

MINUTES OF THE SENATE COMMERCE COMMITTEE

The meeting was called to order by Chairperson Karin Brownlee at 8:15 a.m. on March 16, 2004 in Room 123-S of the Capitol.

All members were present.

Committee staff present:

Susan Kanarr, Legislative Research  
Helen Pedigo, Revisor of Statutes  
Nikki Kraus, Committee Secretary

Conferees appearing before the committee:

Bill P. Duncan, Ph.D., President, Kansas City Area Life Sciences Institute  
Dr. Tom W. Bryant, President, Pittsburg State University  
Nelson Mann, Chairman-elect, Greater Kansas City Area Chamber of Commerce  
Trudy Aron, Kansas AIA  
Scott Heidner, Kansas Consulting Engineers  
Kathy Ostrowski, Kansans for Life

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**

The committee received a fiscal note on the bill. (Attachment 1)

Dr. Duncan presented testimony in favor of the bill. (Attachment 2)

Dr. Bryant presented testimony in support of the bill. (Attachment 3) Dr. Bryant spoke about Pittsburg State University being the world leader in bio-based materials research and said the bill had several features of potential importance to work at Pittsburg State. He also included testimony given by Cargill to the House Committee on Economic Development. (Attachment 4)

Chairperson Brownlee stated that she had really enjoyed her past visit to Pittsburg State through Leadership Kansas. In response to a question from the Chair, Dr. Bryant clarified that a “research institution” is a formal designation, and that it does not apply to Pittsburg State.

Mr. Mann presented testimony in favor of the bill. (Attachment 5) He stated that in the context of commercialization, the state would need incubators that are viable and good, similar to the kind that KTEC can bring to businesses. He concluded by saying that Kansas would need early stage capital for development and eventual marketing of new products; if we do not, production will go elsewhere.

Senator Kerr stated that regarding early stage risk capital, for the past 19 years he has been in the Legislature, we have recognized the problem. He stated that the wealth we see in Johnson county is amazing, but he wondered why has that not gotten organized, despite past efforts. Mr. Mann stated that the private sector has largely not stepped up nor had the tools. He stated that when the information technology bubble burst, investors pulled back. On the Missouri side of state line, investors are not taking advantage of legislation in that state regarding capital pools, and there has even been a full realization that this has to be addressed. He stated that now, more Angel networks and angel investors were forming to identify development, and a number of people with substantial wealth are focused on dealing with this. Senator Kerr stated that the Legislature keeps creating vehicles to make that happen; he hopes this bill is finally the right vehicle because this remains the state’s biggest deficiency.

Mr. Mann complimented the Legislature on venture cap bills and others and stated that they were being under-

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MINUTES OF THE SENATE COMMERCE COMMITTEE at 8:30 a.m. on March 16, 2004 in Room 123-S of the Capitol.

utilized. Senator Kerr stated that this was considered a major problem back in 1985.

Ms. Aron gave testimony in opposition to the bill. (Attachment 6) She stated that while the AIA supports the bill, they oppose the exemption of Kansas statutes that relate to the design of facilities and those affecting the responsibilities of facilities management and the Office of Architecture.

Mr. Heidner presented testimony in opposition to the bill. (Attachment 7) He stated that his concerns apply to sections 16 and 17. He stated that the state statutes mirror federal laws, and the more complex the buildings, the more important that we have qualified individuals designing them. He stated that they would like to see these projects follow the state law as written, but would also be open to a compromise similar to the Regents Institutions' language.

Senator Jordan stated that the language in the bill mirrors the Hospital Authority language. Ms. Aron stated that a lot of hospitals are under federal regulations. Following discussion, Chairperson Brownlee stated that it would add an extra layer of bureaucracy and expense to require review by the architects office, and that seemed unnecessary considering the other checks and balances that exist in getting a building built. Senator Barone pointed out that the allusions to the Regents research institutions' language is something that exists in present law and seems to be working well for them, so it might be helpful to see a side by side comparison. Mr. Heidner concurred and said that he also heard that is working well from an engineering perspective.

Senator Emler asked what the federal review requirements are. Senator Jordan replied that it had been several years since the Legislature had dealt with the hospital authority, but they were comfortable with federal regulations then; the goal was to try and get out from under large fees and use that money for other things.

Ms. Ostrowski presented testimony in opposition to the bill. (Attachment 8) She stated that while Kansans for Life does not take an official position on State economic incentive programs, they do have a strong position on the sanctity and dignity of life, which is pertinent to the definitions of "bioscience, biotechnology and life sciences" in **HB 2647**. She stated that "KFL would advocate the bill include complete state-wide bans on cloning and destructive ESC (embryonic) research applying to all citizens and entities."

Senator Wagle asked what kind of restriction was currently in the bill. Chairperson Brownlee referred to p. 4, lines 18-21.

Chairperson Brownlee closed the hearing on **Sub HB 2647**.

Senator Barone referred the committee to information provided by Dr. Edge regarding the number of employees presently engaged with bioscience research. (Attachment 9) He stated that it showed undergraduate student assistants and classified employees as taking part, however. Dr. Edge stated that the request placed to the Universities was to use an economic model to look at all jobs that were involved in bioscience in any way shape or form that would be comparable to a private organization.

Following further discussion, Senator Steineger referred to the testimony of Dr. Bryant and asked if it was necessary to be that specific on which universities can compete for funds. Mr. Taylor stated that there was no reason to delineate, and that they could all compete for funds.

Senator Steineger also questioned if the bill contained a Johnson county mandate for the headquarters location; he favored allowing the Authority to choose where they would like to go. Mr. Taylor stated that, as Senator Steineger knew, that would be the county contributing the most dollars to the project, and, in response to another question from Senator Barone, Mr. Taylor clarified that most of this money would come from withholding. Chairperson Brownlee recommended the committee look at the fiscal note for the bill.

Written testimony in support of the bill was submitted by Blake Schreck, Lenexa Chamber of Commerce, (Attachment 10) Doug Wareham, Sr. V.P., KS Agribusiness Retailers Association, (Attachment 11) Harry Watts, Kansas Farm Bureau, (Attachment 12) and Wes Ashton, Director Govt. Relations, Overland Park Chamber. (Attachment 13)

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MINUTES OF THE SENATE COMMERCE COMMITTEE at 8:30 a.m. on March 16, 2004 in Room 123-S of the Capitol.

Chairperson Brownlee adjourned the meeting at 9:30 a.m. The next meeting will be at 8:30 a.m. on March 17, 2004 in Room 123-S of the Capitol.

# Senate Commerce Committee Guest List

Date: March 14, 2004

JOHN DOUGHERTY	ESU
Kathy Ostrowski	Kansans for Life
Jeanne Bowden	KFL
Jon Jossand	University of Kansas
Michael Furver	KTEC
Nelson Mann	PrestorKense, City Chamber of Commerce
Julie Edge	Inside Edge SOLUTIONS LLC
Tracy Taylor	KTEC
William F. Duncan	Kansas City Area Life Sciences Institute
REBECCA FLOYD	KDFA
Reggie Robinson	KBOR
Tom Bryant	Pittsburg State Un.
McKernan	PSU
Jeanne Page	KACCT
Tom Slattery	AGC/KS
Andy Cron	Am Inst of Architects
Sandra Braden	Civic Council of GCC
Bob Vanerum	Greater KC Chamber of Commerce
Pat May	HEIN Law Firm
Jeff Bottner	Pokinselli, Sh. Hon & Wolte
Mike Farmer	Kansas Catholic Conference
Pat Lehman	GKCCF
Christy Caldwell	Topeka Chamber of Comm
Hung-Li	KFB
SUE PETERSON	K-STATE



March 15, 2004

The Honorable Kenny Wilk, Chairperson  
House Committee on Economic Development  
Statehouse, Room 426-S  
Topeka, Kansas 66612

Dear Representative Wilk:

SUBJECT: Fiscal Note for Substitute for HB 2647 by House Committee on Economic  
Development

In accordance with KSA 75-3715a, the following fiscal note concerning Substitute for  
HB 2647 is respectfully submitted to your committee.

HB 2647, as substituted by the House Committee on Economic Development, would  
create the following five different acts: Bioscience Authority Act; Emerging Industry  
Investment Act; Bioscience Development Financing Act; Bioscience Research and Development  
Voucher Program Act; and Bioscience Research Matching Funds Act.

#### **Bioscience Authority Act**

The act would create a new agency called the Bioscience Authority. The mission of the  
agency would be to make Kansas a desirable state in which to conduct, facilitate, support, fund,  
and perform bioscience research, development, and commercialization. This would make  
Kansas a national leader in bioscience, create new jobs, foster economic growth, advance  
scientific knowledge, and improve the quality of life for Kansas citizens.

An 11-member Board of Directors would govern the agency. Nine of the members  
would come from the general public, and the Kansas Board of Regents would appoint the other  
two. The board would meet at least four times a year. The board members would appoint a  
president to be the Chief Executive Officer of the agency. Employees of the agency would not  
be considered employees of the state. The agency's powers would include the powers to  
purchase and transfer property, incur debt, own and construct research facilities, as well as own  
and possess patents. The board would be prohibited from creating or contributing to a political  
action committee.

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The agency would work with state universities to determine the types of bioscience research to be conducted, identify and recruit research scholars, and construct research facilities. The agency would also contract with the Kansas Technology Enterprise Corporation (KTEC) for the initial commercialization of bioscience intellectual property. The Department of Revenue would assist the agency in preparing its annual report summarizing the growth of bioscience research and industry in Kansas.

### **Emerging Industry Investment Act**

The purpose of the act would be investment in real property and improvements, equipment and supplies, and the employment of research scholars by the state universities and the Kansas Bioscience Authority to lead to bioscience discoveries and products. The act would also create the Bioscience Development and Investment Act Investment Fund (BDIF) to be administered by the Bioscience Authority. The fund would not be a part of the state treasury and would fund the purpose, powers, and duties of the Authority. For 15 years from the effective date of HB 2647, state taxes paid by bioscience companies and facilities in excess of taxes paid by the companies and facilities in the base year (2003) would be transferred to the BDIF. The fund would also receive 95.0 percent of withholding taxes above the base on wages paid by bioscience employees. The House Committee amended the bill to exclude property taxes levied for schools and excise taxes from the definition of "state taxes."

The act would also require the Department of Revenue to prepare an annual report evaluating the effectiveness of income tax credits and sales tax exemptions to encourage economic development in the state. The report would be due on or after January 1, 2006.

### **Bioscience Development Financing Act**

This act would be used to facilitate the transfer of bioscience companies to Kansas. The House Committee also substituted tax increment financing statutes for the original provisions of this act. The bill would authorize the use of tax increment financing to fund bioscience development projects in bioscience development districts. The costs associated with the projects would be financed through the issuance of special obligation bonds. The bonds would be repayable from the tax increment generated from the bioscience development projects. The Committee amended current tax increment financing statutes to include bioscience development areas and bioscience development projects.

The bill also creates the Bioscience Development Bond Fund (BDBF). All revenue collected from a bioscience development district would go into the BDBF. The new fund would be used to pay bioscience development project costs as well as to pay off bonds issued to finance a bioscience development.

For tax years commencing after December 31, 2004, the Bioscience Authority could pay a bioscience company no more than 50.0 percent of the company's Kansas net operating loss incurred during the claimed tax year. The payment could not exceed \$1.0 million. The



Secretary of Revenue would be responsible for developing rules and regulations providing for these payments to bioscience companies.

### **Bioscience Research and Development Voucher Program Act**

Under this act, the Bioscience Research and Development Voucher Program would be created to provide funding vouchers to small and medium-sized bioscience companies to allow partnership with state universities in research and development projects. HB 2647 would also create the Bioscience Research and Development Voucher Fund, which would receive state appropriations, gifts, federal funds and other private and public funds. These funds would be used for the vouchers.

### **Bioscience Research Matching Funds Act**

Through this act, funds would be made available to state universities to match research grants from federal, private, and other sources of funding. The Bioscience Research Matching Fund would be created and used to match research grants from federal, private and other funding sources. The bill does not indicate the source of initial receipts to the new fund. The Bioscience Authority would administer the fund and create guidelines for the awarding of matching funds.

The bill also creates the Bioscience Research and Development Voucher—Federal Fund, which would receive all federal funds obtained for bioscience research and development. The fund would provide matching federal monies to enable bioscience companies to undertake bioscience research and development projects in partnership with Kansas universities.

As introduced, HB 2647 created the five different acts described above as well as the Bioscience Tax Investment Incentive Act. The act would have allowed bioscience companies to sell unused net operating loss in exchange for financial assistance. Under the Emerging Industry Investment Act, the Emerging Industry Investment Act Investment Fund (EIIAIF) would have funded the purpose, powers, and duties of the Authority using state taxes and state income taxes from bioscience companies and employees. The amount of taxes paid would have been based on taxes paid in 2003. The definition of state taxes would have included excise taxes and property taxes levied for schools. Kansas, Inc. would have amended its annual report to include the utilization of special obligation bonds and income tax credits and exemptions under the Bioscience Tax Investment Incentive Act.

In addition, the original Bioscience Development Financing Act would not have included tax increment financing statutes. There were no funds created under the act. The provisions of the Bioscience Research Matching Funds Act would not have included provisions for creating the Bioscience Research and Development Voucher—Federal Fund.

The Department of Revenue estimates that the Emerging Industry Investment Act provisions of HB 2647 would decrease State General Fund revenues by \$1,556,912 in FY 2005. The fiscal effect to state revenues during subsequent years would be as follows:

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
State General Fund	(\$3,173,206)	(\$4,851,180)	(\$6,593,223)	(\$8,401,814)

The bill authorizes the Department of Revenue, Board of Regents, and Bioscience Authority to establish the base year taxation for all bioscience companies and state universities associated with bioscience research, the number of bioscience employees employed by the state universities, and determine the taxation base annually. For 15 years, the State Treasurer would transfer state taxes in excess of the base year taxation from bioscience companies to the Emerging Industry Investment Act Investment Fund (EIIAIF). However, only 95.0 percent of withholding taxes based on wages paid to bioscience employees would be transferred to the EIIAIF. To compute taxes each year, the Department used a growth rate of 4.0 percent for withholding taxes, 2.5 percent for corporate income taxes, and 3.0 percent for sales taxes. See the following table:

<u>Tax Year</u>	<u>Withholding</u>	<u>Corp. Income</u>	<u>Sales</u>	<u>Excess Above Baseline</u>	<u>Fiscal Year</u>
2003*	\$35,000,000	\$5,000,000	\$3,397,062	\$ --	2004
2004	36,400,000	5,125,000	3,498,974	1,556,912	2005
2005	37,856,000	5,253,125	3,603,943	3,173,206	2006
2006	39,370,240	5,384,453	3,712,061	4,851,180	2007
2007	40,945,050	5,519,064	3,823,423	6,593,223	2008
2008	42,582,852	5,657,041	3,938,126	8,401,814	2009

\* Base taxation year

To formulate these estimates, the Department of Revenue reviewed data from its tax database, the Department of Human Resources' labor statistics, and 53.0 percent of the 161 bioscience companies currently operating in Kansas. The withholding taxes estimate also includes \$15.0 million for bioscience employees of state universities associated with bioscience research.

The Department of Revenue also indicates that the Bioscience Development Financing Act provisions could cause a loss in state revenues. The act would create tax increment financing districts for bioscience development and allow the Kansas Finance Development Authority to issue special obligation bonds to finance a bioscience development project. Ad valorem tax increments, as well as revenue from guest, sales, and use taxes collected from taxpayers doing business in the bioscience development district would pay off the bonds. Because consumers have a set amount of disposable income, money spent in businesses within the special bond project displaces money spent in the state on taxable purchases. Currently, revenue generated from these purchases goes to the state. However, revenue generated from purchases within the special bond project would be used to pay off the special obligation bonds issued to fund the project, instead of to the state. This has the effect of lowering state tax



revenue. After the bonds used to finance the special bond project are paid off, then state revenues could increase from taxable purchases generated within the project.

According to the Department of Revenue, the provisions of the Bioscience Authority Act in HB 2647 would have a negligible fiscal effect on state revenues. The provisions of the Bioscience Tax Investment Incentive Act, the Bioscience Research and Development Voucher Program Act, and the Bioscience Research Matching Funds Act would not have a fiscal effect on state revenues.

The Department states that passage of this bill would require new withholding forms, revisions to the net operating loss schedule, and various other processes in the Department at an estimated cost of \$23,329. The agency would also need \$47,826 for an additional FTE position and \$5,142 for other operating expenses, including a workstation. However, these costs would be absorbed by the Department. This bill also would require modifications to the automated tax system. The required programming for this bill by itself will be performed by existing staff of the Department of Revenue. However, if the combined effect of implementing this bill and other enacted legislation exceeds the Department's programming resources, or if the time for implementing the changes is too short, expenditures for outside contract programmer services beyond the Department's current budget may be required.

