in the total funding available for Kansas research universities. For instance, K-State is funded at a level that is 70% of the average of land grant institutions in the United States (these statistics compare the combination of state appropriations and tuition dollars per full-time equivalent student). And, K-State is not alone is this disparity – the other universities face similar realities. At present levels the challenge to compete for researchers and the accompanying dollars and opportunities is large if not overwhelming. Without significant initial investment and a dependable ongoing funding stream, it is not reasonable to expect to attract world-class scholars.

The three research buildings that were made possible by bonds in 2002 are examples of the type of infrastructure investment that enable the recruitment of additional research leaders. The Kansas Economic Growth Act builds upon that investment and extends opportunities exponentially, including providing the resources to actually fund the researchers themselves as well as providing additional infrastructure.

There is much opportunity for synergies between the efforts of the Board of Regents and the Bioscience Authority Board. Many mutual goals are stated in the roadmap and other documents, and the Board is committed to optimizing this opportunity. In thinking about how best to achieve those synergies and to avoid the possible duplication of efforts, inefficiencies of

multiple administrations, and even potentially conflicting governance, it is important to carefully think through this authority structure. Presently, KU is reviewing the authority structure proposed in HB 2647 to assess how it might function in relation to existing structures. The Board of Regents is presently engaged in several activities that are enumerated in the roadmap, such as programming for research collaboration. A high priority for the Board is working with all partners and we believe that aligning the interests of the Board and the Bioscience Authority and ensuring long-term collaboration, communication, and cooperative endeavor between the two entities can best be achieved by voting representation from the Board of Regents itself or through appointments, perhaps in a style similar to that of the present Research Corporation Board.

Also, the Board encourages the bulk of the dollars generated by this Act be directed to the Board of Regents institutions. With additional investments in faculty and space, these entities are very well-poised and best-situated to build on existing resources and ultimately attract the commercial firms needed to actualize discovery.

In conclusion, the Board is very excited about the potential of this initiative because of its positive impact on numerous institutions, because it builds on the solid foundations of existing programs and collaborative culture. And, ultimately, because we believe that investment such as this is vital to the future of the quality of life in Kansas as we capitalize on the knowledge and skills of our citizens.

Thank you for the opportunity to speak to you today and we look forward to further occasions at which to highlight this effort.

SENATE COMMERCE COMMITTEE
SENATOR KARIN BROWNLEE, CHAIRPERSON

15 MARCH 2004

STATEMENT BY JAMES A. GUIKEMA
KANSAS STATE UNIVERSITY
ASSOCIATE VICE PROVOST FOR GRADUATE RESEARCH
ASSOCIATE DEAN OF THE GRADUATE SCHOOL
PROFESSOR OF BIOLOGY

Madam Chairperson and members of the committee, thank you for the opportunity to provide a few brief comments regarding the ***Kansas Economic Growth Act***. Clearly, it offers exceptional prospects for enhancing the economic future of all Kansans.

Kansas was not a significant participant in the first wave of the biotechnology revolution that focused predominantly on human health innovations in the 1980s. That entrepreneurial transformation was spawned on the west coast and spread to the east coast, but the states in between were bypassed for the most part.

The ***Kansas Economic Growth Act*** provides the opportunity for Kansans statewide to benefit and prosper in the new millennium's bioscience/biotechnology evolution. It builds on the state's agricultural bioscience roots as well as the Kansas City area life sciences initiative. It provides an opportunity for the research universities in Kansas to be more competitive nationally and internationally. All of these things bode well for the economy in Kansas ... diversifying, solidifying, and magnifying the financial base.

Kansas State University can help facilitate the economic growth in Kansas. During the past decade and a half, K-State has made huge strides in research, moving from less than $20 million in annual research awards to $100 million. Bringing federal research dollars back to Kansas, in and of itself, has positive economic outcomes: a significant portion of the research funding goes into personnel — it creates jobs. As a land-grant university, most of the research at K-State is also applied in nature — the products of research are designed to solve real-world problems. For example, new wheat varieties are developed that provide increased crop yields for Kansas' farmers, thereby enhancing family income and the Kansas economy. The list of such benefits is long and diverse.

But, how will the ***Kansas Economic Growth Act*** impact research, graduate education, and technology transfer at K-State? Tremendously! And that's true across the board.

