

**T50T01**  
**Maryland Technology Development Corporation**

***Operating Budget Data***

(\$ in Thousands)

	<u>FY 07</u> <u>Actual</u>	<u>FY 08</u> <u>Working</u>	<u>FY 09</u> <u>Allowance</u>	<u>FY 08-09</u> <u>Change</u>	<u>% Change</u> <u>Prior Year</u>
General Fund	\$23,136	\$28,026	\$27,792	-\$234	-0.8%
<b>Total Funds</b>	<b>\$23,136</b>	<b>\$28,026</b>	<b>\$27,792</b>	<b>-\$234</b>	<b>-0.8%</b>

- The fiscal 2009 allowance for Technology Development, Transfer, and Commercialization is a \$234,000 decrease from the fiscal 2008 working appropriation.
- The Stem Cell Research program is level-funded at \$23.0 million.
- The Maryland Technology Development Corporation (TEDCO) does not report personnel data through the State budget system because the agency's employees are not State employees, but the agency reports it has 12.25 full-time State funded positions and 1.5 federally funded positions.

***Analysis in Brief***

**Major Trends**

***Investment Programs: Follow-on Funding Remains Steady in 2007; Companies Reach Product Sales:*** Follow-on funding for businesses receiving Maryland Technology Transfer Fund support came in at \$47 million in fiscal 2007, the same as in fiscal 2006, though well above the estimate of \$20 million. The track record has improved for providing pre-seed or seed stage funding to at least six companies annually that reach product sales. The number of companies that execute license agreements for their technology has been four annually.

***Technology Transfer: Patent Support and Partnering Agreements Reach Their Objectives:*** TEDCO generally reached its objective to support more than 100 patent applications annually from fiscal 2004 to 2006 and is on track to facilitate more than 30 partnering agreements annually by fiscal 2009.

Note: Numbers may not sum to total due to rounding.

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**Business Incubator Space Has Decreased, Technology Showcases Are on Track:** TEDCO supported more than 130,000 gross square feet of incubator space in fiscal 2005 and again in 2006. In 2007, it supported only 64,800 gross square feet, spending more and leveraging less in non-State funds. The agency is on track in sponsoring technology showcases at Maryland’s federal labs to help the labs present their intellectual property, ongoing research, and technology needs to potential licensees and collaborators.

## Issues

**Stem Cell Research Fund Applications and Award Contracts Are Moving Forward:** Maryland’s support for stem cell research began with a \$15 million appropriation for fiscal 2007, followed by a \$23 million appropriation for 2008. In fiscal 2008, 127 letters of intent were received and the application deadline was January 2008. **Based on existing appropriations to the fund and the actual cash flow for awards, DLS recommends deferring the fiscal 2009 allowance to fiscal 2010. TEDCO should brief the committees on the status of the Maryland Stem Cell Research Fund, including the progress on fiscal 2008 applications, the timeline for awarding funds to scientists, and anticipated commencing dates for research projects for 2008 awardees.**

**University Research Parks Performance and Technology Transfer:** The State has made significant investments in university affiliated research parks. To measure the return on these investments and evaluate overall progress toward technology commercialization, the 2006 *Joint Chairmen’s Report* requested that TEDCO and the University System of Maryland report annually on the performance of these research parks. **The Department of Legislative Services recommends TEDCO comment on efforts to boost technology transfer resources at Maryland public universities.**

## Recommended Actions

	<u>Funds</u>
1. Adopt narrative on fund balances and project activity.	
2. Add language expressing intent for the Stem Cell Research Fund.	
3. Delete Stem Cell Research Funds.	\$ 23,000,000
4. Adopt narrative on technology commercialization at universities and their affiliated research parks.	
<b>Total Reductions</b>	<b>\$ 23,000,000</b>

## **Updates**

***Outside Funding for Fiscal 2008 Totals \$800,000:*** TEDCO aims to secure federal and other funds to support its technology transfer and development efforts. Fiscal 2008 outside funding totals \$800,000, and cumulative funding since fiscal 2001 represents nearly a 14 to 1 leverage of TEDCO funds put into programs.

*T50T01 – TEDCO – Maryland Technology Development Corporation*

*Analysis of the FY 2009 Maryland Executive Budget, 2008*

**T50T01**  
**Maryland Technology Development Corporation**

***Operating Budget Analysis***

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**Program Description**

The Maryland Technology Development Corporation (TEDCO) was launched in 1998 to help commercialize the results of scientific research and development conducted by higher education institutions, federal laboratories, and private sector organizations. TEDCO also aims to promote new research activity and investments that lead to business development in Maryland.

To achieve its goals, TEDCO provides non-equity investments to early-stage technology businesses, and it funds development and patenting of new technologies at research universities. TEDCO also develops linkages with federal research facilities in the State and helps companies pursue research funds from federal and other sources.

