

# State Legislative Best Practices

in support of



# Bioscience Industry Development



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# I. Introduction

This report is available online:  
[www.bio.org/local](http://www.bio.org/local)

## Prologue

**The biosciences industry pays, on average, 68 percent higher salaries than the average private-sector job at approximately \$71,000 as compared with the average annual wage of \$42,000 for the total private sector.**

This digest was created to assist biosciences industry partners and their economic development practitioners in identifying key state legislative and administrative efforts needed to create, nurture and retain the bioscience industry. The policies and legislation cited in this document are key examples of state efforts to grow and sustain bioscience industry development.

The recent economic downturn has had a significant impact on the bioscience industry. Venture capital investment in the industry is down more than 50% from the previous year. Of the publicly traded bioscience companies, over 90% have experienced significant losses in their market capitalization. Smaller bioscience companies are more acutely affected, with many companies trading below their cash value and with less than a year's worth of operating capital remaining in their coffers. Due to pressure from investors looking for quick returns, some companies are abandoning research on new products and technologies and only focusing on products that are further along in the development phase.

While the economic climate has been difficult for bioscience companies, it has also had a significant impact on state budgets, causing many states to cut programs and reassess economic priorities. The biosciences continue to be a high growth, high value industry for many states. Almost every state in the country is actively engaged in building bioscience industry infrastructure. State sponsored programs to encourage investment and help bioscience companies leverage existing resources can be instrumental in helping these innovative companies survive this economic cycle. This report chronicles several types of state programs that have been very helpful in sustaining bioscience industry development.

Until a decade ago, the United States was the undisputed leader in bioscience industry development. However, a variety of factors such as low cost labor, speed of information dissemination, and available risk capital, has rapidly

U.S. Average Annual Wages per Employee, 2006	
Drugs & Pharmaceuticals	\$ 86,892
Information	\$ 76,257
Professional, Scientific, & Technical Services	\$ 71,544
Research, Testing, & Medical Laboratories	\$ 71,284
<b>Total Biosciences</b>	<b>\$ 70,959</b>
Agricultural Feedstock & Chemicals	\$ 67,870
Finance & Insurance	\$ 65,095
Medical Devices & Equipment	\$ 59,441
Manufacturing	\$ 54,865
Construction	\$ 43,215
U.S. Total Private Sector	\$ 42,272
Transportation & Warehousing	\$ 42,013
Real Estate and Rental & Leasing	\$ 41,071
Healthcare & Social Assistance	\$ 40,205
Retail Trade	\$ 25,849

increased global competition for the industry. Europe and Asia, for example, are actively promoting opportunities for bioscience companies.

State governments continue to understand this new dynamic of increased competition for developing the biosciences and are actively working to develop and promote to grow the industry within their states. According to the study "Technology, Talent and Capital: State Bioscience Initiatives 2008<sup>1</sup>," the bioscience industry is a growing and vibrant sector of the U.S. economy, with more than 42,000 businesses employing 1.3 million people in all 50 states, Puerto Rico and the District of Columbia. Direct and indirect employment in the biosciences sector accounts for 7.5 million jobs.

Realizing the economic potential, state and regional economic development organizations throughout the nation are much more aware of the industry's needs and have put in place numerous programs and incentives to attract and grow the biosciences industry. These programs include:

- Providing business and financial assistance to emerging companies
- Creating tax and regulatory environments to support and expand growing companies.
- Addressing capital needs by providing funding for pre-commercialization activities
- Creating seed funds
- Implementing policies encouraging private investment in early and later state venture capital
- Supplying capital for facilities funding
- Working closely with bioscience companies to develop and create a skilled workforce

## Economic Impact of the Biosciences Industry

The bioscience industry provides value to the economy in three distinctive ways:

### Direct Impact

Company jobs, revenues, and wages –In 2006, the average national salary for bioscience jobs was \$70,959 compared to \$42,272 for the overall private sector, a difference of over \$28,000. Since 2001, real (inflation-adjusted) earnings have increased by 6.4 percent for all bioscience workers, compared with a 1.4 percent increase in real earnings for the average U.S. private sector worker.

### Indirect Impact

### Indirect Impact

Purchases made by the company for goods and services—According to the Minnesota

IMPLAN model<sup>2</sup>, adapted to gauging the impact of the biosciences industry in the US, researchers from Battelle Memorial Institute

When combining direct and indirect impact – employment the biosciences sector accounts for 7.5 million jobs.

<sup>1</sup> Battelle, BIO, SSTI, *Technology Talent and Capital: State Bioscience Initiatives 2008*

<sup>2</sup> Battelle analysis of Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW) data from Minnesota IMPLAN Group

note there are 1.2 million direct impact jobs in the US biosciences sector resulting in 5.8 million additional indirect impact jobs.