With regard to research, the eminent scholars and rising stars will enhance the stature and breadth of bioscience research at K-State significantly. Our greatest limitation in taking research to the next level (doubling/tripling the competitive awards) is the need for more faculty scientists. Infusing a critical mass of current and soon-to-be bioscience superstars will provide a step-function increase in research output. The bottom line: the payback to Kansas will be measured in the near-term for once — in years, not decades.

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Can we succeed in bringing the cream of the crop to Kansas? Absolutely! We recently hired Dr. David Franz to lead the National Agricultural Biosecurity Center at K-State. The hiring was done jointly with the Midwest Research Institute. Dr. Franz is a world-renowned authority on public health and biodefense who serves on multiple committees of the National Academy of Sciences. Dr. Franz joins his illustrious Army colleagues at K-State, Drs. Jerry and Nancy Jaax. What these three experts bring to our biosecurity efforts, the eminent scholars and rising stars will bring to our bioscience research efforts.

The second greatest challenge in taking research to the next level at K-State is the shortage of research support personnel — postdoctoral researchers, graduate students, and laboratory technicians. Technically proficient human resources are in high demand nationally and internationally; they're expensive as well. A critical mass of eminent scholars and rising stars will serve as a magnet to attract the numbers needed, starting with graduate students who want a broad-based, high-quality pool of faculty scientists from which to select a research mentor. The importance this plays in attracting the very best graduate students and postdoctoral researchers cannot be overstated. Additionally, it helps attract the best and brightest undergraduates.

And how will these research and human resource outcomes at Kansas State University impact the Kansas economy? Positively and extensively!

The generation of intellectual property (patentable inventions and the like) correlates directly to the extramural funding base at a research university — the greater the research funding, the more inventions that result. Therefore, a step-function increase in extramural awards should automatically increase the number of patent disclosures that ensue. Moreover, the eminent scholars and rising stars should be selected, at least in part, for their track record in creating intellectual property of commercial value.

Patentable inventions can lead to the generation of revenues from traditional licensing agreements with major corporations or less traditional licensing to local start-up companies. Our experience has demonstrated that licensing to local start-ups provides the greatest opportunity for K-State to generate substantial revenues. In addition, local start-up ventures provide the greatest opportunity for Kansas to benefit economically. Notably, the infrastructure necessary to facilitate these entrepreneurial activities is already in place within the KTEC network. K-State works closely with the KTEC innovation center in Manhattan, the Mid-America Commercialization Corporation.

By hiring eminent scholars and rising stars with an interest in seeing the products of their research commercialized, the ***Kansas Economic Growth Act*** can move the Kansas economy forward expeditiously. An integrated research and economic development program will help diversify and grow the Kansas economy in a synergistic fashion.

University scientists with entrepreneurial interests launched the biotechnology revolution in California in the 1980s. The eminent scholars and rising stars can do the same thing in Kansas in the new millennium, leading the bioscience evolution with an expanded focus on plants, animals, and people. The state's economy will be the better for it ... east to west, north to south. Kansans will be able to take that to the bank.

Barbara Atkinson, MD, Executive Dean, KU School of Medicine
Testimony before the Senate Commerce Committee
Economic Development Act
March 15, 2004
Topeka, Kansas

Good morning. I'm Barbara Atkinson, executive dean of the University of Kansas School of Medicine and vice chancellor for clinical affairs at the University of Kansas Medical Center.

I applaud the intent of this bill to build bioscience research as an economic engine for Kansas and thank you for your consideration of this bill which would mean so much to business and life science research in Kansas.

The University of Kansas School of Medicine has been doing bioscience research since 1905 when our school was founded. Early on, we led the nation in scientific discovery. From his studies of grasshoppers on the Kansas plains, Dr. Walter Sutton discovered that chromosomes carry the units of inheritance. Through his work with monkeys in a KU medical center laboratory, Dr. Herbert Wenner contributed critical research to Jonas Salk's polio vaccine. Today Dr. Bill Narayan works on an AIDS vaccine.

We're scientists and educators. Some of us are also physicians who do research. We study the mysteries of human health and disease, always working toward the day when we can take our discoveries from the laboratory to the bedside in order to improve the lives of our patients.