In 2001, TEDCO was authorized to create, manage, and provide funds for the statewide Maryland Technology Incubator Program. Technology business incubators offer start-up companies physical office space, research space, and an array of business services in hopes of generating new research and jobs.

TEDCO supports stem cell research and development at Maryland's research universities and private sector research corporations in accordance with the Maryland Stem Cell Research Act of 2006. The Maryland Stem Cell Commission established an independent scientific peer review committee to review, evaluate, rank, and rate research based on procedures and guidelines that give consideration to scientific, medical, and ethical implications.

**Performance Analysis: Managing for Results**

The TEDCO mission is to facilitate business creation and foster business growth in all regions of the State through the commercialization of technology. TEDCO aims to be Maryland's leading source of funding for technology transfer and development and entrepreneurial business assistance.

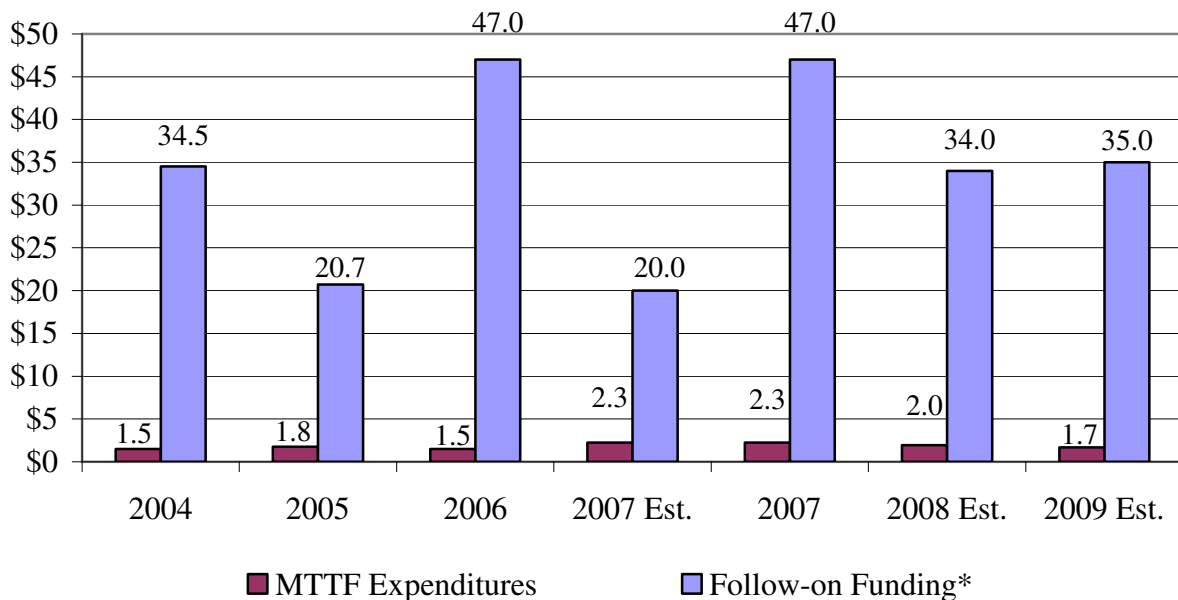
**Investment Programs: Follow-on Funding Remained High in 2007; Companies Reach Product Sales**

The Maryland Technology Transfer Fund (MTTF) provides seed investments to early stage technology companies that are economically viable but do not have the scope for a venture capital investment. The companies must partner with universities in Maryland or federal laboratories to receive funds. A measure of success for MTTF is the ability of funded start-ups to obtain follow-on funding for commercialization. The primary sources of follow-on funding include federal funds, venture capital and other equity investments, debt consolidation, and Department of Business and Economic Development (DBED) funds. TEDCO tracks follow-on funding for up to seven years for each MTTF recipient.

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Follow-on funding for MTTF recipients is shown in **Exhibit 1**. Fiscal 2007 came in at \$47.0 million, well above the estimate of \$20.0 million. Funds for MTTF were at its highest level in fiscal 2007, and Exhibit 1 shows that TEDCO’s awards have consistently generated significant follow-on funding.

**Exhibit 1**  
**Follow-on Funding for Recipients of TEDCO Investments**  
**Fiscal 2004-2009**  
**(\$ in Millions)**



\*Follow-on funding is measured for companies receiving Maryland Technology Transfer awards. Fiscal 2004 was cumulative follow-on funding to date.