The Kansas Technology Enterprise Corporation (KTEC) indicates that HB 2647 would cost approximately \$300,000 for the initial planning and development of the Bioscience Authority. These expenditures are included in *The FY 2005 Governor's Budget Report* as a part of KTEC's FY 2005 budget recommendation. The Bioscience Authority Program is part of the Governor's Economic Revitalization Plan to encourage the development of a prominent bioscience industry in Kansas. In addition, any services provided by KTEC to the Authority under the bill would be financed from contract fees paid by the Authority. KTEC is unable to estimate the cost of services because it would depend on what would be negotiated between the two agencies.

The Department of Revenue did not have information upon which to estimate the introduced bill's fiscal effect.

Sincerely,

Duane A. Goossen  
Director of the Budget

cc: Kevin Carr, KTEC  
Marvin Burris, Board of Regents  
Kim Gulley, League of KS Municipalities  
Matt Jordan, Department of Commerce

Sharon Schwartz, Legislative Services  
Debby Fitzhugh, Kansas, Inc.  
Steve Neske, Revenue

**Testimony to Senate Commerce Committee  
Government Committee  
Kansas Senate SJ 1280  
Friday, March 16, 2004  
Topeka, Kansas**

William P. Duncan, Ph.D.  
President  
Kansas City Area Life Sciences Institute

Thank you Madam Chairman, and members of the Senate Commerce Committee, for the opportunity to testify in support of SJ 1280. The Bioscience Authority Act outlines a critically important funding approach to support life sciences research and related commercialization in Kansas. My name is Bill Duncan, and I am President of the Kansas City Area Life Sciences Institute - a not-for-profit organization leading our region's transformation into a center of excellence in the life sciences. The University of Kansas in Lawrence and the Kansas University Medical Center in Kansas City are two of our key stakeholder institutions.

The Life Sciences Institute actively fosters research collaborations, attracts funding, facilitates sharing of resources and information, and advocates for related economic development. We realized early the importance of a broad regional vision for life sciences - specifically stated - increasing research focused on humans, animals and plants, translates into more intellectual property, leading to development and commercialization of new products, ultimately benefiting the health and well-being of Kansans while, at the same time, providing significant economic returns to the State.

We must repetitively complete the cycle from laboratory to innovation to commercialization, creating an "economic churn" that provides a financial increase to fuel our success and sustain our momentum. Commercialization means revenue to invest in more research and scientists, more equipment for research facilities, the creation of revenue to reinvest, the formation of entrepreneurial companies and the jobs they create.

The expenditures outlined in the Bioscience Authority Act are critical for supporting this growth cycle, from laboratory to innovation to commercialization over the

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next ten years.

- \$184.5 million of this bill targets recruitment of world-class scientists and provides support needed to sustain their success. The 25 eminent scholars and 35 rising star researchers to be recruited under this legislation are crucial to our future. Such investments will enhance our significant life sciences research base and generate a thriving, creative community capable of attracting other world-class scientists to conduct their research in Kansas and the Kansas City region. Drawing premiere researchers to our region is fundamental for continued growth and expansion of Kansas institutions, as well as the Stowers Institute for Medical Research, the Midwest Research Institute and other regional organizations. Similarly, such a dynamic scientific environment within our major universities fosters the creation and growth of life sciences companies.
- Nearly \$200 million of this bill is earmarked for research facilities, allowing for some 500,000 ft<sup>2</sup> of expansion at our research universities. Increasing essential research infrastructure at our universities and medical schools, including additional laboratory and office space, is vital to sustaining the level of research necessary to become a center of excellence in the life sciences.
- The \$86 million earmarked for commercialization and the \$27 million designated for investments fulfills an urgent need in our region. Availability of early capital is absolutely critical for entrepreneurial companies to commercialize intellectual property and take a product to market.

In the Kansas City region, we have made considerable progress toward achieving our goal of developing a critical mass of life sciences research, as evidenced by:

- Annual life sciences research expenditures at our stakeholder institutions have grown from \$104M when the Life Sciences Institute launched in 1999, to \$218M by the end of 2003. The U.S. Department of Commerce tells us that 41 jobs are supported by every one million research dollars in our community. Considering our goal of \$500 million dollars in annual research expenditures, we estimate the life sciences initiative will support more than 12,000 additional jobs.
- More than \$1 billion has been invested in ongoing or approved public and private capital improvement projects in the region, ranging from new life sciences buildings

and laboratory space at our stakeholder institutions to life sciences companies moving into or expanding within the Kansas City region.

- The growing ability of our stakeholders to successfully recruit world-class scientific talent, especially the Stowers Institute, which is experiencing an 80% acceptance rate of offers made.
- The formation of several start-up companies spawned from research conducted at our key stakeholder institutions, e.g. Proquest, Crititech, and Deciphera in Lawrence, and Xenotech in Lenexa, and a host of others throughout the state.

Clearly, the life sciences initiative has attained significant regional momentum. To leverage our success into a truly successful center of life sciences research, however, we must secure funding from several diverse sources. The Bioscience Authority Act is an important funding concept, generating significant dollars for life sciences research at both our universities and our local commercial life sciences entities, which are inextricably linked.

Our success as a region hinges on the strength of our research base. Life sciences research today requires transdisciplinary approaches to complex problems. Indeed, the new NIH roadmap that will provide Federal Funding puts significantly increased emphasis on translational research and requires collaboration across disciplines and research institutions.

Plant and animal sciences contribute significantly to our life sciences portfolio, both at the local and national level. With its outstanding agriculture school, Kansas State University is a key contributor to life sciences efforts in the State of Kansas. Additionally, the medical school at Wichita State University will benefit from this legislation, ensuring its contributions to medical advances that improve the quality of life for all Americans.

Ideas for new drugs and therapies for humans and animals, the concept of plants as factories (“farmaceuticals” with an “f”), and methods for developing healthier foods, all need a place for inception and incubation. I must emphasize that the research universities are best suited for directing, sustaining, and evaluating the strategic course of life sciences research in Kansas.

With all of the positives included in this bill, I would like to note two cautions.



One, the Biosciences Authority can be an effective facilitator of technology transfer and commercialization and may even play a key accountability role back to the legislature regarding expenditures of funds by researchers and other scholars. There should be no question, however, that universities must retain authority over the type of science they conduct, the collaborations pursued to address research opportunities at the national level, and the development of other collaborative proposals necessary for them to attract the very best scientists, graduate and post-graduate students, and support personnel. All of these activities are necessary for institutions to remain flexible, nimble and responsive to the evolving priorities identified by the NIH roadmap. Two, it would be unwise at this point to pass legislation containing overbroad language which would ban certain promising types of research. If Kansas bans promising areas of research, we risk losing (a) our best scientists and research infrastructure to other states; (b) the regional momentum of our life sciences research and economic development initiative; and (c) finding treatments and cures for such devastating conditions as diabetes and spinal injuries.

A colleague of mine in Texas always reminds me... "Vision without funding borders on hallucination." In the Kansas City region, we have witnessed how a solidifying vision for the life sciences has hugely impacted the way institutions have spent their research dollars. This Bioscience Authority Act carries this vision to the critical next step by providing the funding and the future revenue streams we must have if we are to achieve our goal of making our region a national leader in the life sciences.

Thank you for your attention and I would be pleased to address questions.



# Pittsburg State University

OFFICE OF THE PRESIDENT

Testimony in Support of Substitute for HB2647  
Kansas Legislature  
Senate Committee on Commerce  
March 16, 2004  
Dr. Tom W. Bryant  
President, Pittsburg State University

Senator Brownlee, Chairperson; Senator Jordan, Vice Chairperson; Senator Barone, Ranking Minority Member; Senate President Kerr; and, Senators Brungardt, Bunten, Emler, Wagle, and Steineger

It is my distinct honor to appear before you today and speak in support of Substitute for HB 2647. As you are aware, Pittsburg State University is home to the Kansas Polymer Research Center, an arm of our Business and Technology Institute, a Kansas Technology Enterprise Corporation Center of Excellence. We have long been seen as a world leader in bio-based materials research. We are engaged in an applied area of research. In general, applied areas of bioscience research as compared with more basic, traditional areas of bioscience research are characterized by hastened speed and ease between research development and commercialization of products.

We have a well-developed history of partnering with industry and government, particularly at the federal level, in the development of bio-based materials. Our research is transforming soybeans, a major crop of the state of Kansas, into polymers like polyurethane, which in turn, can replace the use of petroleum products in production. Polyurethanes are versatile materials used to make foam, plastic, fiber, film, coatings, inks, adhesives, sealants and other products. The principal industries in which it is used are furnishings, construction, and transportation. We focus on environmentally-sound polymers from plant materials. We hold a number of significant patents related to our research expertise.

One of our present industry partners is Cargill, the world's leader in merchandising, processing, and distributing agricultural and other essential products and services. Together we have developed a number of soy-based polymer products now ready for manufacturing. Our partnership is an excellent example of academia and industry working together for economic development to further innovation and research that will benefit the crop producers in our state, the citizens of Kansas, consumers across the world and the environment.

Let me be specific about features of the bill that are seen by us to be of particular potential importance to our work at Pittsburg State University.

1. Provisions to attract bioscience research and to attract bioscience faculty, researchers, and scientists – the ability to access matching funds to be used to attract federal dollars for bioscience research and to ensure stable, qualified individuals is important to smooth the path to commercialization of our research products. The ability to access funding that would help us hasten and expand our research agenda and recruit and retain promising faculty, researchers, and scientists could help push us to new heights. For instance, this type of provision could help us with the type of recruitment effort that we are currently engaged in for a prominent world-class chemist. These types of searches tend to be quite global in nature.
2. Incentives to the bioscience industry – the ability for Kansas to provide incentives to industry partners helps to ensure that well-established industry leaders and often smaller, less established companies have additional impetus to consider the significant research being conducted in our state and in our state universities as potential partners for investment of resources. It becomes a win-win in terms of Kansas' place in a global economy thus bringing jobs to Kansas and keeping jobs in Kansas.
3. Research facilities – the ability to enhance the facilities for researchers particularly in settings like Pittsburg State University is critical. While HB 2690 of the 2002 Legislative Session was passed relating to scientific research and development facilities for educational institutions under the control and supervision of the State Board of Regents, only three institutions were included in the provisions set forth by that landmark legislation. My institution was not one of them yet we have some of the most potentially viable and economically rewarding research for the benefit of Kansans. Pittsburg State University, as you know, is not classified as a research institution. However, that does not mean or imply that we do not participate in scientific research along with our teaching and service mission. We have achieved strong success through our endeavors to date. But we have done so in less than ideal facilities. Our researchers working on our biobased research initiatives are doing so in an aging former residence hall on campus and working with inadequate support. It is ill-suited to the serious nature of research that we are conducting. Our research requires us to work with gases at extremely high pressures and with heavy equipment. It is extremely challenging to meet requirements for safety in such an incompatible research environment. The Kansas Polymer Research Center of Pittsburg State University would benefit greatly from access to a state-of-art research facility and we pledge that we will be first in line to access the provisions provided for in this bill.

With that said, there are three points of potential concern that I have. Some state universities are named in this bill while others are not. For instance, page 7, line 22. I would suggest that Pittsburg State University be listed by name as well. While all of the state elected leaders sitting in this room know the intent of this bill, leaders of institutions, government and other sectors will come and go. For your intent to be



preserved through time, I would suggest that Pittsburg State University be named by name together with the University of Kansas and Kansas State University.

As I read the bill, I am somewhat concerned about checks and balances. I see a deliberate system of checks and balances as being healthy to the success of new endeavors with significant investment. The state of Kansas has so few Authorities, one could pose the question of whether or not present legislative intent on behalf of the citizens of Kansas can be preserved throughout time as this bill is drafted. While I have no specific suggestions for improvement, I do feel compelled to pose the question and urge the creation of a system of appropriate long-term checks and balances.

One last point that I would make is that this Authority will have tremendous power over a potentially extremely large source of funds. The composition of the Authority is a factor for potential concern to those of us from southeast Kansas. While the modification requiring that no more than three voting members of the Authority could be appointed from any one congressional district is seen as a positive contribution to the bill, I would suggest considering limiting the number of alumni from any one university and making the two nonvoting members appointed by the Kansas Board of Regents voting members or some similar modifications to bring long-term balance to the body.

Senators, in summation, as President of Pittsburg State University, I am excited about the opportunities that exist in this legislation. Pittsburg State has the vision -- take a staple crop of Kansas (soybeans) and use it to replace many of the dependencies that our nation has on foreign oil. We have world renowned scientists working on this vision on our campus in southeast Kansas as we speak. We have a well-developed research program in place. There are federal dollars flowing into our research and we have key business and industry partners. While I know that you have discussed in this committee the balance between facilities and other aspects of the bill, to better enable us to fully execute our vision, we need a research facility. Pittsburg State University's most critical need is for a state-of-art facility and equipment that should cost no more than six million dollars. That would enable us to have room to expand the number of scientists that we can readily employ and bring in more federal and industry support dollars. We have had to refer some federal grants elsewhere because we have not had the space for scientists needed to do the research. The passage of Substitute for HB 2647 would potentially help us to achieve our vision. I trust that the ensuing debate in the Senate and resolution of differences between the Senate and House will produce quality landmark legislation for Pittsburg State University, other educational institutions in the state, business and industry, Kansans and the collective whole of our global economy.

Thank you very much for your attentive consideration of my remarks. I stand for questions.



Jim Stoppert

Testimony

Kansas House Committee on Economic Development

February 10, 2004

- Referenced by

Dr. Bryant

Thank you Mr. Chairman and members of the House Committee on Economic Development for the opportunity to submit testimony in support of House Bill 2647 — The Kansas Economic Growth Act's Bioscience Initiative. My name is Jim Stoppert, and I serve as the senior director of industrial bioproducts development for Cargill Incorporated.

Cargill is an international marketer, processor, and distributor of agricultural, food, financial, and industrial products and services. Our company is a global player in the agricultural side of the bioscience industry. Of the 100,000 people Cargill employs in 60 countries, about 4,000 jobs are located in Kansas, including about 50 at our Wichita-based soybean crushing plant.

In addition to Cargill's operations in 21 communities across the state, scientists from Cargill are also conducting joint research with the Kansas Polymer Research Center at Pittsburg State University on the development of soy-based polyols for the urethane industry. Our research is an excellent example of the potential industrial and environmental applications of the biosciences, as well as a successful research partnership between academia and industry. In our joint research, we are developing soybean-based polyurethane, which is a versatile bio-based material used to replace the use of petroleum products in the manufacturing of foam, plastic, fiber, film, coatings, inks, adhesives, sealants, and many other products.

Senate Commerce

03/16/04

Attach #17

There is a growing need for more sustainable, renewable, and low-cost raw material options in the industrial marketplace. We believe derivatives of agricultural commodities can fill many needs of the industrial market and contribute to the success of the bioscience industry. As a leading processor of agricultural products, we have access to a sizeable renewable materials feedstock, some of which is produced by Kansas growers.

The research alliance with the Kansas Polymer Research Center is part of a larger Cargill industrial bio-products initiative to accelerate development of industrial products from annually renewable resources, such as soybeans. The potential for the industrial bio-products market is substantial, but will take many years to develop. By some estimates, as much as two-thirds of the \$1.5 trillion global industrial chemicals and plastics business could potentially be served by bio-based renewable feedstocks.

The Kansas Economic Growth Act's Bioscience Initiative is an important commitment by the State of Kansas to grow and support its bioscience research base and industry. Such a commitment sends a signal to bioscience companies like Cargill that Kansas is a great place to consider for expanding existing and locating new operations. Cargill's industrial bio-products program is a long-term initiative that requires a long-term commitment. Cargill is looking for this same commitment from our research and commercial partners as well as the states in which we locate our operations.

Cargill's decision to partner with the Kansas Polymer Research Center was largely based on the research of the Director, Dr. Zoran Petrovic, and his team. The proposed investments in the eminent and rising star scholars at the state's universities will provide access to more world-class researchers like Dr. Petrovic. In addition, the proposed bioscience development district program will help companies like Cargill offset the costs of building new manufacturing facilities to commercialize the joint research conducted with academic partners. Kansas' investment in the biosciences will also help ensure that bioscience companies like Cargill have access to high-quality, highly-educated workers. All of these aspects of the Kansas Economic Growth Act will help bioscience companies like Cargill conduct the business of bioscience in a more cost-effective and supportive business climate.

For almost 140 years, Cargill has been finding markets for the products farmers grow. The company has always looked to future developments in areas like the biosciences to sustain our growth. We are encouraged by the developments in Kansas to support the bioscience industry and the state's academic institutions.



Testimony to the Senate Commerce Committee  
in Support of House Bill 2647  
T. Nelson Mann, First Vice-Chair  
Greater Kansas City Chamber of Commerce  
March 16, 2004

Chairperson Brownlee and Honorable Members of the Committee:

I am appearing today on behalf of the Greater Kansas City Chamber of Commerce to offer testimony in favor of House Bill 2647. This Bill is complimentary to the Kansas Entrepreneurship Initiative and the Kansas Biosciences Authority Act, and as such is high priority for our Chamber in this legislative session.