At the University of Kansas Medical Center, we have the Kansas City area's only wet lab incubator. We know how to take a good idea, give it the support it needs to build, and then launch a new biotechnology business. Dr. Andrew Parkinson, a pharmacology professor from the School of Medicine, created Xeno Tech LLC

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in our incubator. His business grew from 1 to 70 employees in six years and now thrives in a new 20,000-square-foot facility Lenexa. We have since remodeled our incubator laboratory, and it's ready to continue supporting great new discoveries which are in the process of developing into new small businesses.

The Kansas legislature has been a partner with us from the beginning, and every day we work hard to make you proud of your investment. For every one dollar that you invest in the medical school faculty, we earn an additional four dollars, bringing in a total of $160 million dollars to Kansas in research grants, physician practice revenue and endowments this year alone. Recently, your support of a bonding issue, together with $27 million from the Hall Family Foundation of Kansas City, enabled us to break ground on a biomedical research building, which will increase the amount of research space on our campus by nearly 90 percent.

Recruiting eminent scholars and rising stars to fill that facility, giving them the support team and the tools to help them succeed is expensive. Start up packages to move each eminent scholar will cost up to $2 million with another $1 million for supporting staff and equipment. One of our recent recruits, Dr. Darryl Quarles from Duke University, is coming next month to direct our Kidney Institute and lead the patient care effort in kidney disease. He's bringing a team of 17 scientists with him as well as 5 grants from the federal government that will bring in $1.3 million dollars each year.

We welcome additional financial resources to help us recruit the world's best scientists to Kansas. We know this will be a good investment. We just received a report from the American Association of Medical Colleges on the economic impact generated by your two medical school campuses with their teaching hospitals in Kansas City and Wichita. It shows that we have a total state business volume economic impact in Kansas that surpasses $1 billion and

accounts for almost 10,000 jobs. I have included a summary from that report in my testimony.

We are in the process of recruiting another superstar, Dr. Roy Jensen from Vanderbilt University, to lead our Kansas Masonic Cancer Research Institute. The Kansas Masons recently pledged $15 million to help us become a National Cancer Institute designated center. NCI designation will make us eligible for millions of additional dollars from private and federal sources, but we need to demonstrate a commitment from the state. NCI designation also will mean that Kansas has access to the latest research from all the other NCI centers around the country. That means people in this region won't have to go to the Mayo Clinic or to MD Anderson for the most up to date cancer treatment, but can receive the best cancer care right here in Kansas.

Part of the Kansas Masons' $15 million gift will be used for an endowed professorship that our new director will hold. If we are successful in recruiting Dr. Jensen (and it looks promising, except that we still need to find additional resources), we need to give him the people and resources that are necessary to make our cancer program the best it can be. He has learned from Vanderbilt how to build a quality program, and we are fortunate he's interested in bringing that expertise to Kansas.

Dr. Jensen's recruitment package includes the addition of 21 physicians and 9 basic scientists over the next four years. The money to recruit these faculty members will need to come from a combination of private, federal and state dollars. We know that the investment in our cancer program will eventually bring in more dollars than the ultimate cost, and we hope it will bring the promise of better treatments for those with cancer.

An example of this promise is Dr. Kathy Roby in our Department of Anatomy who is working with a team to develop a breakthrough drug to treat ovarian cancer.

She worked with scientists at KU Lawrence and CritiTech (a company founded by two KU professors) to develop a better delivery system for Taxol, a drug used to treat breast and ovarian cancers. It's a good drug but unfortunately has many terrible side effects. Dr. Roby has shown that a similar but newly packaged drug called NanoTax, is effective in treating ovarian cancer in the mouse without those side effects. Mice receiving NanoTax survived more than twice as long as mice receiving no drug. NanoTax is now ready for human trials, and Dr. Roby has applied for NIH funding so that the first patients to receive this new drug will be at the University of Kansas Hospital, receiving a drug which was developed at KU with the help of a small business that started at KU. Dr. Roby's research illustrates how industry and university scientists can become partners in developing treatments and drugs that improve human health and lead to a positive economic impact on the state.