Source: Maryland Technology Development Corporation; Governor’s Budget Books, Fiscal 2007-2009

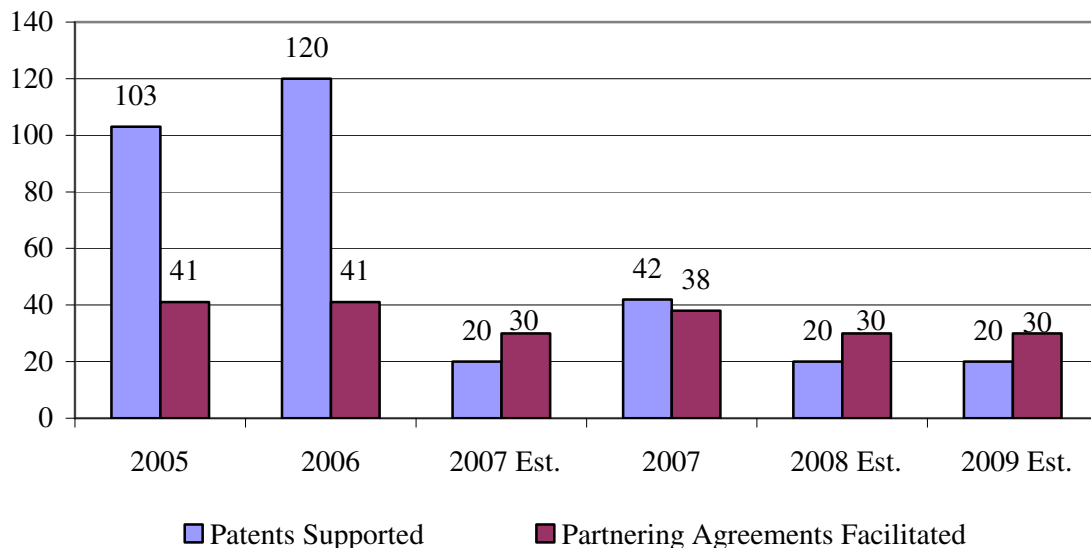
As another measure of its investment programs, TEDCO aims to provide pre-seed or seed stage funding to at least six companies each year that reach product sales by the end of the third year after the investment. In other words, this measure is tracked over three-year time frames. Four companies receiving funds in fiscal 2003 reached sales by 2006. Another eight companies reached sales in fiscal 2007, of which seven received TEDCO funding in the previous three years. TEDCO also tracks the number of awardee companies that execute license agreements for their technology. Four companies reached this level in fiscal 2006 and again in 2007, and three are expected to reach it in 2008. TEDCO helps companies work toward sales or technology licensing by assigning each one to a portfolio manager. The portfolio manager contacts the company monthly to discuss issues and link the company with investors and educational workshops.

## Technology Transfer: Patent Support and Partnering Agreements on Track

To measure its contribution to technology transfer, TEDCO tracks the number of patent applications by university faculty that it supports. By the end of fiscal 2009, the agency's objective is that the programs will result in 25 patent applications and 30 partnering agreements through the Maryland University Intellectual Property Support Fund.

**Exhibit 2** shows that the patent objective was exceeded in fiscal 2005 and 2006. The number dramatically declined in fiscal 2007 because TEDCO's original three-year funding commitment (at \$500,000 per year) for the patent program ended. The fiscal 2008 working appropriation and fiscal 2009 allowance include \$75,000 to continue the program at a more modest level. The motivation for patent funding stemmed from the findings of a study, prompted by a 2001 *Joint Chairmen's Report* request, which found Maryland ranks well in terms of federal research and development funds but near the middle of states in terms of commercializing research.

**Exhibit 2**  
**Patents Supported and Partnering Agreements Facilitated by TEDCO**  
**Fiscal 2005-2009**



Note: Patent applications are supported by TEDCO's University Patent Support Program and partnering agreements represent the number of Maryland Technology Transfer Fund awards TEDCO makes.

Source: Governor's Budget Books, Fiscal 2007-2009

## *T50T01 – TEDCO – Maryland Technology Development Corporation*

Research partnering agreements are another indication of TEDCO's contribution to technology transfer. The agency has an objective to facilitate 30 partnering agreements annually by fiscal 2009. Exhibit 2 shows that the objective was exceeded from fiscal 2005 to 2007. Partnering agreements include MTTF funding awards because a written agreement between companies and their partner universities or federal labs must be executed before awards are given. The measure also includes agreements emanating from TEDCO's federally funded technology transfer programs.

### **Business Incubator Space and Technology Showcases Are on Track**

TEDCO helps technology business growth by supporting the production of incubator space and organizing technology showcases. TEDCO supported more than 64,800 gross square feet of incubator space in fiscal 2006 and 64,800 gross square feet in 2007. Capital funds were not provided in fiscal 2008 or 2009 and so zero square feet will be supported.

TEDCO sponsors technology showcases at Maryland's federal labs to help the labs present intellectual property, ongoing research, and technology needs to potential licensees and collaborators. Showcase attendees include business owners and entrepreneurs, investors, scientists, and economic development professionals. TEDCO organizes five showcases each year. The State has more than 50 federal research facilities, including the National Institutes of Health, the National Institute of Standards and Technology, the National Aeronautical and Space Administration Goddard facility, Naval Surface/Naval Air Warfare Centers, and the Army Research Lab.