**Induced Impact**

*Purchases made by company employees in the community*—Workers use their additional earnings to make purchases and pay taxes resulting in additional economic activity and increased employment.

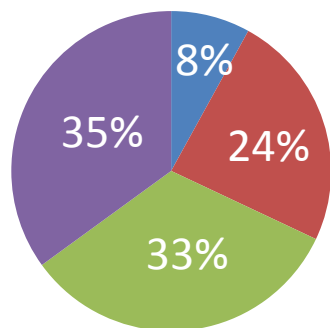
For more information  
[www.bio.org/local/battelle2008](http://www.bio.org/local/battelle2008)

**Defining the Biosciences**

The biosciences are a diverse group of industries and activities with a common link—they apply knowledge of the way in which plants, animals, and humans function. The sector spans different markets and includes manufacturing, services, and research activities. By definition, the biosciences are a unique industry cluster and are constantly changing to incorporate the latest research.

**The Four Major Sectors of Biotechnology**

The biosciences industry sector is defined as including the following four subsectors: Agricultural Feedstock and Chemicals; Drugs and Pharmaceuticals; Medical Devices and Equipment; and Research, Testing, and Medical Laboratories.

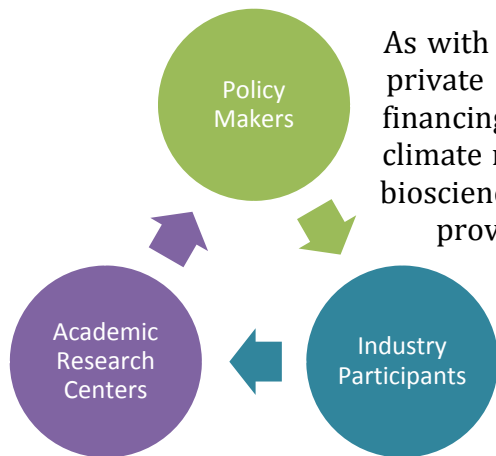


- Agricultural Feedstock & Chemicals
- Drugs & Pharmaceuticals
- Medical Devices & Equipment
- Research, Testing, & Medical Laboratories

<b>Agricultural Feedstock &amp; Chemicals</b>
Wet corn milling
Soybean processing
Other oilseed processing
Ethyl alcohol manufacturing
All other basic organic chemical manufacturing
Cellulosic organic fiber manufacturing
Nitrogenous fertilizer manufacturing
Phosphatic fertilizer manufacturing
Fertilizer (mixing only) manufacturing
Pesticide & other agricultural chemical manufacturing
<b>Drugs &amp; Pharmaceuticals</b>
Medicinal & botanical manufacturing
Pharmaceutical preparation manufacturing
In-vitro diagnostic substance manufacturing
Other biological product manufacturing
<b>Medical Devices &amp; Equipment</b>
Electromedical apparatus manufacturing
Analytical laboratory instrument manufacturing
Irradiation apparatus manufacturing
Laboratory apparatus & furniture manufacturing
Surgical & medical instrument manufacturing
Surgical appliance & supplies manufacturing
Dental equipment & supplies manufacturing
Ophthalmic goods manufacturing
Dental laboratories
<b>Research, Testing, &amp; Medical Laboratories</b>
Testing laboratories
R&D in the physical, engineering, & life sciences
Medical laboratories
Diagnostic imaging centers

Source: Battelle, BIO, SSTI, *Technology Talent and Capital: State Bioscience Initiatives 2008*

## Role of Partners in Commercialization and Job Creation



As with any economic development activity, a variety of public and private stakeholder groups are essential to provide the significant financing, personnel requirements as well as a supportive business climate needed to successfully compete in today's marketplace. The bioscience industry has three primary partners in this endeavor each providing support in unique ways. They include policymakers, universities and research centers, as well as the industry itself.

### **Academic Research Centers:**

Fostering collaborative partnerships between academic research centers and companies has emerged as a critical imperative in sustaining U.S. invention and innovation. The increasing volume and accelerated pace of knowledge creation has transformed the research process to the point where no one scientist or institution can sufficiently conduct wholly independent research programs. This new reality makes the relationship between academic investigators and industry researchers a central driver in the nearly three decades since the passage of the Bayh-Dole Act of 1980.

### **Policy Makers:**

The need for a stable and supportive public policy structure is pivotal to bioscience companies large and small. It is almost impossible for any state to ignore the need for selective infrastructure and development incentives to either hold existing companies or attract new enterprises. From the perspective of public policymakers bioscience industry development provides opportunities for states to diversify their economic base, generate new jobs, and improve the standard of living for citizens.