House Bill 2647 gives Kansas the cutting edge infrastructure to build on the nationally ranked Biosciences foundation already in place. Area Development Magazine reports KC metro area is ranked in top 15 BioTech metros areas in U.S. and MX Magazine (business planning and tech development periodical) ranks KC in top 10 metro areas to consider when starting BioTech companies. Stowers Institute for Medical Research is the second largest Medical research facility in U.S. KU Medical Center - Hogle Brain Imaging Center offers unequaled brain scan technology in entire US. KU also ranks high nationally in cancer, kidney, diabetes and gene research. The demand for medical Technicians is so high that Johnson County Community College just started a medical technician's program and cannot turn out medical technicians fast enough to meet the demand. There are over 155 bioscience companies in Biosciences Corridor which is Manhattan KS to Columbia, MO. Other states are moving aggressively in the Bioscience area.

HB 2647 gives Kansas the infrastructure which the Stowers Institute is seeking in order to build a Stowers II facility in Kansas or in the Greater KC area. The potential impact of Stowers II is as follows.

The Anderson study shows Stowers II campus will generate \$1.4 billion economic impact to region over 10 years:

- \$54.9 million per year in direct earnings
- \$49.9 million per year in indirect earnings

Stowers is not expecting the state to invest in its research institute, just seeking commitment from state to support its own university research centers—HB 2647 does this.

The Greater Kansas City Chamber of Commerce would offer support for all aspects of the Bioscience Authority Act, including the Emerging Industry Investment Act, the Bioscience Development Financing Act, the Bioscience Tax Investment Incentive Act, the Bioscience R&D Voucher Program Act and the Bioscience Research Matching Funds Act.

Senate Commerce  
03/16/04  
Attach #5



March 11, 2004



TO: Senator Brownlee and Members of the Senate Commerce Committee

FROM: Trudy Aron, Executive Director

RE: **Opposition to Sections 16-17 in HB 2647**

*President*  
Rich Bartholomew, AIA  
Overland Park  
*President Elect*  
Mark Franzen, AIA  
Overland Park  
*Secretary*  
Jan Burgess, AIA  
Wichita  
*Treasurer*  
Michael Seiwert, AIA  
Wichita

*Directors*  
Tracy Anderson, AIA  
Manhattan  
Richard Blackburn, AIA  
Topeka  
Joy Coleman, AIA  
Lawrence  
Douglas R. Cook, AIA  
Olathe  
Timothy J. Dudte, AIA  
Wichita  
Robert D. Fincham, AIA  
Topeka  
John Gaunt, FAIA  
Lawrence  
Jane Huesemann, AIA  
Lawrence  
J. Jones, Associate AIA  
Manhattan  
Michael G. Mayo, AIA  
Manhattan  
Rick McCafferty  
Wichita  
Tom Milavec, AIAS  
Manhattan  
Courtney Miller, AIAS  
Lawrence  
Bobbi Pearson, Assoc, AIA  
Emporia  
C. Stan Peterson, AIA  
Topeka  
Jennifer Rygg, Assoc, AIA  
Wichita  
Jason Van Hecke, AIA  
Wichita  
Kyle Wedel, AIAS  
Manhattan

*Executive Director*  
Trudy Aron, Hon. AIA, CAE  
aron@aiaks.org

Good Morning Madam Chair and Members of the Committee. I am Trudy Aron, Executive Director, of the American Institute of Architects in Kansas. Thank you for giving me the opportunity to speak against several sections of HB 2647.

AIA Kansas is a statewide association of architects and intern architects. Most of our 700 members work in over 100 private practice architectural firms designing a variety of project types for both public and private clients including justice facilities, schools, health facilities, industrial buildings, offices, recreational facilities, housing, and much more. The remainder of our members work in industry, government and education where many manage the facilities of their employers and hire private practice firms to design new buildings and to renovate or remodel existing buildings.

First, I want it to be clear that we support bioscience development in Kansas. However, AIA Kansas opposes the exemption of Kansas statutes that relate to the design of facilities and the elimination of the responsibilities of the Division of Facilities Management. Two sections of the bill remove the process the State has been successfully using for the design and construction of buildings for over 30 years.

**New Section 15** on page 16 eliminates plan review and approval of the facility design by any city, county or state agency. This section only requires that a nationally recognized fire prevention code and life safety code be used and that the State Fire Marshal inspect the facility prior to granting of a certification of building occupancy. If passed, this means that plans for these highly sophisticated and technical buildings will not be examined by a third party for code compliance. In addition, this section would not require visual inspection of critical construction elements, like foundation, mechanical, electrical, and plumbing connections, before they are covered during construction.

**New Section 17**, also on page 16, eliminates the procedures used for the design and construction of all state buildings. For those of you who are not familiar with the procurement of architectural services for the design and construction of buildings, I would like to walk you quickly through the process.

75-1250 **“State policy.** The legislature hereby declares it to be the policy of this state to announce publicly all requirements for architectural services, and to negotiate contracts for architectural services on the basis of demonstrated competence and qualification for the type of professional services required and at fair and reasonable prices.”

All architectural projects are advertised by listing a “Notice of Commencement of negotiations for architectural services” in the *Kansas Register*. Firms seeking consideration on the project will submit the required information to DFM. These are then forwarded to the State Building Advisory Commission. This commission is made up of seven individuals; the chair of the commission is the Secretary of Administration or their designee; the dean or head of the architecture program at KU or K-State (who serve rotating 2-year terms) with the remaining five members being appointed by the governor. After looking at the submitted information, the advisory committee selects up to five firms it believes to be qualified for the project and recommends them to the Negotiating Committee for interview. The negotiating committee is made up of a representative from DFM, the agency or institution for which the construction will be provided and the state agency that supervises the operations and management of the institution

for which the building is being designed.

The negotiating committee ranks the firms and commences negotiations with their first choice. These negotiations include discussions on the project requirements and the fee required by the architect and their design team to do the work. If the negotiating committee cannot reach an agreement, the committee terminates their discussions and begins negotiations with their second choice firm.

Our other major concern in this legislation is the elimination of the services provided by DFM. The Division of Facilities Management provides these services:

- Announcement of projects
- Negotiation of services and fee for architect and design team (as stated above)
- Development and execution of contracts for design and construction
- Development, management and oversight of the policies and procedures for design and construction
- Code administration, review and inspection for design and construction
- Coordination between the agencies, institutions, design team and construction team

Each new building, even the most modest, is a once in-a-lifetime creation. The more complex the building is, the more we need to follow proven methods for their design and construction. Bioscience facilities are very complex projects that will require architects and engineers with the necessary qualifications to design them.

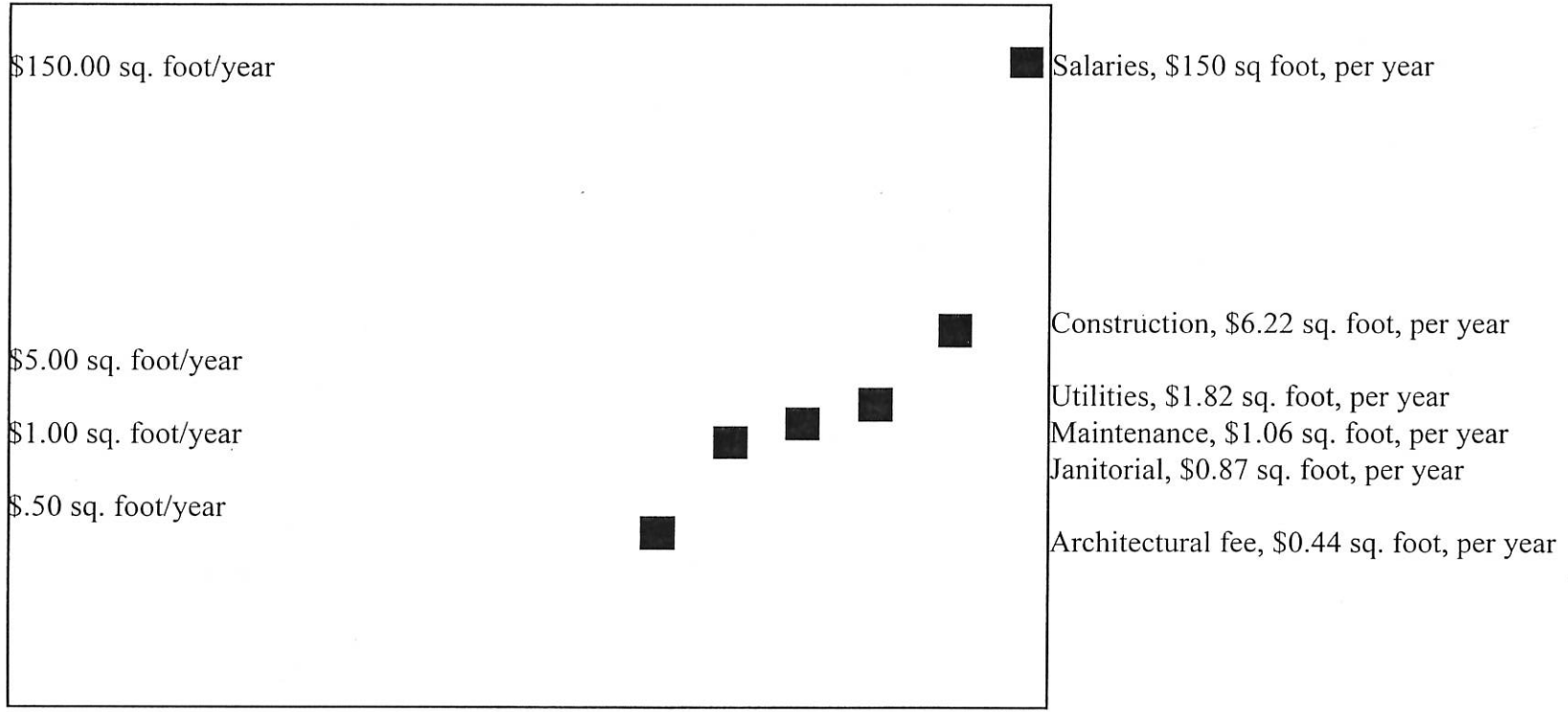
The legislature rejected similar language in the Regents Corporation bill, HB 2690 passed in 2002, for the three research facilities they are now undertaking. Those in this body then did not think that one entity should have complete control of the design; construction; code compliance; and administration of all aspects of these extraordinarily complex and sophisticated buildings. We urge you to reject these sections of the bill.

On the next page, I have attached a graph that demonstrates the typical costs of a building during a 30-year lifespan. The decisions made when buildings are designed and constructed have the most impact on the future costs of those buildings. Design decisions affect the construction methods, the energy costs, the janitorial and maintenance expenses and the performance of the building occupants.

Thank you. I'll be glad to answer any questions you may have.

# Life-Cycle Cost of a Building

(30 years)







Affiliated with:

American Council of Engineering Companies  
Kansas Society of Professional Engineers  
National Society of Professional Engineers  
Professional Engineers in Private Practice

TESTIMONY ON HB 2647  
SENATE COMMERCE COMMITTEE  
MARCH 16, 2004  
SCOTT HEIDNER  
KANSAS CONSULTING ENGINEERS

Good morning Chairman Brownlee and members of the committee. My name is Scott Heidner; I am the Executive Director of the Kansas Consulting Engineers, or KCE. KCE is an organization of private engineering companies in the state of Kansas. We have approximately 60 member companies, with several thousand employees in Kansas.

KCE is supportive of the development of biosciences in Kansas, and supportive of the intent of HB 2647. I have been impressed over the last several weeks hearing testimony on the potential this bill for both economic and educational development in Kansas. It is not the intent of KCE to stand in the way of this endeavor.

However, there are two specific sections in the bill which cause great concern, Sections 16 and 17. These sections exempt the act from many state statutes. Of particular concern to KCE are the provisions relating to the procurement of architectural and engineering services. The current state statutes have been in place for almost 40 years and mirror the law that exists at the federal level. These laws are in place to insure that when the state procures professional services of a technical nature, it makes a selection based primarily on qualifications.

Under the current state system, the top three to five firms are put on a list and ranked. Negotiations on price then take place with the top ranked firm. If a price cannot be agreed to, then negotiations are terminated with that firm, and commence with the second ranked firm. This process continues until price is agreed upon.

There are two common concerns with this system. The first is that the state will end up paying a higher price for these services if they don't include price as part of the initial selection process. This actually proves to be the opposite of what really happens. A flaw in design work can result in a tremendous cost later in the project when corrections have to be made, change orders increase, and design work has to be redone. States that have gone away from the type of qualifications based selection in use under Kansas and federal law have ended up coming back to this system due to the costs incurred under the bid based systems. Design work is a very small part of the overall cost of a project, but can lead to the most expensive mistakes if not done correctly.

The second common concern with the current system is that it results in unfair selection processes, where an owner gets to choose a firm, and the amount paid for the firm's services,

Scott Heidner, Executive Director

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Attach # 7



without any accountability. If the current system is used correctly, this simply can't happen. If you trust the selection committee that you are setting up under this act, these incidents won't happen. Any such practices that have happened in the past are a result of people *not* using the system correctly.

I would like to reiterate that it is not our intent to oppose this bill. We wish to strongly support HB 2647. However, in order to insure that the best possible procedures are used, we urge you to withdraw the language in section 16 and 17 which exempts this act from current state law. The reasons that have led Kansas to use this procurement process for two generations are all the more important on sophisticated projects like these.

Thank you for your time and attention, and I would stand for any questions.



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## March 16, 2004-Testimony HB 2647 Senate Commerce Committee Hon. Karen Brownlee, chair

Good morning, I am Kathy Ostrowski, KFL State Legislative Director, here to present testimony, and suggest amendments, for Kansans for Life. Kansans for Life does not take an official position on State economic incentive programs. However, we do have a strong position on the sanctity and dignity of life, which is pertinent to the definitions of "bioscience, biotechnology and life sciences" in House Bill 2647.

Human embryos are not mere clumps of cells, but are living, distinct human organisms, the same as you and I were at earlier stages of our lives. With the fusion of sperm and ovum, or with the coming to be of a distinct and complete (though immature) human organism either by (identical) twinning or by cloning, there is present a distinct organism which will (unless prevented) actively develop himself or herself to a more mature stage as a member of the human species. This new organism directs its own growth, coordinating from within all of its elements and forces toward his or her own survival and maturation.

For that reason, Kansans for Life would advocate amending HB 2647 to include complete state-wide bans on cloning and destructive ESC (embryonic) research, applying to all citizens and entities. Such bans won overwhelming House approval in 2002 but never were heard in the Senate. We needed to put the brakes on back then, and now even more so following the cloning claims of the Raelian cult and others. In an age where individuals find instructions in bomb-making on the Internet, can it be long before they also find bio-recipes online? Will computer hacking be eclipsed by cloning terrorism?

Kansans for Life is also concerned that the specific limits of HB 2647 be clearly laid out. Kansas should not create some authority through which our tiniest children could be destroyed for patents and profits. Unborn unused embryos are alive and we oppose experimenting on them. For the fullest protection, Kansans for Life would amend new section 3 (w), on page 4 of the substitute bill, to also prohibit the use of cells or tissues that were derived by destroying live human embryos.

We are well aware that such a prohibition is considered a "tougher" standard than President Bush announced in summer 2001. But 2004 is practically a different era as it pertains to stem cell research. Not that the average citizen would know that from media reports. Top bio-journalist Wesley Smith writes: many Americans are woefully unaware that the best opportunity to obtain regenerative medical treatments in the soonest possible time is most likely with adult stem cell therapies, not therapeutic cloning.

Attachment A to our testimony is a summary of embryonic stem cell difficulties and adult stem cell advantages. This list was created by Sen. Brownback's trusted expert, Dr. David Prentice, who was commissioned to present an extensive overview of current stem cell research to the President's Council on Bioethics this past January. Attachment B is the first page of that extensive report, and includes a reference to an admirable ongoing umbilical stem cell project at Kansas State University.

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A Hach #8

Legislators need not debate whether they can afford to do the right thing. Attachment C is a smattering of very current news stories showing that the life-protecting states are doing exceptionally well as bio-centers. Michigan, which has outlawed all human cloning and destructive embryo research, has subsequently jumped into the top 10 of states with biotech investment, and Pennsylvania, which prohibits embryo destruction, is #3 in states with biotech investment.

[<http://www.usccb.org/prolife/issues/bioethic/embryo/growth11404.htm>]

Unfortunately, some statehouses are being visited by lobbyists for the biotech industry, urging laws that sacrifice tiny human lives in the interests of pseudo-science -- and profits. A lobbying group, known as the Biotechnology Industry Organization or BIO, is working for the legalization of human cloning for research in five states. Two other states, California and New Jersey, have already approved similar anti-life measures. "BIO is pushing in many states for legislation to legitimate the use of cloning to establish human embryo farms, and beyond that, the growing of cloned human fetuses to produce body parts," said Douglas Johnson, legislative director of the National Right to Life Committee.