### **Governor's Proposed Budget**

The fiscal 2009 allowance is budgeted as a State general fund grant of \$27.8 million. Of this amount, \$23.0 million is dedicated to level-funding the Stem Cell Research Fund. The remaining \$4.8 million is for Technology Development, Transfer, and Commercialization, which represents a \$234,000 decrease from the fiscal 2008 working appropriation. **Exhibit 3** summarizes the major changes and shows the TEDCO budget by fund. The stem cell funds are discussed further in Issue 1.

TEDCO does not submit personnel data through the State budget process, but the agency reports that it has 12.25 full-time State funded positions and 1.5 federally funded positions. The fiscal 2009 budget for salaries and wages is \$1.6 million; specifically, there is a \$124,230 increase over the fiscal 2008 appropriation to fund an employee cost-of-living adjustment for TEDCO staff and to account for higher benefit costs. Salaries and wages includes all employer payroll taxes; health, life, and disability insurance; 401(k) management; workers' compensation and unemployment insurance; and educational benefits.

**Exhibit 3**  
**TEDCO State Budget**  
**Fiscal 2006-2009**  
**(\$ in Thousands)**

<u>Operations</u>	<u>2006</u>	<u>2007</u>	<u>Wrk. Appr.</u> <u>2008</u>	<u>Allowance</u> <u>2009</u>	<u>\$ Change</u> <u>07-08</u>	<u>% Change</u> <u>07-08</u>
Program Development and Outreach	\$361	\$322	\$241	\$246	\$5	1.9%
Technology Transfer Programs and Services	1,280	1,374	1,337	1,392	55	4.1%
Business Incubation	363	562	679	647	-32	-4.7%
Executive Management	357	303	344	357	14	4.0%
<b>Operations Subtotal</b>	<b>\$2,361</b>	<b>\$2,561</b>	<b>\$2,601</b>	<b>\$2,642</b>	<b>\$41</b>	<b>1.6%</b>
<b>Investments</b>						
Maryland Technology Transfer Fund	\$1,500	\$2,250	\$1,950	\$1,675	-\$275	-14.1%
University Technology Development Fund	450	450	400	400	-	-
University Intellectual Property Support Fund	500	100	75	75	-	-
Working Capital Loan Fund	0	500	0	0	-	-
<b>Investments Subtotal</b>	<b>\$2,450</b>	<b>\$3,300</b>	<b>\$2,425</b>	<b>\$2,150</b>	<b>-\$275</b>	<b>-11.3%</b>
Capital – Business Incubator Investment Program	\$0	\$2,275	\$0	\$0	-	-
<b>Total Operations, Investments, and Capital</b>	<b>\$4,811</b>	<b>\$8,136</b>	<b>\$5,026</b>	<b>\$4,792</b>	<b>-\$234</b>	<b>-4.7%</b>
Stem Cell Research Fund	0	15,000	23,000	23,000	-	-
<b>Grand Total</b>	<b>\$4,811</b>	<b>\$23,136</b>	<b>\$28,026</b>	<b>\$27,792</b>	<b>-\$234</b>	<b>-0.8%</b>

Source: Maryland Technology Development Corporation

### **Three Investment Programs Are Level Funded; One Declines Slightly**

TEDCO has four primary investment programs. Overall, investment programs decrease \$275,000 in the fiscal 2009 allowance, not including the proposed stem cell research fund.

***Maryland Technology Transfer Fund:*** MTTF awards seed funding to early-stage companies that partner with universities or federal laboratories in Maryland. The allowance includes \$1.7 million for this program. This represents a \$275,000 decrease from fiscal 2008. MTTF awardee companies must have a commercialization strategy to qualify, and awards are up to \$75,000 in non-equity investments per company. The companies serve as a “farm team” for DBED’s Challenge program, which targets businesses at a later stage of development. MTTF awardees also often go on to participate in the Maryland Industrial Partnerships Program at the University of Maryland, College Park. In February 2005, MTTF absorbed the TEDCO Federal Lab Partnership Program, which offered pre-seed funding for partnerships between new companies and federal labs. TEDCO has memoranda of understanding with 12 federal research facilities.

***University Technology Development Fund:*** The University Technology Development Fund provides pre-seed funding for technologies at the earliest stages of the development process. The allowance includes \$400,000 for this program. Program awards go to university technology licensing offices, with initial awards up to \$50,000 each. The offices use the funds to support early stage proof of concept testing, prototype development, feasibility demonstrations, and similar activities.

***University Intellectual Property Support Fund:*** The Maryland University Intellectual Property Support Fund provides pre-seed funding for universities’ patent application activities. The allowance includes \$75,000 to continue this program. TEDCO’s three-year, \$500,000 annual commitment to the program ended in fiscal 2006. Proposals for these funds are required to include a first United States patent application. The funds are awarded based on a formula that factors in universities’ research expenditures, invention disclosures, and patents awarded per \$10 million in research expenditures.