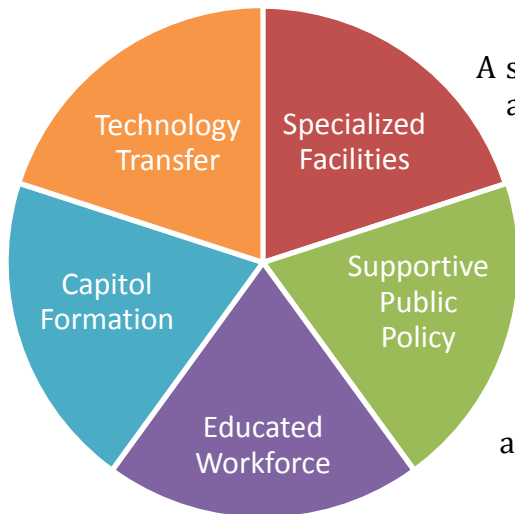
### **Industry Participants:**

Industry collaboration with universities and policymakers has led to significant technology industry growth over the past three decades. During that period, industry moved to become an active participant in public policy creation. Future state efforts to support industry will require sustained industry input on the policy tools necessary for success. The symbiotic relationship between academia, industry, and state and federal policy makers is important for future industry development and continued U.S. leadership in the biosciences.

**The Bayh-Dole Act of 1980 was a landmark piece of federal legislation that for the first time allowed universities to actively pursue the transfer of government funded research into the marketplace. This act has been copied by every nation interested in moving university invention into market innovation. The Association of University Technology Managers (AUTM) in 2007 estimated that since the Bayh-Dole Act became law, more than 1,700 technology companies have been created as a result of the transfer university research to the private sector.**

## II. Essential Building Blocks for Growth

### Major Building Blocks of Industry Development



A strong partnership between industry, academia, and state and local government is essential for the development of a successful bioscience cluster. States with large bioscience industry clusters actively encourage and facilitate technology transfer from academic research institutions as well as helping to promote investment in bioscience companies.

There are five essential components for bioscience industry development that state policy makers should be aware of and support:

#### 1. Technology Transfer

Technology transfer refers to the sharing of knowledge and facilities among federal laboratories, industry, universities, federal, state, and local governments, and third party intermediaries. Realizing that entrepreneurship is a key ingredient in economic development, the goal of state and local governments seeking to create regional economic growth is to utilize technology transfer as a mechanism to increase private sector innovation.

Once research yields a new discovery from a university or federal laboratory, there is still a great deal of work to be done to assist faculty, entrepreneurs, and companies through the commercialization process before the technology can be incorporated into the marketplace. Through technology transfer offices, universities increasingly focus their efforts on creating mechanisms to transform government invested basic research, knowledge, and capabilities in the marketplace. The passage of the Bayh-Dole Act has aided universities in moving invention and innovation into the marketplace.

Nearly every state now has programs that provide commercialization assistance to universities and technology companies in an effort to more smoothly transition invention into innovation in the marketplace. Listed below are specific examples of successful technology transfer programs:

#### **Washington: Life Science Discovery Fund**

In 2005, the State of Washington earmarked a portion of its tobacco settlement dollars to fund bioscience research and development through the \$350 million Life Sciences Discovery Fund (SB 5581). In 2006, the state began allocating \$35 million annually to

fund research projects with economic development potential, including recruitment and facility enhancements.

Find links to the legislation online  
[www.bio.org/local](http://www.bio.org/local)

- Link to the legislation:  
<http://www.leg.wa.gov/pub/billinfo/2005-06/Pdf/Amendments/House/5581-S2.E%20AMH%20APP%20AMH3043.1.pdf>

### **California: San Diego CONNECT Program**

CONNECT of San Diego is designed to link entrepreneurs with critical resources for success, by providing networking opportunities as well as expertise to San Diego's technology-based firms. Through the use of partnerships with the region's industry-specific organizations and individuals, CONNECT assists entrepreneurs and bioscience companies with commercializing ideas, patents, and other opportunities surrounding university or private research institute R&D efforts.

- For more information: <http://www.connect.org/about/index.htm>

### **Texas: Emerging Technology Fund**

The Texas Emerging Technology Fund was created by House Bill 1765 in 2005 and reauthorized in 2007 in an effort to speed up the process of commercialization. The purpose of the fund is to generate new jobs and companies from technologies created by institutions of higher education in Texas. The Fund is dedicated to recruiting research talent, matching grants to help draw down federal dollars, and to help push technology through the commercialization phase. This legislation also creates Regional Centers of Innovation and Commercialization (RCICs). These RCICs are expected to foster collaboration on emerging technologies between public and private entities and institutions of higher education.