BIO has spent \$12.7 million lobbying Congress and the Executive Branch since 1999, and helped to block federal legislation, passed in the House, that would ban human cloning for "therapeutic purposes." In so-called "therapeutic" cloning, a human being is created so that his or her stem cells can be harvested for research. The tiny human is then killed.

The biotech organization and its state affiliates have also pressured state legislatures to approve measures to legalize embryonic stem cell research, allow the sale of fetal body parts, and permit clone-and-kill techniques for questionable medical research. The biotech industry claims that therapeutic cloning could be used to cure diseases such as Parkinson's, Alzheimer's, juvenile diabetes, and heart damage --the claim in yesterday's Kansas City Star editorial.

[<http://www.kansascity.com/mld/kansascitystar/news/opinion/>]

However, initial trials have proven disastrous, and a number of scientific experts believe that research involving adult stem cells, which does not involve the destruction of human life, holds much greater promise. If this were a ball game, the private bio-investors scoreboard reads a big Zero for successes from ESC in humans, and now they demand more money --this time from taxpayers.--to attract some "big hitter" scientists with the promise that there won't be any rules or referees to obey. Well that scenario just played out at Harvard and they still didn't hit a homerun.

Unfettered research dollars went to Dr. Douglas Melton at Harvard from the Juvenile Diabetes Research Foundation, to find new embryonic stem cell lines to cure diabetes, an ailment Melton's son suffers from. 344 humans were destroyed to produce 17 new lines of human embryonic stem cells. However, "the new cell lines are as useless for therapies as the old ones," says Richard Doerflinger Associate Director for Policy Development for the United States Catholic Bishops.

In a detailed report, Melton and his fellow researchers "admit that their cell lines accumulate chromosomal abnormalities in culture, and that the abnormal cells grow much faster than the normal ones -- the implication being that these new cell lines may soon be completely taken over by abnormal, potentially cancerous cells." (see Attachment C) This has been the story of ESC failures time and time again -- uncontrollable and abnormal growth.-- yet Harvard and other academic institutions defiantly plan to establish their own embryonic stem cell institutes..



Presumably, these Harvard researchers are the very kind of “rising stars” that Kansas has been warned will not tolerate any legal limitations on their human experimentation. Who needs that? Without the amendment to HB 2647 suggested by Kansans for Life, taxpayer money could well be pumped into scientists' labs, without saving any lives. Frankly, outside the ethical issue, money going to ESC takes money away from the truly promising research, involving adult stem cells and umbilical cord stem cells-- the cells that show real promise and are already successfully treating patients for the diseases.

Only adult stem cells have been scientifically proven to repair heart tissue, put leukemia into remission, cure sickle cell anemia, and limit the effects of other diseases. The states that stay “true” to the defense of life, do not clone or do destructive ESC, and enjoy economic success. If Kansas joins them she can become a successful bio-center without “Nuremberg” regrets.

Attachment A-Dr. Prentice listing:ESC problems, adult cell benefits

Attachment B-Dr. Prentice overview article for President’s Council on BioEthics

Attachment C-Six news stories, some edited



## Attachment A- Kansans for Life- testimony to HB 2647- March 16, 2004

### Current or potential EMBRYONIC stem cell PROBLEMS:

- **Difficult to establish and maintain**
- **Difficulty in obtaining pure cultures in the dish**
- **Questions regarding functional differentiation**  
Sipione S *et al.*, "Insulin expressing cells from differentiated embryonic stem cells are not beta cells", *Diabetologia* published online 14 Feb 2004; doi:10.1007/s00125-004-1349-z  
Rajagopal J *et al.*; "Insulin staining of ES cell progeny from insulin uptake"; *Science* 299, 363; 17 Jan 2003 Zhang YM *et al.*; "Stem cell-derived cardiomyocytes demonstrate arrhythmic potential"; *Circulation* 106, 1294-1299; 3 September 2002
- **Problem of immune rejection**
- **Potential for tumor formation and tissue destruction**  
Wakitani S *et al.*; "Embryonic stem cells injected into the mouse knee joint form teratomas and subsequently destroy the joint"; *Rheumatology* 42, 162-165; January 2003
- **Genomic instability**  
Cowan CA *et al.*, "Derivation of embryonic stem-cell lines from human blastocysts", *New England Journal of Medicine* 350, 13; published online 3 March 2004  
Draper JS *et al.*, "Recurrent gain of chromosomes 17q and 12 in cultured human embryonic stem cells", *Nature Biotechnology* 22, 53-54; January 2004  
Humpherys S *et al.*; "Epigenetic instability in ES cells and cloned mice"; *Science* 293, 95-97; 6 July 2001
- **Few and modest successes in animals, no clinical treatments**
- **Ethically contentious**

### Current Clinical USES of ADULT Stem Cells

- **Cancers**—Lymphomas, multiple myeloma, leukemias, breast cancer, neuroblastoma, renal cell carcinoma, ovarian cancer
- **Autoimmune diseases**—multiple sclerosis, systemic lupus, rheumatoid arthritis, scleroderma, scleromyxedema, Crohn's disease
- **Anemias** (incl. sickle cell anemia)
- **Immunodeficiencies**—including human gene therapy
- **Bone/cartilage deformities**—children with osteogenesis imperfecta
- **Corneal scarring**—generation of new corneas to restore sight
- **Stroke**—neural cell implants in clinical trials
- **Repairing cardiac tissue after heart attack**—bone marrow or muscle stem cells from patient
- **Parkinson's**—retinal stem cells, patient's own neural stem cells, injected growth factors
- **Growth of new blood vessels**—e.g., preventing gangrene
- **Gastrointestinal epithelia**—regenerate damaged ulcerous tissue
- **Skin**—grafts grown from hair follicle stem cells, after plucking a few hairs from patient
- **Wound healing**—bone marrow stem cells stimulated skin healing

Quote from a supporter of ES cell research: "[Robert] Lanza noted 'there is ample scientific evidence that adult stem cells can be used to repair damaged heart or brain tissue... if it works, it works, regardless of the mechanism,' he said." "Study casts doubt on adult stem cells", Steve Mitchell, UPI; 12 October 2003



**Attachment B- Kansans for Life testimony on HB 2647- March 16, 2004**  
*selection from paper commissioned by*

The President's Council on Bioethics  
Washington, D.C. [www.bioethics.gov](http://www.bioethics.gov)  
January 2004

## **Appendix K Adult Stem Cells**

**DAVID A. PRENTICE, PH.D.**

Professor of Life Sciences at Indiana State University, Terre Haute, Indiana

**Within just a few years**, the possibility that the human body contains cells that can repair and regenerate damaged and diseased tissue has gone from an unlikely proposition to a virtual certainty. **Adult stem cells have been isolated from numerous adult tissues, umbilical cord, and other non-embryonic sources**, and have demonstrated a **surprising ability for transformation into other tissue and cell types and for repair of damaged tissues**. This paper will examine the published literature regarding the identity of adult stem cells and possible mechanisms for their observed differentiation into tissue types other than their tissue of origin. Reported data from both human and animal studies will be presented on the various tissue sources of adult stem cells and the differentiation and repair abilities for each source, especially with regards to current and potential therapeutic treatments.

**Adult stem cells have received intense scrutiny** over the past few years due to surprising discoveries regarding heretofore unknown abilities to form multiple cell and tissue types, as well as the **discovery of such cells in an increasing number of tissues**. The term "adult stem cell" is somewhat of a misnomer, **because the cells are present even in infants and similar cells exist in umbilical cord and placenta**. More accurate terms have been proposed, such as tissue stem cells, somatic stem cells, or post-natal stem cells. However, because of common usage this review will continue to use the term adult stem cell.

This paper will review the literature related to adult stem cells, including current and potential clinical applications (with apologies to the many who are not cited, due to the exponential increase in papers regarding adult stem cells and the limitations of this review.) The focus will be on human adult stem cells, but will also include results from animal studies which bear on the potential of adult stem cells to be used therapeutically for patients...

**Regeneration or replacement of dead or damaged cells is the primary goal of regenerative medicine and one of the prime motivations for study of stem cells**. It is thus of significant interest that bone marrow stem cells have shown the ability to produce therapeutic benefit in animal models of stroke. In mice, fluorescence-tracked bone marrow derived stem cells expressed neuronal antigens and also incorporated as endothelial cells, possibly producing therapeutic benefit by allowing increased blood flow to damaged areas of the brain.  
...

*later on in paper, one area of NON-embryonic stem cell research at **K-State University**:*

**UMBILICAL CORD MESENCHYME (WHARTON'S JELLY)** While most of the focus regarding umbilical cord stem cells has focused on the cord blood, there are also reports that the matrix cells from umbilical cord contain potentially useful stem cells. Using pigs, this matrix from umbilical cord, termed Wharton's jelly, has been a source for isolation of mesenchymal stem cells. The cells express typical stem cell markers such as c-kit and high telomerase activity, have been propagated in culture for over 80 population doublings, and can be induced to form neurons *in vitro*.<sup>175</sup> When transplanted into rats, the cells expressed neuronal markers and integrated into the rat brain, additionally without any evidence of rejection.<sup>176</sup>

*Entire paper available at [http://bioethics.gov/reports/stemcell/appendix\\_k.html](http://bioethics.gov/reports/stemcell/appendix_k.html)*



## **Harvard-Created Embryonic Stem Cells No Better than NIH Lines**

by Steven Ertelt, *LifeNews.com* Editor

March 8, 2004

**Boston, MA (LifeNews.com) -- Earlier this month, Harvard researchers made 17 embryonic stem cell lines available to scientists worldwide.**

The announcement was heralded as a breakthrough by cloning advocates, in part because many of the stem cell lines currently available to use from the National Institutes of Health may be unusable. However, it appears the Harvard-created embryonic stem cells are not any better -- making claims that they will provide cures for a plethora of diseases dubious at best.

The stem cell lines that qualify for limited federal funding are fewer in number than researchers previously thought. In addition, developing therapies for patients from the NIH stem cell lines may also prove difficult since they were made using mouse feeder cells and bovine serums. Dr. Leonard Zon, president of the International Society for Stem Cell Research, hailed the Harvard announcement saying that the cell lines will be more useful for scientists than the ones currently available. Daniel Perry, President of the Coalition for the Advancement of Medical Research agreed, saying the "new cell lines will begin to fill the unfortunate void created by a restrictive federal policy, which has left the NIH with less than fifteen usable lines to offer researchers."

But, the new cells Harvard researcher Dr. Douglas Melton created are also grown in mouse feeder cells and would have the same problems, Richard Doerflinger of the U.S. Conference of Catholic Bishops told LifeNews.com. Doerflinger says

**Melton and his fellow researchers, in a scientific paper accompanying the announcement, "admit that their cell lines accumulate chromosomal abnormalities in culture, and that the abnormal cells grow much faster than the normal ones -- the implication being that these new cell lines may soon be completely taken over by abnormal, potentially cancerous cells."**

**"[T]he new cell lines are as useless for therapies as the old ones,"** Doerflinger says.

That flies in the face of Melton's claims that the destruction of human embryos was justified because the embryonic stem cell lines could produce a cure for diabetes, an ailment his son suffers.

This has led some scientists to say that Melton's announcement is a largely symbolic protest against President Bush's August 2001 policy of preventing federal taxpayer funding of any new embryonic stem cell research.

**"They killed 344 fellow human beings for a largely 'symbolic' statement,"** Doerflinger said.

Harvard is just one of a growing number of academic institutions that has either established or has plans to establish its own embryonic stem cell institute and is pressuring President Bush to make embryonic stem cell lines eligible for federal funding, even though scientific evidence is clearly on the side of adult stem cell research

Only adult stem cells have been scientifically proven to repair heart tissue, put leukemia into remission, cure sickle cell anemia, and limit the effects of other diseases.

"Destroying human life is never necessary to cure a disease or illness," says Tony Perkins president of the Family Research Council. "And our taxpayer dollars should never be used to destroy human embryos."

Harvard University, the Juvenile Diabetes Research Foundation and the Howard Hughes Medical Institute, a medical research organization, put up the funding to create the embryonic stem cell lines.



## **Biotech Industry Pushes Hard for Human Cloning, Embryonic Stem Cells**

*by Maria Gallagher, LifeNews.com Staff Writer*

*March 5, 2004*

**Washington, DC (LifeNews.com) -- Beware: lobbyists for the biotech industry could be showing up at a statehouse near you, trying to push legislation that will sacrifice tiny human lives in the interests of pseudo-science -- and profits.**

That is the conclusion of a special report by researchers at the Center for Public Integrity, a non-profit organization which specializes in investigative research. The Center notes that the biotech industry has helped to block federal legislation that would ban human cloning for "therapeutic purposes." In so-called "therapeutic" cloning, a human being is created so that his or her stem cells can be harvested for research. The tiny human is then killed.

**The industry's lobbying group, known as the Biotechnology Industry Organization or BIO, is now pushing for the legalization of human cloning for research in five states. Two other states, California and New Jersey, have already approved similar anti-life measures.** "The Biotechnology Industry Organization is pushing in many states for legislation to legitimate the use of cloning to establish human embryo farms, and beyond that, the growing of cloned human fetuses to produce body parts," said Douglas Johnson, legislative director for National Right to Life.

"They also want state taxpayers to pay the costs of developing their human cloning industry. This is why U.S. Senators must be pressed to act on the Brownback-Landrieu bill to ban all human cloning, which has already passed the U.S. House, and which President Bush supports," Johnson added.

**BIO has spent \$12.7 million lobbying Congress and the Executive Branch since 1999, according to the Center. The biotech organization and its state affiliates have also pressured state legislatures to approve measures to legalize embryonic stem cell research, allow the sale of fetal body parts, and permit clone-and-kill techniques for questionable medical research.**

At times, the BIO backs bills that outlaw reproductive cloning, however, the group is determined to enact legislation permitting therapeutic cloning. Such cloning experiments are no longer limited to science fiction. In February, a pair of South Korean scientists announced that they had successfully cloned human beings and extracted stem cells from one of them.

**The biotech industry claims that therapeutic cloning could be used to cure diseases such as Parkinson's and Alzheimer's. However, initial trials have proven disastrous, and a number of scientific experts believe that research involving adult stem cells, which does not involve the destruction of human life, holds much greater promise.** A number of Congressional representatives want to regulate cloning research. In fact, since 1997, more than forty bills have been introduced in the U.S. House of Representatives and Senate to ban or regulate cloning research.

However, while there is almost universal support for banning reproductive cloning, or cloning which results in the delivery of a full-term baby, there is division in Congress about whether to allow clone-and-kill research. State legislatures have also been scrambling to deal with the human cloning issue. Legislative bodies in the U.S. have considered nearly 100 bills on cloning over the past two years, according to the National Conference of State Legislatures, which tracks legislation in the states.



Part of the biotech industry's strategy appears to be to attempt to sell clone-and-kill research as a way to create jobs. **States are told that they'll suffer serious economic consequences if they don't boost the biotech business.**

In 2002, California became the first state in the nation to legalize therapeutic cloning. The Sunshine State's controversial stand ushered in a new wave of biotech lobbying activity. A study by the Massachusetts Biotechnology Council offered this ominous warning: "Competition for biotech jobs is getting tougher as rival states such as California and North Carolina, often with strong state-government support, organize to attract companies and jobs." The study urged Massachusetts to enact legislation that it said would "enable life-sciences organizations to operate and innovate within a clear and predictable framework."

**The anti-life California law has inspired copycat legislation in Massachusetts, Illinois, Maryland, New York, and Washington. The preamble in all the bills states, "An estimated 128 million Americans suffer from the crippling economic and psychological burden of chronic, degenerative, and acute diseases, including diabetes, Parkinson's disease, cancer, and Alzheimer's disease."**

And there is more evidence that the biotech industry is basically writing the therapeutic cloning bills which are introduced in state legislatures. For instance, the beginning of New Jersey's Stem Cell Research law is nearly identical to the California legislation. But pro-life advocates say the New Jersey law ultimately went much further, becoming the worst cloning law in the nation.

The New Jersey legislation, signed by Gov. Jim McGreevey, authorizes "research involving the derivation and use of human embryonic stem cells, human embryonic germ cells, and human adult stem cells, including somatic cell nuclear transplantation." Somatic cell nuclear transplantation is just another way of describing cloning. The New Jersey law also allows the sale of embryonic and fetal material for "reasonable payment," thereby promoting the trafficking of human body parts. The law purportedly bans reproductive cloning, which is defined as the "replication of a human individual by cultivating a cell with genetic material through the egg, embryo, fetal and newborn stages into a new human individual."

However, pro-life groups noted that the bill's fuzzy language and questionable safeguards could permit not only the cloning of an embryo, but the implantation of the embryo as well. As a result, New Jersey Right to Life, the Catholic Bishops of New Jersey, and members of the President's Council of Bioethics all opposed the bill.