As another example, I'd like to discuss the impact of the work being done at the University of Kansas School of Medicine in Wichita. The faculty practice in Wichita has just set up a new Clinical Research Institute to enable testing of drugs and devices. They have been particularly successful up to now in testing drugs to treat psychiatric illnesses such as depression. The ability to recruit additional eminent scholars and rising stars to Wichita will allow major expansion of this work. The Orthopedics Research Institute that is a joint venture of the School of Medicine with Via Christi Hospital has led to new types of orthopedic devices and glues used in joint replacements. Not only does this type of discovery help the lives of patients, it leads to patents and business opportunities in the state.

At both the Kansas City and Wichita campuses we make a special effort to disseminate our information and critical treatment options throughout the state of Kansas. I have included a map of the state showing the areas we provide outreach clinics where our specialist doctors see patients referred by local family physicians, as well as our telemedicine network sites which span the state and

allow consultation on a regular basis between local physicians and our scarce specialists.

One final example, the Kansas Biomedical Research Infrastructure Network (K-BRIN) fosters inter-campus biomedical research collaboration and infrastructure support among 9 campuses throughout Kansas. The K-BRIN has already brought $8.6 million to Kansas in the past three years, and we have demonstrated such success, the National Center for Research Resources is offering us the opportunity to compete for renewal of this grant which will bring $18.5 million to Kansas during the next five years. A map which demonstrates the 9 campus partnership throughout Kansas is included.

We have other examples, but I share these to show you that your School of Medicine has experience in this business of bioscience research. Again, I applaud the intent of this bill to build on our success by recruiting more eminent scholars and rising stars to Kansas who will be able to expand and increase our efforts.

However, at this time, I would like to raise a few questions. How will this bill influence the direction of bioscience research in Kansas? Will there be an effort to build a critical mass of research in cancer, for instance, so that Kansas will be known as a center of excellence? That will enable us to both recruit and retain eminent scholars.

What is the role of the Kansas Bioscience Authority in the commercialization of intellectual property created by the scholars employed by state universities? In my experience, scientists relinquish their intellectual property with great reluctance. I would encourage you to appoint eminent scholars already in Kansas to the Kansas Bioscience Authority Board. They would be able to offer valuable guidance in recruitment efforts.

I would also ask if the intent of this legislation is to create new free-standing research institutes whose scholars are employed by the authority or, as I hope, to support those academic institutions that already are successful in education and bioscience research.

If we want to foster a climate that recruits the best scientists to Kansas, we need to be thoughtful in how we answer these questions.

The Life Sciences effort in Kansas is not in its infancy; rather, it's rapidly entering quite a growth spurt. The investment by the state will not be in a speculative start-up venture, but in a movement that already has passed critical milestones in quality of research and financial stewardship. The University of Kansas School of Medicine has been at this business of biomedical research for nearly 100 years. Our federal funding, combined with the Stowers investment and that of our other life science partners proves opportunities are here and now, not wishful thinking.

I welcome the opportunity to help you evaluate and lead this ambitious endeavor and answer your questions for the benefit of the citizens of Kansas.

Association of American Medical Colleges
The Economic Impact of AAMC Member Institutions 2002

State Summary Report
State: Kansas

Summary of AAMC Member-Related State Impacts

Total State Business Volume Impact	**$1,054,411,454**
Direct State Business Volume Impact	**$458,439,763**
Indirect State Business Volume Impact	**$595,971,691**
Total State Employment Impact	**9,999**
Total State Government Revenue	**$35,017,240**
Total Out-of-State Medical Visitor Impact	**$54,289,986**

State Business Volume Impacts

Total State Business Volume Impact	**$1,054,411,454**
Spending for capital improvements, goods, supplies, services	$252,811,443
In-state staff spending	$103,254,730
In-state total physician (employed and contract) spending	$32,648,158
In-state resident and student spending	$15,435,445
Out-of-state patient in-state spending	$3,930,307
In-state spending by out-of-state patient visitors	$3,287,005
In-state spending by other out-of-state visitors	$47,072,674
AAMC member-related business real property investments	$156,052,895
AAMC member-related business inventories	$130,747,020

Government Revenue Impacts

Total Government Revenue Impact	**$35,017,240**
Individual income tax revenues	$11,121,643
Sales and gross receipts tax revenues	$17,541,983
Corporate net income tax revenues	$2,342,442
Other tax revenues	$4,011,172

Total AAMC Member-Related Employment Impact **9,999**

Tripp Umbach Healthcare Consulting, Inc., 2003