- For more information:  
<http://www.governor.state.tx.us/divisions/ecodev/etf/files/HB01765F.pdf>

### **Georgia: Eminent Scholars Program**

The Georgia Research Alliance Eminent Scholars Program was created in 1990 in hopes of attracting pre-eminent scientists to Georgia's universities. These scientists now lead programs of research and development in areas with the most potential for generating new high-value companies, growing established companies, and creating new high-wage jobs. To date, the Alliance has invested approximately \$400 million. This investment has helped to attract more than 50 Eminent Scholars, leverage an additional \$2 billion in federal and private funding, create more than 5,000 new technology jobs, generate some 120 new technology companies, and allow established Georgia companies to expand into new markets.

- Link to the legislation: [http://www.legis.ga.gov/legis/2005\\_06/pdf/sb556.pdf](http://www.legis.ga.gov/legis/2005_06/pdf/sb556.pdf)

### **Colorado: Advancement of New Bioscience Discoveries Initiative**

Colorado's "Advancement of New Bioscience Discoveries" legislation of 2005 is essentially a state bioscience proof-of-concept (POC) program. This program provides funds to be used on a one-to-one matched basis for development-oriented research to accelerate commercialization by reducing inventions to operational practice and validating their ability to address significant market applications. The State bioscience preclinical research program awards (which include an 8% facilities and administrative

cost) are designated at between \$50k and \$200k. Technologies are competitively selected after several steps to confirm the potential for commercial success.

- Link to the legislation: [http://www.leg.state.co.us/Clics2006A/csl.nsf/fsbillcont3/14A80D716E4F3BFD872571010064303D?Open&file=1360\\_enr.pdf](http://www.leg.state.co.us/Clics2006A/csl.nsf/fsbillcont3/14A80D716E4F3BFD872571010064303D?Open&file=1360_enr.pdf)

## 2. Specialized Facilities

Bioscience companies have two characteristics that distinguish them from other developing technology industries. First, bioscience companies are subject to a longer and more costly federally mandated oversight process. Second, they are required to conduct research in highly specialized and government inspected facilities. The specialization required in bioscience research facilities makes for some of the most expensive business real estate in the world. To offset this cost for small and emerging bioscience companies, many states are now investing in the development of specialized facilities to serve as incubators.

State governments, in particular, have become increasingly aware of the role specialized facilities play in creating a productive environment for bioscience industry development. States are integrating the need for physical facilities into their overall economic development strategy by setting aside pools of matching physical infrastructure funds to leverage public-private partnerships in commercialization. Examples of some of these programs are listed below:

### **Texas: Clean-room Construction Tax Exemption**

In 2003, the Texas Legislature passed HB 2425, an exemption from the state's sales and use tax on "pharmaceutical biotechnology clean-room" construction and equipment. The exemption applies to all tangible personal property used in connection with manufacturing, processing, or fabrication of a pharmaceutical biotechnology product in a clean-room environment.

- Link to the legislation: <http://www.legis.state.tx.us/tlodocs/78R/billtext/doc/HB02425F.doc>

### **University of Massachusetts Life Sciences Facilities Act**

In 2005, the Massachusetts Legislature passed SB 2264 to build three new industry-related facilities at the University of Massachusetts. The bill provides funding for the construction, equipment, and operating costs of a new nanotechnology and biomanufacturing facility to be built on the UMass-Lowell campus and for a bioprocessing facility near UMass-Dartmouth. The third facility, the Venture Development Center, to be constructed at UMass-Boston, will be a research and business center offering specialized R&D facilities for collaboration with companies and other research institutions.

- Link to the legislation: <http://www.mass.gov/legis/laws/seslaw06/sl060123.htm>

### **Pennsylvania: Life Sciences Greenhouse Initiative**

To capitalize on their existing strengths in the biosciences in 2001, Pennsylvania House Bill 2 created the Pennsylvania Life Sciences Greenhouse Initiative to sustain early stage risk capital for the industry. The one-time investment of \$100 million from Tobacco Settlement funding was allotted to Central Pennsylvania, Philadelphia, and Pittsburgh

and is part of Pennsylvania's larger \$2 billion Biosciences Enterprise Commitment to fuel research and development, venture capital and other early-stage company investment.

- Link to the legislation:

<http://www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=PDF&sessYr=2001&sessInd=0&billBody=H&billTyp=B&billNbr=0002&pn=0149>

### **Arizona: Biodesign Institute**

Arizona's Biodesign Institute at Arizona State University was established in 2000 to create an entrepreneurial research culture attractive to scientists uniquely capable of working across disciplines and in close cooperation with industry. In 2003, the Arizona legislature partially funded the construction of four interconnecting buildings with 800,000 square feet of advance research space with flexibility for adaptation related to new research efforts.