Two New Jersey lawmakers, Charlotte Vandervalk and Samuel D. Thompson, noted that there appeared to be **"undue haste in releasing the bill without taking time to give full consideration to the practical and ethical questions."**

The lawmakers noted that there were a number of problems with the bill, including "the potential that this bill creates for the forced abortion of cloned embryos...the potential for medical abuses and exploitation of women and children; and the creation of a new class of human—one designated for the purpose of experimentation." New Jersey hosts some of the largest biotech companies in existence, including Merck & Co. and Johnson & Johnson.

The primary aim of the New Jersey legislation appears to be to enhance the biotech industry. The law itself proclaims, "The biomedical industry is a critical and growing component of New Jersey's economy, and would be significantly diminished by limitations imposed on stem cell research." In other words, say pro-life lawmakers, the bottom line appears to be money, not health.

**Other states, however, have taken a different course, banning both therapeutic and reproductive cloning. Iowa, Arkansas, Michigan, and North Dakota have all given the boot to the biotech industry with legislative bans.**

<http://www.lifenews.com/bio231.html>

# Legislature drops stem cell support

By Scott S. Greenberger, Globe Staff, 11/25/2003 (excerpt)

**A measure promoting cutting-edge stem cell research in Massachusetts was stripped from the economic stimulus bill the Legislature approved late last week, handing a victory to the Catholic Church as it readies for a much larger battle over the effort to allow gay marriage in the Commonwealth.**

The provision was billed as a key piece of an economic growth package backed by Senate President Robert E. Travaglini and the state's biotechnology industry, but it ran into a strong lobbying campaign by the church and social conservatives who saw it as **violating the sanctity of life**. "We certainly were very concerned about that language and I know that people from around the country were concerned as well," said Daniel Avila of the Massachusetts Catholic Conference, which lobbies for the church and fought against the stem cell provision.

**"We spread the word. We were particularly concerned that the scientific and philosophical issues were being dominated by those in the biotech industry who see economic value in doing research in a destructive way on human embryos."**

**Rather than providing money to stem cell researchers, the provision expressed the Commonwealth's support for the research, aiming to give biotechnology companies the confidence to remain in Massachusetts rather than decamping for other states.**

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## State legislation may jeopardize life sciences gains

Lola Butcher, Staff Writer(excerpt) March 5, 2004 [The Business Journal of Kansas City](#)

Even as Missouri and Kansas try to woo the big-name researchers needed to win the life sciences game, another field of competition is emerging on the horizon. **A few states, including some of the leaders in life sciences research, have passed laws legalizing stem cell and fetal-cell research.** Missouri and Kansas, meanwhile, face legislative proposals that may limit it.

In Missouri, Sen. Matt Bartle, R-Lee's Summit, and Rep. Jim Lembke, R-St. Louis, each have introduced bills that would ban human cloning. **But the real matter at hand, Lembke said, is not reproductive cloning, but rather "therapeutic cloning," which involves moving a cell nucleus and its genetic material from one cell to another.** "I believe this is the human rights issue of our day," said Lembke, whose bill has 102 co-signers. "We have the votes in both the House and the Senate, if we can get a vote on the floor." In Kansas, the economic development proposal to create a biosciences authority -- and generate about \$500 million in life sciences financing in the next 15 years -- that won House approval Feb. 27 included an amendment that limits research in a different way.

**In that proposal, fetal tissue from induced human abortions could not be used for research conducted under the umbrella of the biosciences authority. Further, if the federal government eventually broadens its approval of federally financed therapeutic stem cell research, the Kansas biosciences authority will not go along.**

Reggie Robinson, president and CEO of the Kansas Board of Regents, said the restrictions are unacceptable because they might curtail the work of some current Kansas researchers and "would send a negative message to the very highly sought-after people we are trying to attract."

*Reach Lola Butcher at 816-421-5900 or [lbutcher@bizjournals.com](mailto:lbutcher@bizjournals.com)*



# Midwest Plays Gracious Host to Biotech Field

By P.J. Huffstutter, L.A. Times Staff Writer  
(excerpt)

March 8, 2004

**Like the heady days of the dot-com boom, biotechs hold the promise of big returns on big dreams.** It's an appealing pitch to many states in the Midwest, which is hungry for ways to shore up dwindling populations, boost depressed agriculture-based economies and bounce back from the bust in information technologies.

Minnesota lost more than 10,000 high-tech jobs from 2001 to 2002, while Wisconsin watched an estimated 5,700 positions evaporate, according to a recent report from the American Electronics Assn. South Dakota lost 12% of its jobs, dropping from 11,000 positions to 9,700. Nationwide, high-tech industries dropped 540,000 jobs, falling 8% during that time. But while the stock market was slumping in many other areas, biotech stocks were on the rise. The market value of the entire industry reached more than \$300 billion last year, according to industry analysts, who **attribute the boom in part to the Food and Drug Administration approving several cancer drugs.**

In South Dakota and in many other states, universities are gearing up to train what they hope will be a flood of young, bright biotech students — bioengineers, biochemists and geneticists — eager to launch companies locally or work for biotech firms that relocate to their area. **The reality is that many biotech companies run out of funding far before they deliver an approved product — and most never turn a profit.**

**"If you're in the drugs and pharmaceutical space, which is where much of this business is, it can take as much as 12 to 14 years** to get to a point where you have a product to sell," said Walt Plosila, vice president of the research firm Battelle Memorial Institute in Columbus, Ohio. "There will be a lot of money spent with no profit for a long time. And everyone wants the home run. Clearly, not everyone is going to get it." That hasn't stopped the investing craze among government agencies nationwide.

**Iowa** has set aside about \$503 million for economic development of biotechnologies, including a \$205-million chunk aimed specifically at start-ups and life sciences infrastructures.

**Arizona** has spent about \$140 million to build a biotechnology sector, including setting aside 24 acres of land and a \$30-million promise to back the International Genomics Consortium. The consortium plans to create a standard for collecting cancer data and a central database for medical researchers.

**In Missouri**, investors in St. Louis have raised nearly \$285 million in venture capital for biotech efforts, nailed down funding for a new and private academic research center and built two start-up business parks

Last fall, **Florida** Gov. Jeb Bush enticed San Diego-based Scripps Research Institute with more than \$500 million in state and local funds to set up an extension laboratory facility in West Palm Beach.

## **In fact, 41 states had some sort of biotech initiative in place in 2002 —**

ranging from modest proposals to plans to spend hundreds of millions of dollars to attract companies, according to a report by the Biotechnology Industry Organization, an industry trade group.

California is the leader in the nation's biotech race and has an estimated 450 publicly traded firms. That is double the number in Massachusetts, the state with the second-largest collection of biotech firms. In the Midwest, there are less than 15 publicly traded biotech companies and only 1,500 workers at these firms.

Eager to change that status, several Midwestern states sent emissaries last summer to an annual trade show hosted by the Biotechnology Industry Organization. Governors and political figures from nearly a dozen states — including Iowa, Kentucky, Missouri and Wisconsin — attended the event and began wooing companies on the showroom floor.

**"Biotech is a promising area, and everyone wants to be part of it,"** said Kansas Lt. Gov. John Moore. **"The difference, I hope, is that states are becoming smarter in the types of companies that they try to attract."**

<http://www.latimes.com/news/nationworld/nation/la-na-biotech8mar08,1,1864088.story>

## **Juvenile Diabetes Group Claims Conservatives Back Embryonic Stem Cell Research**

by Steven Ertelt, *LifeNews.com* Editor

March 12, 2004

New York, NY (*LifeNews.com*) -- The Juvenile Diabetes Research Foundation today released results of a poll that it says shows a majority of conservative Americans support destructive embryonic stem cell research. However, other polls show that's not the case. JDRF claims most Americans back the controversial research, and the group commissioned a poll of 600 self-identified conservative voters to attempt to show that such support crosses ideological lines. The JDRF poll found that 56 percent of conservative voters "support medical research using cells from frozen embryos in fertility clinics" while 36 percent of self-described conservatives opposed it. But of those conservatives who felt most strongly about the issue, support for the research dropped to 34 to 28 percent margin.

### **Pro-life groups discount the results saying that other polls show most Americans oppose embryonic stem cell research and favor more ethical alternatives using adult stem cells.**

For example, a May 2002 Gallup Poll found that by 61 to 34 percent, Americans oppose the "cloning of human embryos for use in medical research." "That is why pro-cloners have stopped using the c-word and now refer to experimental cloning as somatic cell nuclear transfer," Wesley Smith, an attorney who is a leading monitor of bioethics issues, has said.

"Polls sponsored by groups promoting destructive embryo research claim to show broad support for their agenda," says Richard Doerflinger, Associate Director for Policy Development at the NCCB Secretariat for Pro-Life Activities. The Juvenile Diabetes Research Foundation recently provided significant funding to Harvard researcher Dr. Douglas Melton who destroyed nearly 350 human embryos to create 17 embryonic stem cell lines. "This is what pollsters call a "push poll," in which you determine the answer by the way you frame the question," Doerflinger added. President Bush announced his policy of prohibiting taxpayer funding of any new embryonic stem cell research in August 2001. That essentially shut down most funding of such research since only a few usable embryonic stem cells lines existed at the time.

When asked in the JDRF poll if the policy on embryonic stem cell research in the U.S. should be broadened, contracted, or remain the same, (44%) said it should be broadened while (23%) said it should remain the same or be contracted (23%). JDRF claims the poll results shows support for expanding funding for the destructive research. But with 23 percent of conservatives in the JDRF poll supporting Bush's limitation and another 23 percent wanting even stricter standards, a majority (46 percent) appears to generally oppose funding embryonic stem cell research.

"Most Americans do not want to pay their tax dollars for research that requires destroying live human embryos for their cells, when their funds can be used instead for promising research and treatments that pose no moral problem," Doerflinger explained. "But that is not a question you will see in a JDRF poll."

Pro-life groups also point to other polls that show different results. A poll commissioned by the U.S. Conference of Catholic Bishops, found that Americans oppose federal funding of stem cell research that requires destroying human embryos, by a factor of almost three to one (70% to 24%).

Asked to choose between funding all stem cell research (both adult and embryonic), and funding only adult stem cell research and similar alternatives to see if there is no need to destroy embryos for research, Americans prefer the latter approach by an even wider margin (67% to 18%).

Meanwhile, a poll of Canadians in October 2003 found that they prefer adult stem cell research to using cells obtain by destroying human embryos. The poll, commissioned by the pro-life group LifeCanada, found that 70 percent of Canadians favored more ethical alternatives. Only 21% thought it was acceptable to use embryonic stem cells. Related web sites: Catholic bishops poll - <http://www.nccbuscc.org/comm/archives/2001/01-101.htm>



**Estimated Bioscience Employees at State Universities in Kansas (number of jobs associated with biosciences)**

12/03

Research Institution	Estimated Bioscience Employees
University of Kansas-Lawrence	3,106
University of Kansas-Medical Center	2,666
Kansas State University	2,513
Wichita State University	102
Pittsburg State University	43
Emporia State University	23
Fort Hays State University	22
Washburn University	15
<b>Totals</b>	<b>8,490</b>
<b>University of Kansas-Lawrence*</b>	<b>Number Employees</b>
Tenure or tenure-track faculty	359
Research scientists	122
Post doctoral scientists	99
Professional staff	611
Classified staff	211
Graduate teaching assistants	260
Graduate research assistants	393
Undergraduate student assistants	658
Adjuncts, courtesy, visiting scholars, etc who are employed in research or research support roles.	393
<b>Total</b>	<b>3,106</b>
<b>University of Kansas-Medical Center*</b>	<b>Number Employees</b>
Tenure/Tenure Track Faculty	347
Research Faculty	71
Clinical Faculty(Clinical Title and Regents Clinical Contract)	269
Other Faculty (Adjunct, part-time, etc.)	57
Post Doctoral Fellows(Post Doctoral Research Fellows and Post Residency Clinical Fellows)	61
Medical Residents	402
Graduate Assistants	108
Professional Staff	854
Classified Staff	487
Other Staff (Mostly medical staff paid by KUMC - such as Physical Therapists, Occupational Therapists etc.)	10
<b>Total</b>	<b>2,666</b>
<b>Kansas State University*</b>	<b>Number of Employees</b>
Faculty, tenure/tenure track	417
Research scientists	31
Postdocs	11
Unclassified professional staff	354
Classified staff	285
Graduate teaching assistants	110
Graduate research assistants	341
Undergraduate student assistants	840
Adjuncts, etc.	124
<b>Total</b>	<b>2,513</b>
<b>Wichita State University*</b>	<b>Number Employees</b>
Tenure or tenure-track faculty	26
Post doctoral scientists	3
Professional staff	8
Classified staff	4
Graduate teaching assistants	17
Graduate research assistants	29
Undergraduate student assistants	15
<b>Total</b>	<b>102</b>
<b>Pittsburg State University*</b>	<b>43</b>
<b>Emporia State University**</b>	<b>23</b>
<b>Fort Hays State University**</b>	<b>22</b>
<b>Washburn University**</b>	<b>15</b>

\* Estimated employee numbers provided by institution

\*\* Estimated employee numbers based on Web research

Senate Commerce  
03/16/04  
Attach #9





*The Historic Lackman-Thompson Estate*

11180 Lackman Road  
Lenexa, KS 66219-1236  
913.888.1414  
Fax 913.888.3770

TO: Senator Karin Brownlee, Chairperson  
Senator Nick Jordan, Vice-Chairperson  
Members, Senate Commerce Committee

FROM: Blake Schreck, President  
Lenexa Chamber of Commerce

DATE: March 12, 2004

RE: **Support for HB 2647—Kansas Bioscience Authority  
and Development Act**

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The Lenexa Chamber of Commerce would like to express its strong support for the concepts embodied in House Bill (HB) 2647, which would create a new statewide bioscience authority, fund new programs that support bioscience research and development, enhance bioscience commercialization infrastructure, and provide incentives to encourage bioscience companies to locate and expand operations in Kansas.

**The emerging bioscience industry is already an important contributor to the Kansas economy.** Kansas received more than \$140 million in federal bioscience research and development funds in FY 2000 – 30<sup>th</sup> among all states. By January 2004, more than 20,000 Kansans held bioscience-related jobs, employed either as researchers and support staff at the state's universities or as researchers, management, technicians, and support staff at one of more than 160 bioscience companies currently operating in Kansas (33 of which are located in the City of Lenexa – 1 in every 5 bioscience companies in the state.) In addition to these jobs, which often pay substantially higher salaries than positions with similar educational backgrounds in other academic fields, bioscience companies also add to the state's tax base and provide significant capital investment.

The movement to further develop bioscience technology is rapidly accelerating nationwide. In June 2002, the Brookings Institute found that biotechnology companies have grown an average of 12.3% annually, and many forecasters are predicting that bioscience will become a major focus of the U.S. economy in coming years. **Recognizing its economic value and significant growth potential, a number of states are already taking steps to ensure their ability to effectively compete for future bioscience-related opportunities.**

**To cultivate the strengths that make our state a natural fit for bioscience work and to remain a forerunner in the race to attract this important economic sector, the State of Kansas must demonstrate its serious commitment to creating a supportive**

Senate Commerce  
03/16/04  
Attach #10

**environment for the biosciences industry. By improving the technical and human infrastructure necessary to promote development and commercialization of bioscience products and services, we believe HB 2647 would send a strong pro-business message and substantially raise Kansas's competitive position in attracting unique bioscience-related opportunities across the state.**

If implemented, the 10-year plan envisioned by HB 2647 would provide the strategic funds necessary to assist key stakeholders in sharing resources and information, attract additional federal research funding, provide needed lab facilities and equipment, encourage project collaboration, facilitate the transfer of technology from research to commercial products and services, provide business assistance to start-up companies, and create incentives to recruit more bioscience-related businesses to Kansas -- **investments that will encourage new economic growth, new businesses, new jobs, and new opportunities statewide.**

These opportunities include a real chance for the Kansas City metropolitan area to expand its existing bioscience facilities and continue to build its reputation as a leader in bioscience research. In fact, the Stowers Institute for Medical Research recently announced plans to build a second campus, a 600,000 sq. ft. addition employing 225 people with an estimated economic impact of \$1.5 billion. Richard Brown, co-chairman of the Institute, said the decision to expand came as a direct result of efforts by civic leaders and lawmakers to push proposals to strengthen bioscience research. The proposals in HB 2647 are already paying dividends.

**Because it would allow all communities in Kansas the opportunity to pursue significant projects that would positively impact the state and improve the quality of life of its citizens, the Lenexa Chamber of Commerce strongly urges the committee to consider HB 2647 favorable for passage.** Thank you for your time and attention to this issue.

# KANSAS AGRIBUSINESS RETAILERS ASSOCIATION



KARA is  
*"Committed to  
Professional  
Development  
and Business  
Viability for  
the Retail Crop  
Production  
Industry"*

Statement of the  
  
Kansas Agribusiness Retailers Association

Presented to the  
  
Senate Commerce Committee

In support of  
  
House Bill 2647

Senator Karin Brownlee, Chairman

March 15, 2004

Contact:

Doug Wareham  
Senior Vice President

Kansas Agribusiness Retailers Association  
(785) 234-0463

Senate Commerce  
03/16/04  
Attach # 11



The following statement in support of House Bill 2647 is submitted on behalf of the Kansas Agribusiness Retailers Association (KARA). For more information contact Doug Wareham at (785) 234-0463.