***Working Capital Loan Fund:*** The working capital revolving loan fund does not receive funds in the allowance because initial funding sufficiently capitalized the program to provide loans to incubator companies. TEDCO received a \$325,000 start-up grant from the federal Economic Development Administration for the fund, and TEDCO provided a \$325,000 match. The State provided another \$500,000 in fiscal 2007 to ensure all areas of the State may be served. The fund provides working capital loans of \$15,000 to \$50,000 to companies affiliated with incubators.

## ***Issues***

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### **1. Stem Cell Research Fund Applications and Award Contracts Are Moving Forward**

The Stem Cell Research Fund was established by Chapter 19 of 2006 to support stem cell research and development at Maryland research institutions or private companies. In July 2006, the members of the Stem Cell Research Commission were announced. This group reviews the proposed research process for applicant projects and makes final decisions about research grant awards. The research commission includes 15 members, as directed by statute, who include the Attorney General or designee, patient advocates, individuals with experience in biotechnology, scientists who work for the University System of Maryland (USM) and the Johns Hopkins University and do not engage in stem cell research, bioethicists, and individuals with expertise in biomedical ethics as it relates to religion. Several commission members work at institutions that are applying for funding, and so the commission has adopted conflict of interest guidelines to help members avoid inappropriately influencing commission decisions.

The commission is authorized to award two types of grants: Exploratory grants which provide up to \$100,000 per year for a maximum of two years, and Investigator-Initiated grants which award \$500,000 per year for a maximum of three years. The former is geared toward scientists new to the industry, while the latter is structured for well-established researchers.

#### **Disbursement of Funds Slow to Follow**

A strong response to the program's first year amounted to 86 proposals totaling an estimated \$81.0 million. However, award contracts were not signed until December 2007, driven partly by work undertaken by the Stem Cell Research Commission and TEDCO to draft program regulations before releasing formal Requests for Applications.

An independent scientific peer review committee did not meet until February 2007 to review and rank the scientific merit of those applications. Twenty-four awardees were identified, but contracts were not finalized by June 2007. Furthermore, the award amounts were still being negotiated to take into account other funding sources secured for proposed projects and to verify that recipients would be able to follow required procedures. Consequently, in fiscal 2007, \$14.7 million of the \$15.0 million appropriation was encumbered in anticipation of making awards in fiscal 2008. As of December 2007, all agreements have been signed. Of the 24 research grants, 15 are embryonic stem cell grants (\$8.3 million), 7 are adult stem cell grants (\$3.1 million), and 2 involve the use of both embryonic and adult stem cells (\$1.7 million). The remaining \$1.7 million will fund post-doctoral fellowships grants.

In October 2007, TEDCO formally issued a Request for Applications. The fiscal 2008 Maryland Stem Cell Research fund appropriation generated even greater interest in the field, with almost 130 letters of intent received from scientists in November 2007. The deadline for applications was January 2008, and the Stem Cell Research Commission expects to identify grantees by April. At the earliest, awards may be disbursed in June 2008.

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As a result of the extensive process and each grant's structure, the commitment of fiscal 2007 funds will be allocated to scientists during fiscal 2008 for their first round of funding. As shown in **Exhibit 4**, this is estimated at \$5.2 million, based on the mix of Exploratory and Investigator-Initiated grants. TEDCO advises that the remaining \$7.9 million has been invested in a separate account, drawing its own interest and dividends until it is paid to the awardees for the second and third years of research. During fiscal 2009, an estimated \$23.3 million will be paid to awardees for the second round of fiscal 2007 and 2008 commitments and the first round of fiscal 2009 commitments. As shown, the general funds are being appropriated at a faster rate than the actual cash flow dictates. Assuming fiscal 2008 and 2009 funds are awarded and expended during the year in which they are appropriated, total payments to researchers through fiscal 2009 are estimated to be \$23.4 million less than the cumulative general fund appropriations. If, for example, fiscal 2009 awards are paid to researchers after June 2009, total annual expenditures would drop to \$14.2 million, \$32.5 million less than the cumulative appropriation.