- Link to the legislation:

<http://www.azleg.state.az.us/legtext/46leg/1r/bills/hb2529s.pdf>

### **Delaware: Biotechnology Institute and Technology Park**

The Delaware Technology Park was created in 1991 and is an early example of a statewide collaboration between the state's universities, government, and private sector to move early technology invention to the marketplace. In 2000, Senate Bill 242 authorized the creation of Delaware Biotechnology Institute, to more fully integrate biotechnology to state-of-the-art research laboratories in the areas of biology, biochemistry, engineering, and computer science.

- Link to the legislation:

[http://www.budget.delaware.gov/fy2007/capital/FY07\\_HB535\\_BondBill.pdf](http://www.budget.delaware.gov/fy2007/capital/FY07_HB535_BondBill.pdf)

## **3. Venture Capital/ Discovery Funds**

The need for private equity funding continues to be a reality confronting all bioscience companies. Locating funds to underwrite innovative research is an on-going challenge for small companies which require significant funding to hire qualified personnel and acquire research space and equipment. More established companies require larger infusions of venture capital funding for investments in additional infrastructure and clinical research and to move products into the marketplace. It can take anywhere from 10-15 years and more than \$1 billion dollars to successfully bring a biotech product to market.

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A number of states have passed measures to encourage venture capital and discovery fund investments that benefit targeted technology sectors. These initiatives tend to specifically target early stage funding typically underserved by existing capital markets. Policymakers are establishing a variety of mechanisms to provide vital "deal flow" funding for companies at various stages of research and development.

From encouraging pension fund and quasi-public investments administered by privately managed venture funds to tax credits to angel investors. Examples of state venture capital initiatives are listed below:

### **Michigan: 21st Century Jobs Fund**

Michigan's 21st Century Jobs Fund Public Act 225 is a \$2 billion, ten-year initiative to accelerate the diversification of the state's economy and devotes approximately \$800 million for technologies in the targeted sectors of life sciences, alternative energy, and other industries. The annual awards are administered by the Michigan Economic Development Corporation (MEDC) with contracts that establish conditions and mileposts for receipt of funds. The Jobs Fund's Competitive-Edge Technologies Program invests in funds or alongside qualified private equity funds, qualified mezzanine funds, and qualified venture capital funds and a commercial enhancement program to assist small companies

- Link to the legislation: <http://www.legislature.mi.gov/documents/2005-2006/publicact/htm/2005-PA-0225.htm>

### **Maryland: Biotechnology Investment Tax Credit Program**

Maryland's 2005 Biotechnology Investment Tax Credit program, HB 664, provides income tax credits for individuals, corporations and qualified Maryland venture capital firms that invest in qualified Maryland biotechnology companies. The value of the credit is equal to 50% of an eligible investment made to a qualified Maryland company during the taxable year. The maximum amount of the credit cannot exceed \$50,000 for individual investors and \$250,000 for corporations and qualified Maryland venture capital funds. A qualified Maryland biotechnology company has its headquarters and base of operations in the state, has fewer than 50 employees, and has been in active business no longer than 10 years. A qualified venture capital firm has at least two principals who each have at least 5 years of venture capital experience and has its principal place of operation in Maryland.

- Link to the legislation: [http://www.mdbusiness.state.md.us/Resources/documents/taxincentives/Statute\\_10-725%20Biotechnology%20Investment%20Tax%20Credit.pdf](http://www.mdbusiness.state.md.us/Resources/documents/taxincentives/Statute_10-725%20Biotechnology%20Investment%20Tax%20Credit.pdf)

### **Missouri: New Enterprise Creation Venture Fund Tax Credit**

Missouri's New Enterprise Creation Tax Credit, HB 664, offers a \$20 million pool of 100 percent tax credits to individual and corporate investors in venture funds that are approved by the Missouri Seed Capital Investment Board.

- Link to the legislation: <http://www.house.mo.gov/bills99/bills99/hb664.htm>

### **Oregon University Venture Development Fund**

Oregon's University Venture Development Fund, authorized by the state legislature in 2007, allows the state's taxpayers to receive a 60 percent income tax credit on contributions that will be applied toward commercialization and entrepreneurial programs at Oregon's eight public universities. The fund will enable an aggregate \$14 million to be provided to the universities, with each institution's allocation formulated by its annual income from research grants and contracts.

- Link to the legislation: <http://www.leg.state.or.us/07reg/measpdf/sb0500.dir/sb0582.en.pdf>

### **Kentucky SBIR Matching Fund**

House Bill 422 passed in 2006 authorizing the Kentucky Economic Development Finance Authority to match federal Small Business Innovation Research and Small Business Technology Transfer awards to high-tech companies in Kentucky. This includes matching

awards of up to \$100,000 to support Phase I exploration of the technical merit or feasibility of an idea or technology. Phase II federal awards, which support full-scale research and development, would be matched by the commonwealth up to \$500,000.