KARA's membership includes nearly 750 agribusiness firms that are primarily retail facilities that supply fertilizers, crop protection chemicals, seed, petroleum products and agronomic expertise to Kansas farmers. KARA's membership base also includes ag-chemical and equipment manufacturing firms, distribution firms and various other businesses associated with the retail crop production industry.

Biosciences, in the form of agricultural plant biotechnology has made a dramatic impact on agriculture production in Kansas and the United States. According to a study published by University of Minnesota Professor C. Ford Runge in December of last year, four commercial biotech crops – corn, soybeans, cotton and canola-represented \$20 billion in value in the United States in 2002, half of the total \$40 billion value of the four crops. Agricultural plant biotechnology has been embraced by agricultural producers in Kansas, with 47% of our states corn production attributable to biotech varieties and nearly 90% of our soybean production attributable to biotech varieties. Cotton is a relatively new crop to Kansas, but becoming more and more prevalent, is also benefiting from biotech traits.

Attached to this statement is a copy of Professor Runge's study, entitled, "The Economic Status and Performance of Plant Biotechnology in 2003. This thorough report does an excellent job of outlining the positive impact plant biotechnology has played with respect to agricultural production, but also touches upon the economic impacts of plant biotechnology beyond the farm gate. KARA believes this legislation will position Kansas well to capture economic growth associated with advancements in agricultural biotechnology and the other segments that comprise the Biosciences industry.

In conclusion, KARA believes the benefits from this effort will go far beyond greater economic activity, including high paying jobs for Kansans and a broadening of our tax base. KARA believes this legislation will lead to better crop production tools for our farmers and ranchers, healthier foods and better medicines for Kansas consumers.

Thank you for the opportunity to submit comments in support of H.B. 2647.



# The Economic Status and Performance of Plant Biotechnology in 2003:

## Adoption, Research and Development in the United States

*December 2003*

*C. Ford Runge, Ph.D.*

Distinguished McKnight University Professor of Applied Economics and Law  
Director, Center for International Food and Agricultural Policy  
University of Minnesota

Barry Ryan, M.S.

Research Associate

Department of Applied Economics  
University of Minnesota



The study was supported by the Council for Biotechnology Information. Its results are those of the authors alone and not the University of Minnesota.

The full report can be accessed at [www.apec.umn.edu/faculty/frunge/plantbiotech.pdf](http://www.apec.umn.edu/faculty/frunge/plantbiotech.pdf).



## EXECUTIVE SUMMARY

### INTRODUCTION

Plant biotechnology in the United States is a growing industry offering remarkable economic, social and environmental opportunities in the years ahead. The adoption of biotech crops by farmers has been rapid and profitable. Progress on the research front has moved into a new phase, with biotech traits promising an increasingly wide range of consumer and environmental benefits. Plant biotech is also creating new jobs — and good jobs — beyond the farm gate. Sustaining the revolution in plant biotechnology will require a continued commitment to both public and private sector research and development.

- The purpose of this study is to put progress in plant biotechnology in context, and to appraise both its current place and likely future. It is an economic assessment of the status and performance of plant biotechnology and ongoing research and development in the United States.

- The study is focused on eight crops: corn, soybeans, cotton, rapeseed/canola, wheat, potatoes, sugar beets and rice. Given this focus it assesses four fundamental issues:

- 1) What is the current level of adoption of plant biotechnology and its value to producers and how have adoption decisions affected farm-level profits in the United States?
- 2) What are the main R&D activities in plant biotechnology, by crop and by trait, in both the private and public sector, based on available data?
- 3) What are the probable economic impacts of the technology beyond the farm gate in the creation of jobs and new economic opportunities, and what role do individual states play in value creation and research?
- 4) What is the future direction of both public and private R&D for the plant biotechnology sector?

- The 2003 levels of adoption of biotech corn, soybeans, cotton and rapeseed/canola in the U.S. were 40 percent for corn, 81 percent for soybeans, 73 percent for cotton and 70 percent for

rapeseed/canola. (See Figure 1.) All four crops have shown steady increases in adoption rates. These biotech adoption rates result directly from increases in farm-level profits. Estimates vary by crop and by area, but average profits rose from \$5 to as much as \$60 per acre for corn, on the order of \$15 per acre for soybeans and from \$15 to several hundred dollars per acre for cotton.

- The main R&D activities in plant biotechnology are conducted by large private companies such as Syngenta, Monsanto, Bayer CropScience, DuPont, Dow AgroSciences and BASF. Together, these companies spent \$2.7 billion on R&D in 2002, much of it on biotech. Scores of smaller start-ups are also engaged in the R&D process. In the public sector, research by the U.S. Department of Agriculture, land-grant universities and other academic research centers resulted in billions of dollars in additional research investment. In 2000, total U.S. public agricultural research spending was \$3.5 billion. New biotech traits are now commercialized for corn, soybeans, cotton and rapeseed/canola, especially traits conferring insect and herbicide resistance. Scores of new traits in the pipeline were field tested by both private and public institutions from 2001 to mid-2003.

- The economic impacts of plant biotechnology are also increasingly evident beyond the farm gate, and in individual states active in biotech research and development. Beyond the more than \$20 billion in biotech crops grown in 2002, new plant biotech firms and research facilities are being created throughout the U.S. Agricultural and food scientists are increasingly attracted to the biotech sector's

above average wages, and a large number of individual states are reaping the benefits of this investment and job-related economic activity.

- The future direction of both public and private research and development in plant biotechnology will affect and be affected by producers, the input supply industry, private research and development investments, educational and research institutions, the federal government and increasingly consumers.

### CURRENT ADOPTION, VALUE AND PROFITABILITY

- The growth of value and benefits of plant biotechnology explain producer demand for biotech varieties in the U.S. Adoption rates for corn rose from 4 percent of corn acres in 1996 to 40 percent in 2003, worth \$7 billion in 2002. Biotech soybeans rose from 9 percent of planted soybean acres in 1996 to 81 percent in 2003, worth \$11 billion in 2002. Biotech cotton rose from 17 percent of planted cotton acres in 1996 to 73 percent in 2003, worth \$2.7 billion in 2002. Biotech rapeseed/canola accounted for 70 percent of all acres planted in 2003, worth \$115 million in 2002. All told, over

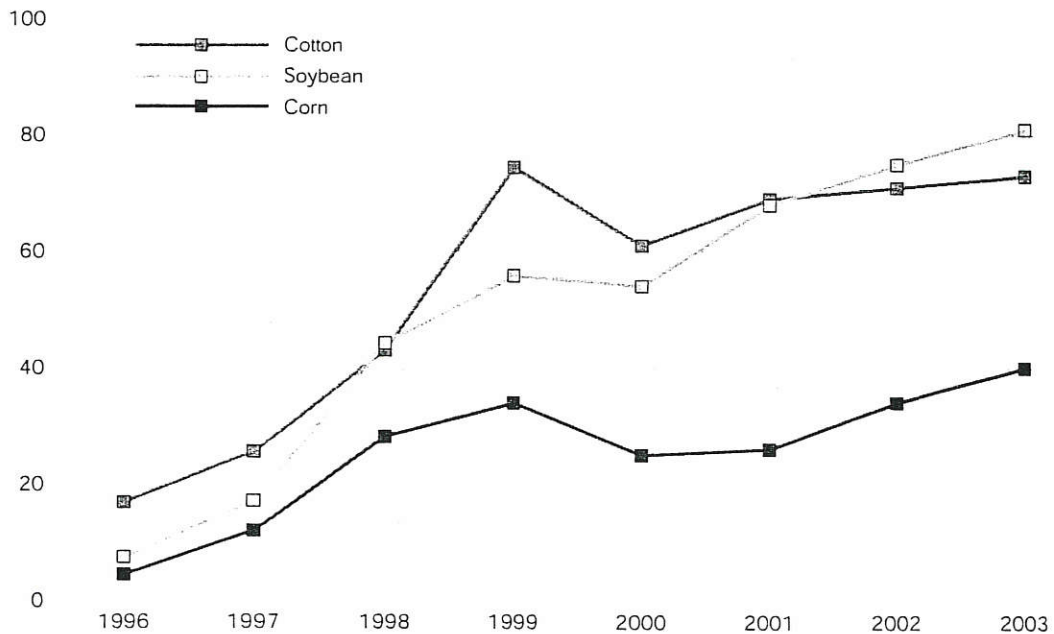
\$20 billion in crop value was associated with biotech crop varieties in 2002, half of the total value of the four crops.

- When evaluated state-by-state, four states (Iowa, Illinois, Minnesota and Nebraska) accounted for 60 percent of the value of biotech corn production. Four states (Iowa, Illinois, Minnesota and Indiana) accounted for 54 percent of the value of biotech soybean production. Four states (Texas, California, Mississippi and Georgia) accounted for 68 percent of the value of biotech cotton production. Two states (North Dakota and Minnesota) accounted for 95 percent of the value of biotech rapeseed/canola production. (See Figures 2, 3 and 4.)

- In 2003, no biotech varieties of wheat, potatoes, sugar beets or rice were planted commercially, although grower organizations remain keenly interested in ongoing research and development of the technology.

- Numerous studies have estimated the benefits of adopting biotech varieties for producers. A survey of these studies shows widespread improvements in profits and management capacity compared with conventional crops.

**Figure 1**  
**Percent of Crop Acres Planted to Biotech Varieties: 1996-2003**



Source: USDA, NASS.

**Figure 2**  
**Value of Crops with Biotech Traits by State: 2002 (millions of dollars)\***

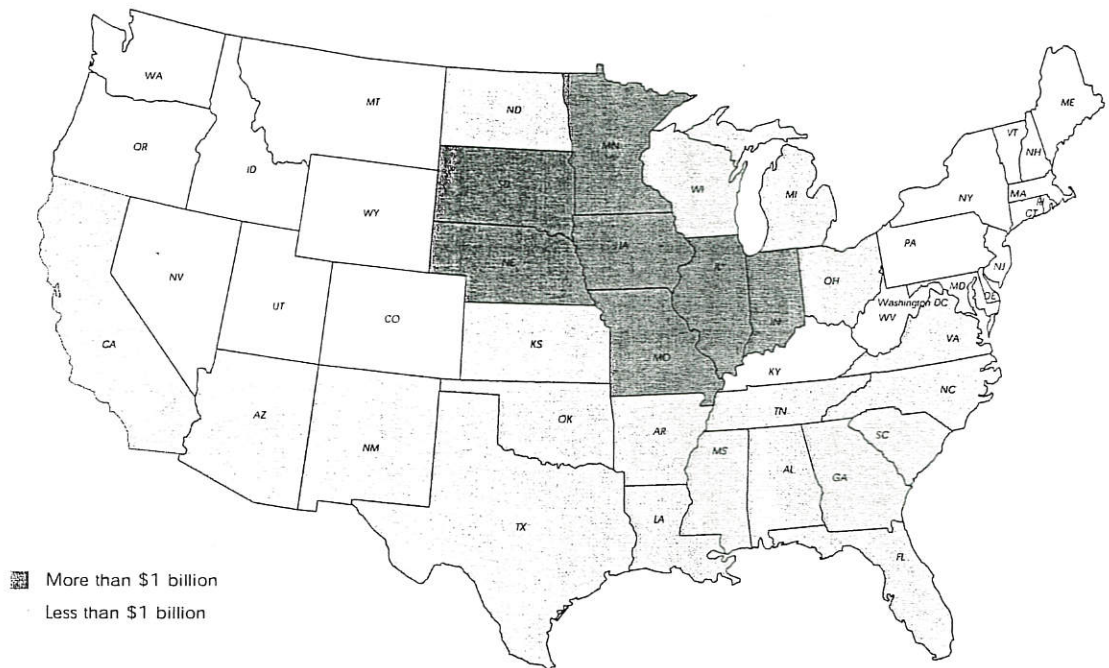
2002	All Biotech	Soybean	Corn	Cotton	Canola
U.S.	\$ 20,889	\$ 11,026	\$ 7,040	\$ 2,708	\$ 115
IA	3,816	2,004	1,811		
IL	2,546	1,756	790		
MN	2,154	1,151	995		8
NE	1,841	802	1,039		
IN	1,258	1,057	201		
SD	1,023	581	441		
MO	1,005	661	236	108	
ND	689	275	312		102
AR	670	371		299	
OH	619	562	57		
MS	528	195		334	
WI	498	274	224		
TX	489			489	
MI	427	309	118		
CA	404			404	
GA	329			329	
KS	274	262		12	
TN	138			138	
NC	137			137	
LA	126			126	
AZ	119			119	
AL	101			101	
OK	31			31	
NM	31			31	
SC	21			21	
VA	17			17	
FL	13			13	
Other	1,588	766	816	—	6

Source: USDA, NASS.

\*USDA reports only the top 12-14 corn and soybean growing states for biotech varieties, allocating the rest to the "other" category. When these states are paired with USDA data on biotech cotton, the result is to underestimate biotech corn and soybeans in those states growing biotech cotton.



**Figure 3**  
**States with Major Biotech Crop Value: 2002\***



\*Four biotech crops (corn, soybeans, cotton, rapeseed/canola)

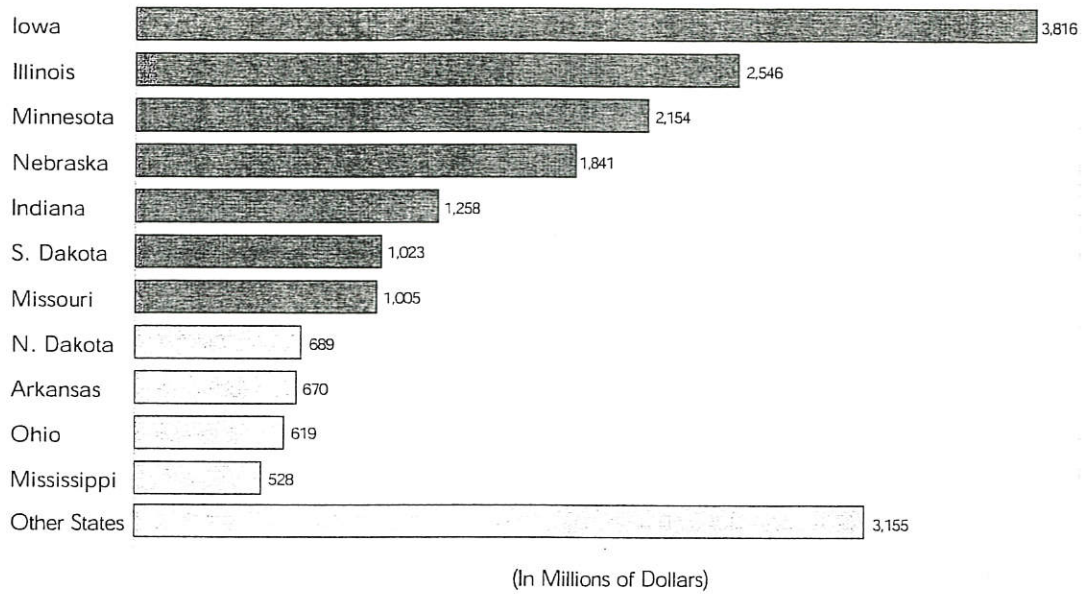
**PRIVATE AND PUBLIC R&D  
 BY CROP AND BY TRAIT**

- Suppliers of plant biotechnology include numerous private and public sector actors. In the private sector, although hundreds of companies are invested in some aspect of plant biotechnology, six companies lead the sector: Syngenta, Bayer, Monsanto, DuPont, Dow and BASF. In 2002 these six companies together had sales in their agricultural divisions of roughly \$28 billion. When research and development investments are calculated as a percentage of these sales, they average about 10.8 percent.
- Despite the dominance of large biotech companies, there are many examples of smaller companies that have found niche markets in the industry. Illustrative examples include Mendel Biotechnology, Arcadia Biosciences and Shoffner Farm Research, which are briefly surveyed.
- Plant biotech research rests on a wider platform of genomics, which is the latest episode in a tradition of modern plant breeding going back over a century. The cumulative nature of the research

process means that research and development by both private and public plant scientists has accumulated over more than 100 years. It is the *accretion* of this knowledge, and not just its leading edges, that defines the R&D mission in plant genetics, including plant biotech.