**Exhibit 4**  
**Maryland Technology Development Corporation (TEDCO)**  
**Stem Cell Research Fund Cash Flow**

	<u>Fiscal 2007</u>	<u>Fiscal 2008</u>	<u>Fiscal 2009</u>	<u>Fiscal 2010</u>	<u>Fiscal 2011</u>	<u>Total</u>
Cumulative Appropriation	\$15,000,000	\$38,000,000	\$61,000,000			
Year 1 Funding (\$15 million)	0	5,160,857	5,150,534	2,740,525		\$13,051,916
Year 2 Funding (\$23 million)		9,094,482	9,076,237	4,829,335		23,000,000
Year 3 Funding (\$23 million)			9,094,428	9,094,428	\$4,829,335	23,000,000
<b>Annual Expenditure</b>	<b>\$0</b>	<b>\$14,255,339</b>	<b>\$23,321,199</b>	<b>\$16,664,288</b>	<b>\$4,829,335</b>	<b>\$59,070,161</b>
<b>Cumulative Total</b>	<b>\$0</b>	<b>\$14,255,339</b>	<b>\$37,576,538</b>	<b>\$54,240,826</b>	<b>\$59,070,161</b>	
<b>Appropriation Less Cumulative Total</b>		<b>\$23,744,661</b>	<b>\$23,423,462</b>	<b>\$6,759,174</b>	<b>\$1,929,839</b>	

Note: Fiscal 2007 awards included 7 Investigator-initiated grants, which provide up to \$500,000 for up to three years, and 17 Exploratory grants, which provide up to \$100,000 for up to two years. These 24 agreements total \$13.1 million. An additional \$274,731 of the fiscal 2007 appropriation was expended in that year to cover operational expenses. TEDCO advises that the remaining \$1.7 million will fund post-doctoral fellowship grants. Estimates for fiscal 2008 and 2009 assume cash flow continues at same rate as fiscal 2007.

Source: Department of Legislative Services

## Industry May Address Ethical Concerns in Future

Since embryonic stem cells were first isolated in the late 1990s, ethical concerns have surrounded the industry. Those concerns may be addressed by recent discoveries. In November 2007, the journals *Cell* and *Science* published two independent studies led by researchers at Kyoto University in Japan and the University of Wisconsin. The research uncovers a new method for turning human skin cells into cells with the same characteristics and behavior as embryonic stem cells. These findings are still in the initial phases; however, it signals the potential for innovative methods of embryonic research that may come to fruition in the future.

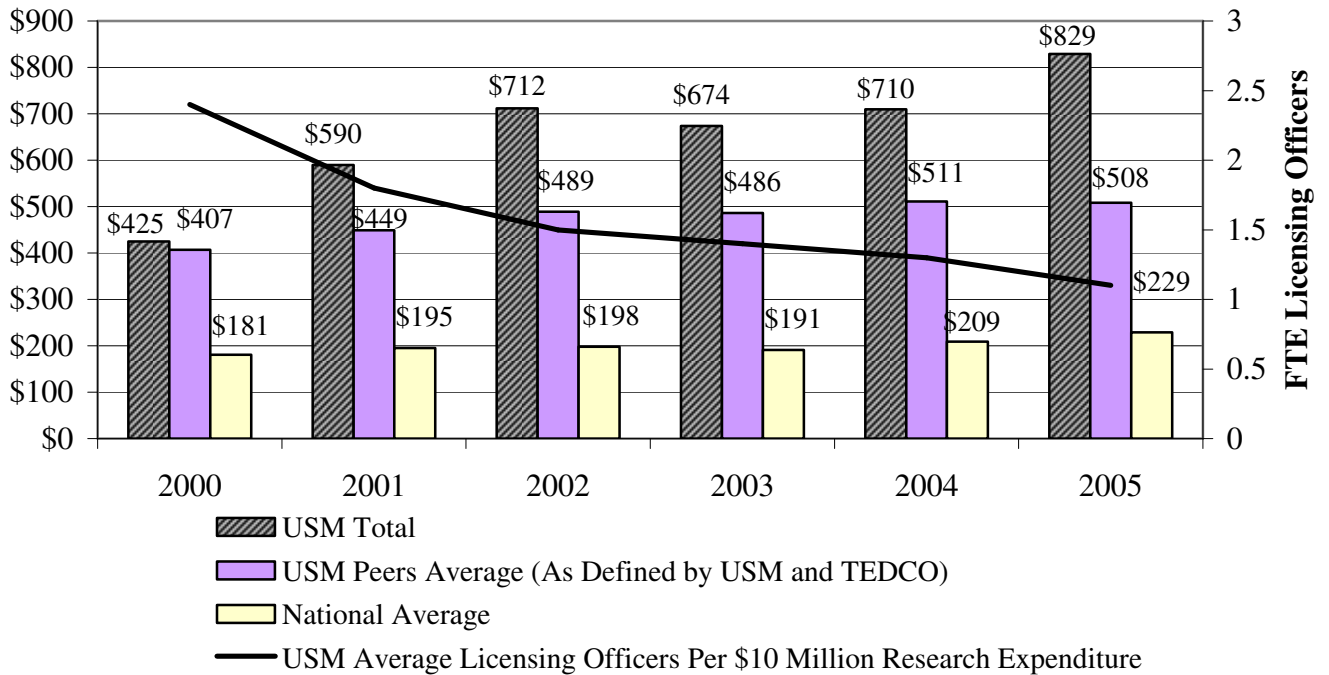
**Based on existing appropriations to the fund and the actual cash flow for awards, DLS recommends deferring the fiscal 2009 allowance to fiscal 2010. TEDCO should brief the committees on the status of the Maryland Stem Cell Research Fund, including the progress on fiscal 2008 applications, the timeline for awarding funds to scientists, and anticipated commencing dates for research projects for 2008 awardees.**