- Link to the legislation: <http://www.lrc.ky.gov/record/06rs/HB422.htm>

## 4. Bioscience Workforce Initiatives

Attracting and retaining a continuing flow of educated (Ph.D., MS, BS, AA) and technically proficient workers is essential to a state aspiring to enhance bioscience industry presence. In this global economy, nearly every competitor has access to breakthroughs in technology and to the equipment and capital to produce standardized products. It is those regions however, that possess the human capital with its insights and competencies, experiencing a competitive advantage. Conversely, if a state does not have an indigenous bioscience industry, it is difficult to retain those individuals receiving science and technical degrees from state universities.

To assist with expanding their state's labor pool, many state legislatures are looking to community colleges to create two-year associate degree programs and on-site training to better reflect the changing needs of the various sectors of the bioscience industry. These new efforts have strengthened the communication lines between the industry and academia to speed access to vital human capital needed for success in the marketplace. Below are examples of state bioscience workforce initiatives:

### **North Carolina: The Golden LEAF**

The North Carolina Legislature approved a law in 1999 that placed tobacco settlement payments into three separate trust funds. One of the trust funds created is the Golden LEAF (Long-term Economic Advancement Foundation). In 2003, The Golden LEAF Foundation's board committed \$60 million to create a statewide training program for biomanufacturing workers. This grant combined with \$4.5 million from the North Carolina Biosciences Organization provided the North Carolina State University in Raleigh with \$36 million to construct a biomanufacturing facility to train workers. In the 2007, Golden LEAF awarded \$750,000 to construct and operate a modular biodiesel testing facility at Appalachian State University.

- Link to the legislation: <http://www.ncga.state.nc.us/sessions/1999/bills/senate/pdf/s6v7.pdf>
- For more information: <http://goldenleaf.org>

### **Illinois: BioTIP**

The Illinois Department of Community Economic Opportunity created the Biotechnology/Bioscience Training Investment Program (BioTIP) to provide state funded grants to companies to cover training costs for graduate students who find part-time employment as lab technicians/engineers in the biotechnology sector as well as additional training to students to enhance their practical skills. Under this program, employers are reimbursed for up to 50% of the costs for training for graduate student employees.

- Link to the legislation: <http://bio.wss.bcentral.com/stagovrel/Public%20Documents/Best%20Practices%20Legislation/BioTIP%20Program.doc>

### **California: Workforce and Development Program**

The Economic & Workforce Development Program in California was established to create education, training, and services that contribute to workforce improvement, technology deployment and business development in identified strategic priority area including biotechnology. The program provides communication and direct interaction between private and public sector education and other private training providers. The California Community Colleges work with employers, advisory committees, and agency partners to identify workforce education and training needs both in the classroom and in corporate on-site locations.

- Link to the legislation: <http://www.cccbiotech.org/pdf/EDinCCC88500.pdf>

## **5. Supportive Business Climate Incentives**

The need for a stable and supportive public policy framework is vital to industry firms large and small. It is almost impossible for any state or region to ignore the need for selective incentives to either hold existing bioscience companies or attract new enterprises. Lawmakers have become increasingly aware of the unique challenges facing bioscience companies such as the high cost and the length of time involved in the development of new bioscience products. They understand the importance of a stable and supportive business climate for small and emerging companies.

Some states are allowing companies to monetize earned R&D and net operating loss credits, sales tax exemptions for the purchase of R&D equipment, and investment tax credits to drive angel capital investment in the bioscience industry. Below are examples of such comprehensive initiatives:

### **New Jersey: High Tech Job Creation and Retention Act**

In 1997, New Jersey passed the “High-Tech Job Retention” legislation, an economic development bill designed to incentivize investment in small high-tech companies with fewer than 225 employees. The law, a four-bill package included an investment tax credit; a transferable research and development tax credit; extension of net operating losses carry-forwards from 7 years to 15 years; and research and development tax credits.

- Links to the legislation:  
<http://bio.wss.bcentral.com/stagovrel/Public%20Documents/Best%20Practices%20Legislation/NJPL334.DOC>  
<http://bio.wss.bcentral.com/stagovrel/Public%20Documents/Best%20Practices%20Legislation/NJPL349.DOC>  
<http://bio.wss.bcentral.com/stagovrel/Public%20Documents/Best%20Practices%20Legislation/NJPL350.DOC>  
<http://bio.wss.bcentral.com/stagovrel/Public%20Documents/Best%20Practices%20Legislation/NJPL351.DOC>

### **Colorado’s Sales Tax Exemption for R&D Equipment**

The Colorado State Legislature enacted legislation in 1999 establishing a refund for qualified taxpayers of all state sales and use tax paid during a given calendar year for the

purchase, storage, use, or consumption of tangible personal property to be used in Colorado directly and predominately in research and development of biotechnology.