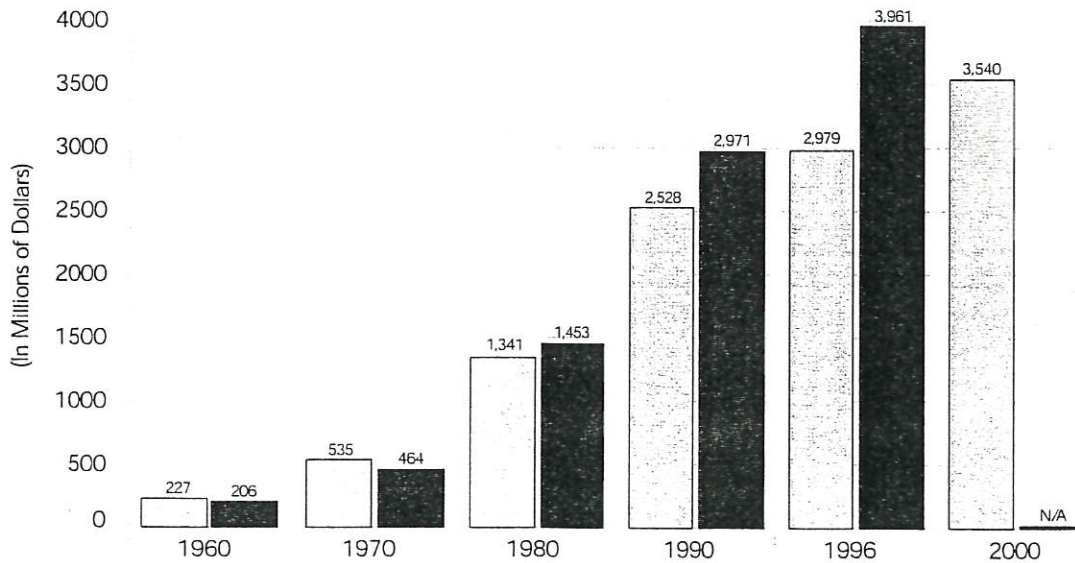
- Estimates of the stock of plant breeding knowledge and its value, compared with the value of agricultural output, show that from 1850 to 1995 (allowing for depreciation of past research) the ratio of value was 10:1. In other words, in 1995, for every \$100 of agricultural output there was \$1,000 stock of knowledge to draw on.
- The role of the public sector in plant science research relates specifically to this stock of knowledge, which is held in large part in the public domain by universities, experiment stations and federal research facilities. It also relates to the fact that agricultural research investments often pay out only after 20-30 years. The public sector is often the only party willing and able to wait for these payoffs to accrue.

**Figure 4**  
**Total Value of Biotech Crops in 2002 in the United States was \$20.9 Billion**



Source: USDA, NASS.

**Figure 5**  
**Public and Private U.S. Agricultural Research and Development Spending in Nominal Dollars, Selected Years**



Source: Philip Pardey, University of Minnesota, 1996. Compiled from unpublished USDA data.

Total U.S. Public Agricultural Research (millions)  
 Total U.S. Private Agricultural Research (millions)







- The changing emphasis of federally funded research is reflected in National Science Foundation data for 1990-99, which shows major gains in the share of the life sciences as a research category. Life sciences outstripped every other research category in its gains, and exceeded the gains of the next largest category, computer sciences, by more than 10 times. Between 1996 and 2002, nationwide NSF funding increased 70 percent in the biological sciences sector.
- Ongoing commercial activity in plant biotech and R&D in the pipeline were examined by describing all traits and varieties of biotech crops approved for commercial sale, and all plant biotech traits in field trials from 2001 to mid-2003. In the first case, USDA, FDA and EPA information was used to construct tables of commercial activity. In the second case, data from USDA's Agricultural Plant Health Inspection Service (APHIS) was used.
- Ongoing commercial activity shows a growing list of approvals in corn, soybeans, and cotton through 2001, mainly by the largest companies. In the remaining crops in the study, some approved varieties exist but are not being commercially sold.
- Plant biotech R&D in the pipeline as of 2001 through mid-2003 indicates almost a hundred new traits in testing. (See Figures 6, 7 and 8.) Represented in these activities are about 40 universities (mainly land grants) and about 35 private sector companies. Without question, more research and development as measured by field tests has been devoted to biotech traits in corn than to any other crop, attracting scores of public and private institutions. Among the traits in testing for corn were 19 new agronomic properties, four traits for fungal resistance, seven for herbicide tolerance, four for insect resistance, ten trials focusing on some form of marker genes, and over 30 for output and other end-use traits.
- Soybean research, in which the public and private sector are about equally represented, involved three field tests from 2001 to mid-2003 for agronomic properties, three for fungal resistance, eight for herbicide tolerance, one for insect resistance, one for marker genes, and eight for output traits related to product quality or environmental and health benefits to consumers.
- Cotton research was led from 2001 to mid-2003 by the six major private companies, one land grant and the Agricultural Research Service (ARS) of USDA. Testing of biotech traits focused on four agronomic properties, one fungal resistance trait, three herbicide resistance traits and one trait for insect resistance.
- Rapeseed/canola field testing was actively pursued by numerous smaller companies as well as major players such as Monsanto and Cargill and two state universities. Four tests were made on agronomic properties, one each on fungal resistance, herbicide tolerance, insect resistance, and marker genes. Four tests were conducted on output traits for enhanced product quality and alternative uses for canola oil.
- Wheat field testing was quite active despite the absence of marketed biotech varieties, reflecting continued interest in their commercial potential. Testing of agronomic properties related to starch, yield and drought tolerance was pursued at three land grants. Fungal resistance traits were tested by ARS, Syngenta and three land grants. Herbicide tolerance and virus resistance was tested by ARS, Monsanto and the University of Idaho. Marker genes were tested by Montana State. Finally, output traits for digestibility, starch metabolism, and improved bread making characteristics, among others, were tested by several small companies, as well as ARS and Montana State.
- Sugar beets also saw a limited number of field trials from 2001 to mid-2003, notwithstanding the absence of commercial sales. Two herbicide tolerant traits and a virus resistant trait were tested by Syngenta, Monsanto and two small privates.
- Rice was the subject of numerous field tests from 2001 to mid-2003, suggesting the potential opportunities once commercial markets open up. Two agronomic properties were tested by both large and small privates and two states. Bacterial resistance traits were tested by Louisiana State University and the University of California-Davis. Fungal resistance and herbicide tolerance were tested at Louisiana State and by Aventis and Monsanto. Insect resistance traits were tested by Syngenta. Marker genes were tested by the University of California-Davis, Louisiana State University and ExSeed Genetics. Lastly, output traits including heavy metal bioremediation, starch level changes, novel protein production and carbohydrate metabolism changes were tested by two small companies, as well as Aventis (now Bayer) and BASF.
- Potatoes were also the subject of considerable field testing of biotech traits from 2001 to mid-2003.

Traits tested include bacterial resistance by ARS, fungal resistance by Syngenta, ARS and three land grants, and insect resistance by Michigan State University and the University of Idaho. Virus resistance traits were tested at ARS, the University of Idaho and the Oregon State University. Gene marker traits were tested by Syngenta, ARS and two

land grants. Last, a number of product quality traits were tested such as increased beta-carotene, starch content and reduced bruising properties. These tests involved major privates like Syngenta, potato producers such as J.R. Simplot, as well as ARS and several land grants.

**Figure 7**  
**Public Institutions Engaged in Plant Biotech Field Studies by State, Commodity and Trait: 2001-2003**

Public Institution by state	Commodity	Trait in field study
<b>Arizona</b>		
U of Arizona	Corn	Endosperm DNA synthesis altered
U of Arizona	Corn	Visual marker
U of Arizona	Corn	Color sectors in seeds
U of Arizona	Corn	Pigment composition/metabolism altered
U of Arizona	Corn	Gene expression altered
U of Arizona	Corn	Anthocyanin produced in seed
<b>California</b>		
Stanford U	Corn	Visual marker
Stanford U	Corn	Seed color altered
Stanford U	Corn	Anthocyanin produced in seed
Stanford U	Corn	Transposon inserted/movement suppressed
U of California	Corn	Fertility altered
U of California	Corn	Environmental stress reduced
U of California	Corn	Visual marker
U of California	Corn	Anthocyanin produced in seed
U of California/Berkeley	Corn	Seed color altered
U of California/Berkeley	Corn	Pigment composition/metabolism altered
U of California/Berkeley	Corn	Gene expression altered
U of California/Davis	Rice	Bacterial leaf blight resistant
U of California/Davis	Rice	Visual marker
U of California/San Diego	Corn	Phosphinothricin tolerant
<b>Colorado</b>		
Colorado State U	Potato	Phytophthora resistant
<b>Connecticut</b>		
U of Connecticut	Corn	Visual marker
<b>Florida</b>		
U of Florida	Corn	Male sterile
U of Florida	Corn	Color sectors in seeds
U of Florida	Corn	Starch metabolism altered
U of Florida	Corn	Seed size/weight increase
<b>Georgia</b>		
U of Georgia	Rapeseed	Lepidopteran resistant
U of Georgia	Rapeseed	Visual marker
U of Georgia	Soybean	Lepidopteran resistant
<b>Hawaii</b>		
Hawaii Agriculture Research Center	Rice	Yield increased
U of Hawaii	Corn	Polymer produced

Public Institution by state	Commodity	Trait in field study
<b>Idaho</b>		
U of Idaho	Potato	Colorado potato beetle resistant
U of Idaho	Potato	PLRV resistant
U of Idaho	Potato	PVY resistant
U of Idaho	Potato	TRV resistant
U of Idaho	Potato	Kanamycin resistant
U of Idaho	Potato	Bruising reduced
U of Idaho	Potato	Ethylene metabolism altered
U of Idaho	Wheat	BYDV resistant
U of Idaho	Wheat	WSMV resistant
<b>Illinois</b>		
U of Illinois	Corn	Phosphinothricin tolerant
U of Illinois	Corn	Visual marker
U of Illinois	Corn	Gene expression altered
U of Illinois	Corn	Epidermal cells increased on juvenile leaves
U of Illinois	Soybean	Phosphinothricin tolerant
<b>Indiana</b>		
Purdue U	Corn	Color sectors in seeds
<b>Iowa</b>		
Iowa State U	Corn	Male sterile
Iowa State U	Corn	Fertility altered
Iowa State U	Corn	Visual marker
Iowa State U	Corn	Starch metabolism altered
Iowa State U	Corn	Carbohydrate metabolism altered
Iowa State U	Corn	Protein altered
Iowa State U	Corn	Pharmaceutical proteins produced
Iowa State U	Soybean	Phytophthora resistant
Iowa State U	Soybean	Protein altered
<b>Kansas</b>		
Kansas State U	Corn	Color sectors in seeds
Kansas State U	Wheat	Drought tolerant
Kansas State U	Wheat	Fusarium resistant
<b>Kentucky</b>		
U of Kentucky	Soybean	BPMV resistant
U of Kentucky	Soybean	Oil profile altered
U of Kentucky	Soybean	Altered amino acid composition
U of Kentucky	Soybean	Methionine level increased
<b>Louisiana</b>		
Louisiana State U	Rice	Yield increased
Louisiana State U	Rice	Burkholderia glumae
Louisiana State U	Rice	Rhizoctonia solani resistant



## ECONOMIC IMPACT BEYOND THE FARM GATE AND THE ROLE OF THE STATES

• Looking beyond the farm gate, it is clear that the plant biotech industry is creating jobs unknown a decade ago. The stock of knowledge associated with the R&D leading to the biotech revolution, if the formula developed by analysts of agricultural research is used, is worth at least \$200 billion.

Maintaining this stock of knowledge will require high skill levels and will demand high wages.

• The number of biological science degrees, one measure of this trend, rose dramatically in the 1990s. In the U.S. as a whole, the number of bachelor's, master's and Ph.D.'s in the biological sciences rose from 45,000 in 1990 to 73,000 in 2000, an increase of 62 percent.

Public Institution by state	Commodity	Trait in field study
Louisiana State U	Rice	Phosphinothricin tolerant
Louisiana State U	Rice	Hygromycin tolerant

### Michigan

Michigan State U	Potato	Phytophthora resistant
Michigan State U	Potato	Coleopteran resistant
Michigan State U	Potato	Lepidopteran resistant
Michigan State U	Potato	Visual marker
Michigan State U	Potato	Starch level increased

### Minnesota

U of Minnesota	Potato	Late blight resistant
U of Minnesota	Wheat	Phosphinothricin tolerant

### Missouri

U of Missouri	Corn	Gene expression altered
U of Missouri	Corn	Anthocyanin produced in seed

### Montana

Montana State U	Wheat	Starch level increased
Montana State U	Wheat	Yield increased
Montana State U	Wheat	Visual marker
Montana State U	Wheat	Improved bread making characteristics

### Nebraska

U of Nebraska/Lincoln	Soybean	Sclerotinia resistant
U of Nebraska/Lincoln	Soybean	Cyanamide tolerant
U of Nebraska/Lincoln	Soybean	Dicamba tolerant
U of Nebraska/Lincoln	Soybean	Oil profile altered
U of Nebraska/Lincoln	Soybean	Fatty acid level/metabolism altered
U of Nebraska/Lincoln	Soybean	Oleic acid content altered in seed
U of Nebraska/Lincoln	Wheat	Yield increased
U of Nebraska/Lincoln	Wheat	Fusarium resistant

### New Jersey

Rutgers U	Corn	Storage protein altered
Rutgers U	Corn	Visual marker
Rutgers U	Corn	Seed color altered
Rutgers U	Corn	Methionine level increased

### New York

Boyce Thompson Institute	Potato	Kanamycin resistant
Boyce Thompson Institute	Potato	Beta-carotene increased
Cold Spring Harbor Lab	Corn	Development altered

### North Carolina

North Carolina State U	Rapeseed	Visual marker
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Public Institution by state	Commodity	Trait in field study
<b>North Dakota</b>		
North Dakota State U	Potato	Carbohydrate metabolism altered

### Ohio

Ohio State U	Corn	Visual marker
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### Oregon

Oregon State U	Potato	PVY resistant
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### Pennsylvania

Pennsylvania State U	Corn	Male sterile
Pennsylvania State U	Corn	Visual marker
Pennsylvania State U	Corn	Color sectors in seeds

### Texas

Texas Agricultural Exp Str	Cotton	Rhizoctonia solani resistant
Texas Tech	Cotton	Carbohydrate metabolism altered
Texas Tech U	Cotton	Environmental stress reduced
Texas Tech U	Cotton	Fiber quality altered

### Virginia

Virginia Tech	Soybean	Phytate reduced
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### Washington

Washington State U	Potato	Storage protein altered
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### Wisconsin

U of Wisconsin	Corn	Altered maturing
U of Wisconsin	Corn	Visual marker
U of Wisconsin	Corn	Gene expression altered
U of Wisconsin	Corn	Anthocyanin produced in seed

### USDA

ARS	Cotton	Oleic acid content altered in seed
ARS	Potato	Erwinia carotovora resistant
ARS	Potato	Phytophthora resistant
ARS	Potato	PLRV resistant
ARS	Potato	PVY resistant
ARS	Potato	PVA resistant
ARS	Potato	Visual marker
ARS	Potato	Steroidal glycoalkaloids reduced
ARS	Soybean	Visual marker
ARS	Wheat	Phosphinothricin tolerant
ARS	Wheat	Powdery mildew resistant
ARS	Wheat	Smut resistant
ARS	Wheat	Storage protein altered

Source: USDA, APHIS



**Figure 8**  
**Public and Private Sector Institutions Filing for Field Testing Permits for Eight Study Crops Between January 2001 and July 2003\***

Public Sector Institutions	Private Sector Institutions
ARS—USDA Agricultural Research Service	Abbott and Cobb
Boyce Thompson Institute (Cornell)	AgReliant Genetics
Cold Spring Harbor Lab	Applied PhytoGenetics, Inc.
Colorado State University	Applied Phytologics
Hawaii Agriculture Research Center	Arcadia Biosciences
Iowa State University	Aventis
Kansas State University	BASF
Louisiana State University	Bayer CropScience
Michigan State University	Betaseed
Montana State University	Biogemma
North Carolina State University	Cargill
North Dakota State University	Dow
Ohio State University	DuPont
Oregon State University	ExSeed Genetics
Pennsylvania State University	Garst
Purdue University	Goertzen Seed Research
Rutgers University	Horan Bros. Agri. Enterprises
Stanford University	Interstate
Texas Agricultural Exp Stn	Interstate Payco Seed
Texas Tech University	J. R. Simplot Company
University of Arizona	Mendel Biotechnology
University of California	Meristem Therapeutics
University of California/Berkeley	Monsanto
University of California/Davis	National Starch & Chemical
University of California/San Diego	Pioneer
University of Connecticut	ProdiGene
University of Florida	Research for Hire
University of Georgia	Shoffner Farm Research, Inc.
University of Hawaii	Stine Biotechnology
University of Idaho	Syngenta
University of Illinois	Targeted Growth Inc.
University of Kentucky	United Agri Products
University of Minnesota	Ventria Bioscience
University of Missouri	
University of Nebraska/Lincoln	
University of Wisconsin	
University of Wisconsin/Madison	
Washington State University	
Virginia Tech	

Source: USDA, APHIS

\*Eight biotech crops (corn, soybeans, cotton, rapeseed/canola, wheat, potato, rice, sugar beets)

- The Minneapolis Federal Reserve District Bank estimated the number of R&D firms in engineering, physical and life sciences in Minnesota at 178 in 2001, followed by Wisconsin with 128, Montana with 53, North Dakota with 20 and South Dakota with 17, or 396 in the five states. Employment in these firms grew at least 50 percent from 1998 to 2002 in Minnesota and Wisconsin, adding 1,000 jobs each.