## 2. University Research Parks Performance and Technology Transfer

University-affiliated research parks bring together businesses and faculty to enhance lines of research and commercialize technology. USM parks have not been performing well in terms of reaping the financial benefits of investments in research. In response, the 2006 *Joint Chairmen's Report* requested USM and TEDCO to report annually on their performance by measuring the extent to which research expenditures result in commercialized technology. USM institutions have been devoting increased resources to research, which would presumably lead to an increase in the amount of technology transfer. This can be measured by invention disclosures, patent expenditures, licensing rates, and other performance indicators.

The first report, released in November 2006, indicated that USM institutions could effectively convert invention disclosures to patent applications and patent applications to licenses as compared to the selected peers and the national average. However, the financial returns from the licenses, as measured by patent reimbursements, lagged behind those groups. The second report showed similar findings. It also highlighted increases to research dollars among USM institutions from fiscal 2000 through 2005, far outpacing the peer group and national average. **Exhibit 5** shows the growth. Despite the growth, invention disclosure rates fell behind both national averages and peer institutions for all six years.

**Exhibit 5**  
**University System of Maryland Research Institutions**  
**Annual Research Expenditures**  
**Fiscal 2000-2005**  
**(\$ in Millions)**



FTE: Full-time Equivalent  
 USM: University System of Maryland

Source: Maryland Technology Development Corporation

The drop in invention disclosures may be partially explained by the decrease in resources dedicated to such efforts. Staffing in USM technology transfer offices has consistently been on the decline despite sizable increases in research. As measured by the number of full-time equivalent licensing officers per \$10 million in research expenditures, USM trails its peers and the nation. Technology transfer office staffing is central in maintaining relationships with commercial partners that would potentially license USM’s technology.

**The Department of Legislative Services recommends TEDCO comment on efforts to boost technology transfer resources at Maryland public universities.**

## ***Recommended Actions***

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1. Adopt the following narrative:

**Fund Balances and Project Activity:** The State has made significant investments in technology commercialization throughout the State. In order to measure the total investments made in research, technology, and commercialization, the committees request that the Maryland Technology Development Corporation (TEDCO) report annually on all fund balances for the Maryland Technology Transfer Fund, University Technology Development Fund, University Intellectual Property Support Fund, the Working Capital Loan Fund and the Stem Cell Research Fund. The fund balances should include interest earnings, federal funds, and private funding leveraged to meet the agency’s goals. The report should also include listings of annual award recipients for all deals closed or projects approved during the previous fiscal year.

<b>Information Request</b>	<b>Author</b>	<b>Due Date</b>
Annual report on fund balances and project activity	TEDCO	November 1, 2008, and November 1 of each year thereafter

2. Add the following language to the general fund appropriation:

It is the intent of the General Assembly that the fiscal 2010 legislative appropriation include \$23,000,000 to support the Stem Cell Research Fund, offsetting a \$23,000,000 reduction to the fiscal 2009 allowance. The deletion of general funds in the fiscal 2009 allowance is not a reduction to the program but reflects an adjustment based on cash flow as determined by the structure of the multi-year research grants.

**Explanation:** The commitment of fiscal 2007 funds will be allocated to scientists during fiscal 2008 for their first round of funding. This is estimated at \$5.2 million, based on the mix of Exploratory and Investigator-Initiated grants. The Maryland Technology Development Corporation (TEDCO) advises that the remaining \$7.9 million has been invested in a separate account, drawing interest and dividends until it is paid to the awardees for the second and third years of research. Total payments to researchers through fiscal 2009 are estimated to be \$23.4 million less than the cumulative general fund appropriations. A reduction of \$23.0 million would reflect the actual cash flow of awards to scientists but allow TEDCO to continue its commitment to fund research projects based on initial commitments. Future funding for the Stem Cell Research Fund may reflect actual estimated payments to scientists based on award commitments.

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- |   |                                    |    |
|---|------------------------------------|----|
|   | <b><u>Amount<br/>Reduction</u></b> |    |
| 3. Delete Stem Cell Research Funds. Existing appropriations to the fund are sufficient to support current commitments. This reduction would also improve the State’s ability to address an expected deficit by appropriating money to the fund in accordance with actual cash flow. | \$ 23,000,000                      | GF |

4. Adopt the following narrative:

**University and Affiliated Research Park Performance Data:** The State has invested over \$30.6 million in university-affiliated research parks, which bring together businesses and faculty to enhance lines of research and commercialize technology.