- Link to the legislation:

[http://www.state.co.us/gov\\_dir/leg\\_dir/sess1999/hbills99/hb1335.htm](http://www.state.co.us/gov_dir/leg_dir/sess1999/hbills99/hb1335.htm)

### **Iowa: Power Fund Technology**

This legislation, passed in 2007, institutes a four-year commitment of \$100 million to increase research, development, production and use of biofuels and other sources of renewable energy. The objective is to improve energy efficiency, reduce greenhouse gas emissions. Additionally, this legislation calls for further research, development, commercialization and distribution of technologies and practices to sustain the environment and develop business in Iowa.

Approximately \$25 million per year will be available to provide financial assistance to businesses, nonprofits, educational institutions, units of state and local government and individuals conducting business, research or programs in the state. Financial assistance is to be used to accelerate research and development, knowledge transfer, technology innovation, improve economic competitiveness, increase the demand for and educate the public about technologies and approaches to advance the above goals.

- Link to the legislation

<http://coolice.legis.state.ia.us/Cool-ICE/default.asp?category=billinfo&service=billbook&GA=82&hbill=HF927>

## **III. Return on Investment**

The one thing that drives state governments as well as venture capitalists to invest in bioscience industry development is the potential for Return on Investment (ROI). ROI is a quantitative performance measurement used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. ROI has been of particular interest to elected officials as they review budget priorities in the face of shrinking state budgets.

For venture capitalists/angel investors ROI comes in the form of recouping their investments, hopefully at a healthy premium. For states it is a bit more intangible. ROI for states could mean creation of high skill, high wage jobs; an opportunity to retain the best and brightest students from state universities; or, even the induced economic impact of numerous construction and service jobs associated with a vibrant bioscience industry cluster.

In 2007 and 2008 several states analyzed the economic impact of funding for the biosciences industries. The results provide lawmakers and other stakeholder's timely and comprehensive numbers that measured the performance of state investments in the industry. Here are four examples of state and region efforts to measure the quantitative value of the biosciences industry.

### **Hawaii: High Technology Business Investment Credit**

The purpose of the High Technology Business Investment Credit is to increase investment in Hawaii's emerging science & tech companies. In order to create high-paying jobs the State supports the early stage growth of Hawaii's emerging innovation economy with

targeted investor tax credits. These tax incentives have been put in place to correct the previous lack of early state investment in Hawaii. This has helped to establish Hawaii as a tech-friendly place to do business. During the period 2002 to 2006, results with 287 Qualified High Technology Businesses (QHTB's), benefiting from this incentive were:

- Investments received totaled \$821.6 million
- Spending by these companies in Hawaii totaled \$1.043 billion
- Salaries paid totaled \$505.8 million
- The 157 QHTB's that filed in 2006 created, since their inception, 5,383 jobs
- The 157 QHTB's that filed in 2006 had an average salary of \$67,020
- The Tax Credit claimed by Hawaii residents totaled \$195.6 million

The direct benefit to the state totals nearly \$2 billion, with a cost to the state of less than 10% of that amount. In other words, this is a return on investment for the state of approximately 10 times or 1000%

- Link to the legislation:  
<http://bio.org/local/industryDev/HawaiiHighTechnologyBusinessInvestmentTaxCredit.pdf>
- For more information: [http://hawaii.gov/tax/pubs/2007hitec\\_rpt07a.pdf](http://hawaii.gov/tax/pubs/2007hitec_rpt07a.pdf)

### **OHIO Third Frontier**

Ohio's Third Frontier program has become an important part of Ohio's efforts to build a strong, technology-based economy. Its continuing purpose is to provide financial support to projects that contribute to technology-based economic development in Ohio including the biosciences.

The Third Frontier Project was initiated in February 2002. This project is the state's largest-ever commitment to expanding Ohio's high-tech research capabilities and promoting innovation and company formation and the return on investment over the past five years has been substantial. The cumulative effect of the program has provided new investment leverage outside state government, retention, expansion, and attraction of companies, and well-paying jobs. As of January 2008 the state jobs initiative spurred growth in the following areas:

- State Funds Awarded \$638 million/Co-Investment and Leverage \$2.4 billion
- Jobs Created/Retained 5,641/ Direct and Indirect Jobs Created 14,101
- Companies Created/Attracted 383
- Average Salary \$67,277
- Link to the legislation:  
<http://onlinedocs.andersonpublishing.com/oh/lpExt.dll?f=templates&fn=main-h.htm&cp=PORC>
- For more information: <http://www.thirdfrontier.com>

### **Kansas Economic Growth Act**

The Kansas Economic Growth Act of 2004 demonstrated the state's deep commitment to continued bioscience growth. The act created the Kansas Bioscience Authority and appropriated \$581 million to invest in the expansion of the state's bioscience clusters, research capacity, startups, and business expansion. The 2008 Kansas Bioscience Index