- There is reason to believe that many estimates of plant biotech activity have been substantially understated, even by industry spokesmen. The Biotechnology Industry Organization (BIO), for example, identified only 64 biotech companies in the Midwest. Yet a 2003 survey of Minnesota firms by the state's Department of Employment and Economic Development found 170 firms in scientific biotech in Minnesota alone, of which two in five were in the agricultural and industrial sectors.

- The Wisconsin Association for Biomedical Research and Education (WABRE) in 2001 identified almost 200 Wisconsin bioscience companies, including 56 in the agricultural sector. These companies employed some 21,000 workers, with an additional 5,000 employed in R&D at Wisconsin universities and laboratories. WABRE estimated total industry activity at \$5 billion, about 3 percent of gross state product.

- Bureau of Labor Statistics from the U.S. Department of Commerce's Occupational and Employment Survey (OES) were examined for evidence of plant biotech impacts. Plant biotech does not fit neatly into OES categories. We examined three U.S. sectors: crop services (with 128,500 workers in 2001); agricultural chemicals (46,490 workers in 2001); and farm products — raw materials (97,180 in 2001). Apart from these sectors, plant biotech firms employ many of the same skilled workers as other sectors of the economy (managers, computer programmers, legal advisors, etc.).

- What makes plant biotech different is the reliance on life science workers, including food scientists, microbiologists, biochemists and biophysicists. These workers typically require advanced degrees and training, and receive above-average wages. In 2001, the OES estimated 13,470 agricultural and food scientists (AFS) alone employed in public and private institutions with an average salary of \$52,310 a year, more than one and one-half times the U.S. average of \$34,020.

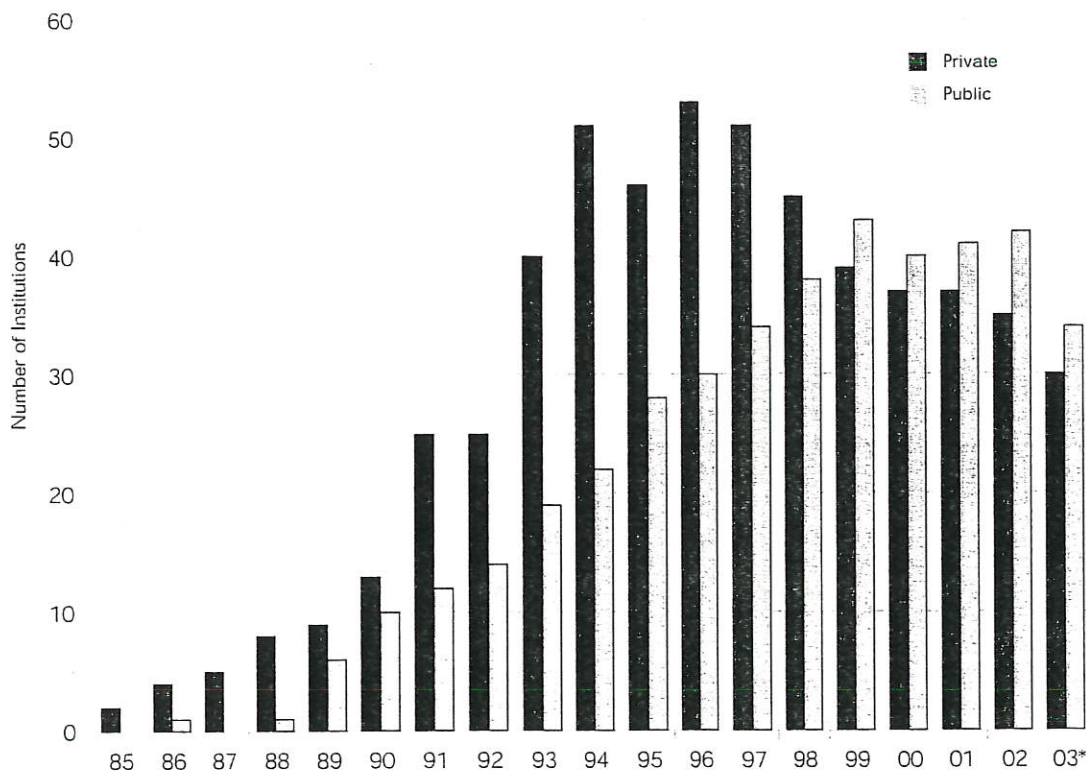
THE 10 COLUMBIAN STATES AND TERRITORIES OF THE UNITED STATES

- The states which have been the most rapid adopters of biotech corn and soybeans up to 2003 were compared with the size of the AFS job category. Those states with the highest levels of biotech crop adoption had more AFS jobs per 100,000 in 2003 than states with lower levels. (See Figure 10.)
- The distribution of wages in the AFS sector showed that overall, AFS workers in the states with the highest levels of biotech plant adoption made between 1.5 and 2 times the average wage. These wages exceeded averages throughout the career life cycle.
- The states' role in value creation shows that commercial plantings of biotech crops have benefited a wide range of individual state economies. These include especially the corn and soybean producing states of Iowa, Illinois, Minnesota, Nebraska, Indiana, South Dakota, Missouri, North Dakota, Ohio, Wisconsin and Michigan. They also include

cotton producing states such as Arkansas, Mississippi, Texas, California, Georgia and others.

- On the research side, state land grant universities and the U.S. Department of Agriculture have been active in plant biotech research. Among the research institutions involved are Universities in Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Texas, Virginia, Washington and Wisconsin.
- When private and public institutions involved in field test permits are compared over time as shown in Figure 9, two pictures emerge: first, there has been steady progress in public sector research through the years. Second, it suggests private sector growth expanded rapidly in the early 1990s;

**Figure 9**  
**Number of Private and Public Institutions Granted APHIS Field Test Permits, 1985-2003**



\*Data for 2003 only includes the first 8 months.



however, the apparent decline in activity since 1996 is likely due to rapid consolidation of firms, leading to fewer private company filings.

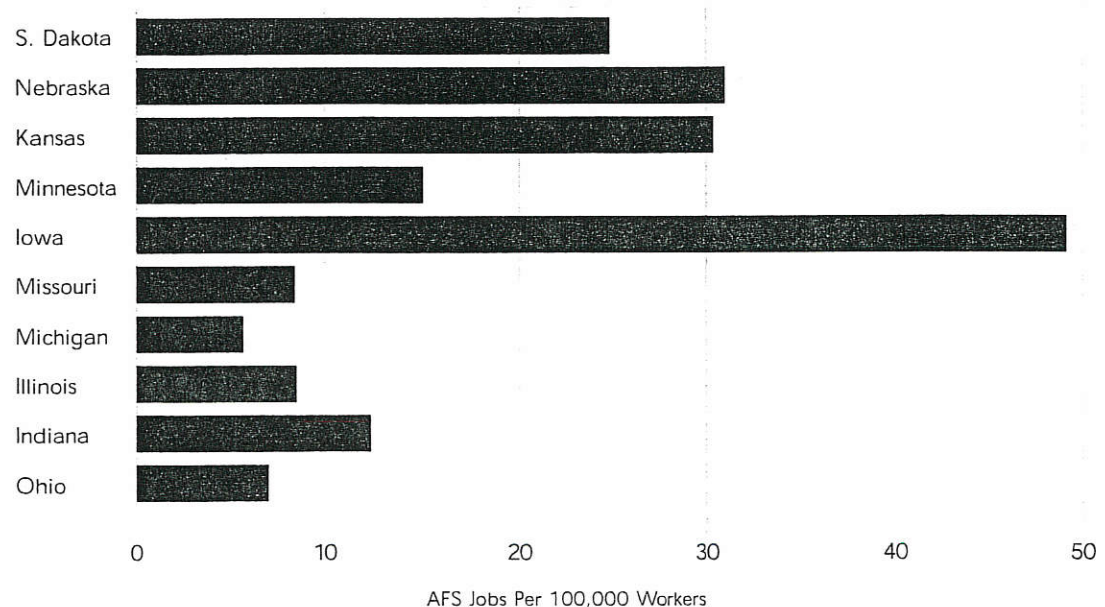
### FUTURE DIRECTIONS FOR PLANT BIOTECHNOLOGY

- In conclusion, plant biotech and its future is of growing importance to producers, to the input supply industry, to private research and development investors, to educational and research institutions, to the federal government and increasingly to consumers.
- For producers, valuable benefits conferred by plant biotech since commercial introduction in 1996 reached over \$20 billion in 2002. In addition to direct improvements in profits, biotech varieties offer management efficiencies worth almost 65 percent more in economic benefits in some cases. Multiplied times the growing number of acres in biotech varieties nationally, these are significant contributions to farm income, especially in the Corn and Cotton Belt states.
- In the input supply industry, the introduction of biotech varieties has forced changes in the “bundles”

of crop protection products, seeds and fertilizers sold to farmers, and promoted rapid consolidation of chemical and seed companies. Biotech varieties have given new impetus to precision agriculture, and offer traits that will yield social rewards not only for productivity but resource conservation and environmental improvements.

- Investors find that high investments are matched by high returns, but that long lags intervene between costs and benefits. These long lags mean that only companies able to commit resources over extended periods will dominate the R&D process. In general, these are larger, well-capitalized firms. Venture capitalists with shorter time horizons will need to find start-ups able to attach themselves to the R&D process of larger companies.
- Public sector R&D will remain important due to the leads and lags in the agricultural research process. Activity will continue to grow in the life sciences as public institutions remain repositories of knowledge worth hundreds of billions of dollars a year. The erosion of funding for land grants and state and federal budget deficits will therefore have negative consequences for the entire plant biotech sector. New directions must maximize the complementarity between private and public science.

**Figure 10**  
**Highest Ranking Plant (Corn and Soybean) Biotech Adopting States and Agricultural and Food Scientists (AFS) per 100,000 — 2003**



Source: Bureau of Labor Statistics, U.S. Department of Commerce

• The federal government's role will become even more important as the regulatory scope of plant biotech requires oversight by not only USDA and its sub-agencies, but FDA, EPA and other agencies such as the Small Business Administration or the export-promotion arms of the Department of Commerce. NSF and NIH will also play key roles.

• The ultimate arbiter of market growth and development is the consumer. As consumer confidence grows, it will feed the demand for new biotech varieties, support those who supply them, and build a base for public investments in the plant biotech research base, resulting in more jobs at higher wages.



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*C. Ford Runge, Ph.D.*

Distinguished McKnight University Professor of Applied Economics and Law  
Director, Center for International Food and Agricultural Policy  
University of Minnesota

[www.pec.umn.edu/faculty/frunge/plantbiotech.pdf](http://www.pec.umn.edu/faculty/frunge/plantbiotech.pdf)



# **Kansas Farm Bureau**

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**PUBLIC POLICY STATEMENT**  
**Senate Committee on Commerce**  
**Substitute for House Bill 2647 – Bioscience Authority**  
**and Development Act**

**March 16, 2004**

**Topeka, Kansas**

**Written testimony by:**

**Harry A. Watts, Managing Director**

**KFB Governmental Relations**

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Chairperson Brownlee and members of the committee, thank you for the opportunity to provide written testimony on this bill that proposes to create a Kansas Bioscience Authority. As you know KFB is the state's largest general farm organization representing more than 40,000 farm and ranch families through our 105 county Farm Bureau Associations. We fully support this bill.

Over the years, our members have supported policy that focuses on developing strong research programs at our colleges and universities, especially our land grant universities like Kansas State. We also support policy that focuses on economic development, in particular for the rural counties and communities where our members reside. In this written testimony, we would like to focus on these two important aspects of our public policy.

For over a century, food and agriculture research, our agriculture extension services, and our higher education system has propelled the U.S. agriculture into world prominence. It has been through research efforts that new commodities have been developed and new uses found for those commodities. This has resulted in an increased demand for our agriculture products here in Kansas and throughout the world. It is imperative that our state continues to support, build and maintain a critical mass of well-trained scientists in the public sector and in our higher education institutions to ensure that Kansas remains the leader in agriculture production.

*Senate Commerce*

*03/16/04*

*Attach # 12*

We would like to voice our support of several areas addressed in this bill. The Eminent Scholar and Rising Star Scholar programs would have a significant impact on our bioscience efforts here in Kansas. We believe that this program would attract the very best scientists/investigators from around the country to the state of Kansas. One of the goals of their research and development efforts would need to be to promote effective and efficient transfer of knowledge and technology to benefit agriculture producers and ultimately consumers in Kansas. Obviously, it is the hope of this program that we will see agricultural intellectual property developed through research that will benefit Kansas by the actual manufacturing, licensing and commercialization of products right here in this state. Kansas and our members will benefit from this effort.

We know the bill addresses the fact that these researchers will bring in financial resources from a whole variety of areas to continue to fund their research. We believe that it is imperative that we effectively garner and use federal and state funding for research programs to support basic and applied research and technology transfer for the benefit of our Kansas farmers, agribusiness and ultimately our consumers. Kansas and our members will benefit from this effort.

As you might guess, rural revitalization and renewal is a significant focus of Kansas Farm Bureau. The revitalization of our Kansas rural communities must be a high priority with not only this initiative but for the entire Kansas Economic Growth Act that this bill is a part of. We must enhance the economic, social and cultural climate for our farms and our rural families. We must strengthen activities designed to help rural communities obtain grant and loans for infrastructure improvements. We must improve the general potential of rural communities to attract and retain people, business and industry. We will always stand up in support of legislation that encourages significant rural economic development, particularly legislation that fosters a strong Kansas agriculture economy.

There were two additions to this bill that we introduced to the House Economic Development Committee and we would like to make sure that they remain in the bill as it is worked in the Kansas Senate.

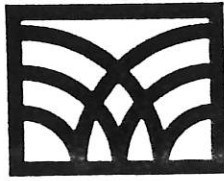
- Section 4 (c) -- One member of the board shall be an agricultural expert who is recognized for outstanding knowledge and leadership in the field on bioscience.
- Section 27 (2)(a) – In creating a bioscience development district, eminent domain shall not be used to acquire agricultural land.



We believe that this bill and the companion bills that are a part of the Kansas Economic Growth Act will have a significant impact on our members by improving their quality of life within their communities and the surrounding rural counties in which they live and work and we firmly believe that this act has the potential to increase the profitability of our Kansas Farm Bureau members.

Thank you for the opportunity to provide written testimony on this important bill.

*Kansas Farm Bureau represents grass root agriculture. Established in 1919, this non-profit advocacy organization supports farm families who earn their living in a changing industry.*



# OVERLAND PARK

CHAMBER OF COMMERCE

TO: Senator Karin Brownlee, Chair  
Members, Senate Commerce Committee

FROM: Wes Ashton, Director of Government Relations  
Overland Park Chamber of Commerce

DATE: March 15, 2004

RE: **HB 2647- Bioscience authority and development act.**

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The Overland Park Chamber of Commerce would like to express its support for the concepts embodied in HB 2647, which is a component of the Kansas Economic Growth Act. We believe this is critical legislation that can help set the economy on the right track for the future of Kansas.

The Overland Park Chamber has recognized the potential growth in the bioscience field, as well as the need to develop and grow new sectors of the Kansas economy. Kansas is in a unique situation to be among the national leaders in a growing field that will soon be a significant portion of the GDP. The Overland Park Chamber of Commerce has listed the expansion of biosciences in Kansas as a Top Priority for the 2004 Legislative session, and encourages this committee to pass this legislation for the benefit of all Kansans.

Although the bioscience sector is unclear to many Kansans today, the Overland Park Chamber believes that it has already begun to be a factor in the Kansas economy and will continue to grow. Currently, there are over 160 bioscience companies in Kansas employing over 10,000 people. Almost half of these companies and over half of the employees are located in Johnson County. There are twenty bioscience companies in Overland Park.

Establishing the Kansas Bioscience Authority is the first step to place Kansas as a leader in this growing sector of the economy. Setting a goal to attract and recruit eminent scholars to relocate to Kansas will not be without challenges, but is a goal that the Overland Park Chamber believes in and will help to succeed. We believe that the Overland Park area will be able to help attract eminent scholars to Kansas due to the high quality of life.

*Senate Commerce*  
03/16/04  
Attach #13

The Overland Park Chamber believes that the plan set forth in HB 2647 will have a significant impact on the Kansas economy in the coming years. This will send an important message to our citizen's as well as the national sector that Kansas is poised and ready to play a role in this industry and grow our economy. While assistance from private institutions will be needed to ensure its success, this committee and this Legislature can begin the process by laying out the tools that business will need.

For all the foregoing reasons, the Overland Park Chamber of Commerce encourages the committee to consider HB 2647 favorably for passage. Thank you for your time and attention to this issue.

For questions or further information, please call 913-491-3600 or [washton@opks.org](mailto:washton@opks.org).