2008 reported the following economic return on state investments:

- Kansas had 981 private biosciences companies in 2004 and 1,075 in 2006, a 9.6% increase in two years
- Employment rose from 14,889 in 2004 to 16,135 in 2006
- Bioscience venture capital investment amounted to \$101.4 million
- Academic R&D spending in bioscience accounted for 62% of total academic R&D spending in the state
- Link to the legislation: <http://www.kslegislature.org/bills/2004/2647.pdf>
- For more information: <http://kansasbioauthority.org/news/Kansas-Bioscience-Index.pdf>

### **San Jose, CA -Incubator Programs**

In 2004, San Jose's incubator program created the San Jose BioCenter (SJBC) was created. The SJBC provides high tech office and wet lab space for fourteen small bioscience companies. According to a preliminary report, the bioscience sector in San Jose experienced a year- to-year growth rate of approximately 28 percent from 2002 to 2008—a rate that outpaces the Bay Area and the U.S. by a healthy margin.

A recent PriceWaterhouseCoopers' MoneyTree survey found that of 40 investments in the first quarter of 2008 in biosciences, \$436.5 million was raised from the San Jose region. These are more investments and dollars raised than any other region in the nation. According to BayBio, a nonprofit trade association serving the life sciences industry in Northern California, Santa Clara County has the largest concentration of bioscience companies of all counties in the Bay Area, \$5.9 billion or 50 percent of the life sciences gross product of the entire metropolitan Bay Area, \$12 billion, is generated there.

- For more information:  
[http://www.sjeconomy.com/publications/pressreleases/bioscience.growth\\_06\\_17\\_08.pdf](http://www.sjeconomy.com/publications/pressreleases/bioscience.growth_06_17_08.pdf)

## **IV. Recent State Legislative Initiatives**

In the past year industry attention was focused primarily on federal legislative activity in the areas of patent reform, follow-on biologics, FDA funding, and small business assistance to early-stage bioscience companies. Nonetheless, states continued to forge ahead with legislation to enhance the presence of the bioscience industry within their borders.

**Massachusetts:** In 2008, the Massachusetts legislature approved the Life Science Initiative (LSI). The LSI is a \$1 billion/10 year initiative designed to bridge the NIH funding gap, create the Massachusetts Stem Cell Bank, and establish the Massachusetts Life Science Fellowship Grants and Massachusetts Life Science Innovation Centers. In 2008, Governor Patrick signed the landmark Massachusetts Life Sciences Law.

- Link to the legislation:  
<http://www.mass.gov/legis/laws/seslaw08/sl080130.htm>

Highlights of the package include:

- \$500m in Capital Funding to be spent over a 10 year period
- \$25m each year for 10 years for the MA Life Sciences Investment Fund
- \$25m each year for 10 years in tax incentives to be awarded to certified life sciences projects
- Creates the Massachusetts Life Sciences Investment Program to expand employment in the life sciences sector
- Creates 5 Regional Technology and Innovation Centers

**Texas:** In 2007, voters approved a bond measure to provide \$3 billion in funding for cancer research over the next ten years. This measure creates the Cancer Prevention and Research Institute of Texas and authorizes the Institute to issue up to \$300 million per year to fund cancer research grants, research facilities, and cancer prevention and control programs in the State. Not more than 5% of total grant awards can be used for facility construction, and not more than 10% for prevention and control programs. The focus of the Institute's activities will be on institutions, facilities, research, and programs.

- Link to the legislation:

<http://www.capitol.state.tx.us/tlodocs/80R/billtext/html/HJ00090F.htm>

**West Virginia:** The Research Trust Fund (also known as “Bucks for Brains”) was proposed in the Governor Joe Manchin’s 2008 State of the State address in hopes of slowing the State’s “brain drain”. The legislation appropriates \$50 million to match dollar for dollar targeted donations to West Virginia and Marshall University for research in areas of energy, biotechnology, biomedical, identification technology, material science and engineering, and environmental science.

- Link to the legislation:

[http://www.legis.state.wv.us/Bill\\_Text\\_HTML/2008\\_SESSIONS/RS/BILLS/SB287%20SUB2%20enr.htm](http://www.legis.state.wv.us/Bill_Text_HTML/2008_SESSIONS/RS/BILLS/SB287%20SUB2%20enr.htm)

## IV. Additional Resources

### Websites

- Biotechnology Industry Organization  
[www.bio.org](http://www.bio.org)
- Technology Talent and Capital: State Bioscience Initiatives 2008  
<http://bio.org/local/battelle2008>
- State Science & Technology Institute  
[www.ssti.org](http://www.ssti.org)
- The Association of University Technology Managers  
[www.autm.net](http://www.autm.net)

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