In order to measure the return on the State’s investments and evaluate overall progress toward technology commercialization, the committees request that the Maryland Technology Development Corporation (TEDCO) report annually on performance at the State’s primary public research institutions as well as the research parks affiliated with them. The following institutions should report data to TEDCO: the University of Maryland, College Park (including its research park); the University of Maryland, Baltimore (including its research park); the University of Maryland Baltimore County (including its research park); the University of Maryland Biotechnology Institute; and the University of Maryland Center for Environmental Science. Currently, neither Managing for Results nor Maryland Higher Education Commission peer data include consistent technology commercialization performance measures among these institutions.

The measure should include invention disclosures, cumulative active licenses and options, and adjusted license income received, among others. This type of information already is collected by most higher education research institutions and reported to the Association of University Technology Managers. Measures of affiliated business incubator performance should also be included. The University System of Maryland (USM) and TEDCO should work collaboratively to develop appropriate measures.

<b>Information Request</b>	<b>Authors</b>	<b>Due Date</b>
Annual report on technology commercialization at universities and their affiliated research parks	TEDCO USM	November 1, 2008, and November 1 of each year thereafter.

<b>Total General Fund Reductions</b>	<b>\$ 23,000,000</b>
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## ***Updates***

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### **1. Outside Funding for Fiscal 2008 Totals \$800,000**

TEDCO aims to secure federal and other funds to support its technology transfer and development efforts. **Exhibit 6** shows that, from August 2000 to January 2008, TEDCO had secured \$13.6 million from outside funding sources. Outside funding specifically for fiscal 2008 is \$800,000. The cumulative funding represents nearly a 14 to 1 leverage of TEDCO funds put into programs.

**Exhibit 6**  
**TEDCO's Outside Funding Sources**  
**Fiscal 2001-January 2008**

<u>Program</u>	<u>Amount</u>	<u>Source</u>	<u>TEDCO Match</u>	<u>Year Funded</u>	<u>Term of Grant</u>
Naval Aviation Technology Exploration Initiative ♦	\$800,000	U.S. Navy	\$0	FY08	TBD
Maryland Minority R&D Initiative ♦	592,337	SBA	0	FY07	2 years
TEDCO/MRASC Initiative ♦	1,000,000	U.S. Army	0	FY07	2 years
Fort Detrick Technology Transfer Initiative II ♦	1,500,000	U.S. Army	0	FY07	2 years
Fort Detrick Technology Transfer Initiative I ♦	799,697	U.S. Army	0	FY05	2 years
Working Capital Loan Fund ♦	325,000	EDA	325,000	FY05	2 years
NAVAir Technology Commercialization Initiative ♦	1,311,866	U.S. Navy	0	FY05	18 months
NAVAir Technology Commercialization Initiative	1,000,000	U.S. Navy	0	FY02	2 years
Aberdeen Technology Transfer Initiative II	1,100,000	U.S. Army	0	FY05	18 months
Aberdeen Technology Transfer Initiative I	965,000	U.S. Army	0	FY04	1 year
ACTiVATE (with UMBC)	600,000	NSF	60,000	FY05	2 years
Maryland Technology Partnership for Innovation	600,000	NSF	60,000	FY04	2 years
Maryland Technology Partnership for Innovation	600,000	NSF	60,000	FY01	2 years
New Markets Growth Fund (Dingman Center – UMCP) ♦♦	500,000	SBA/FHLBAtd	0	FY02	3 years
Mountain Maryland SBIR Initiative ♦	78,950	SBA	42,720	FY05	1 year
Maryland Minority SBIR Initiative ♦	225,000	SBA	150,000	FY02 and 03	2 years
Mid-Atlantic Regional Technology Transfer Center ♦	439,000	NASA	0	FY01	4 years
eReadiness Maryland ♦	210,000	Private/EDA	100,000	FY01	2 years
eReadiness Study of Western Maryland	50,000	EDA/ARC	25,000	FY03	1 year
eReadiness Study of the Eastern Shore	25,000	USDA	15,000	FY03	1 year
Rural Business Incubation Initiative ♦	494,739	SBA	0	FY05	18 months
Best Practices in Business Incubation ♦	200,000	EDA	160,000	FY02	2 years
Council of State Governments ♦	50,000	CSG	0	FY04	1 year
Council of State Governments ♦	99,997	CSG	0	FY05	1 year
American Society of Mechanical Engineers – Fellow ♦	40,000	ASME	0	FY02	2 years
<b>Total Approved August 2000 through January 2008</b>	<b>\$13,606,586</b>		<b>\$997,720</b>		

**Leverage of TEDCO Funds 13.64 : 1**

♦Funds flow through TEDCO

♦♦ \$166,000 flows through TEDCO

ASME: American Society of Mechanical Engineers

CSG: Council of State Governments

EDA: U.S. Department of Commerce – Economic Development Administration

MRASC: Maryland Research and Applied Sciences Consortium (Consortium of Historically Black Colleges and Universities in Maryland)  
NASA: National Aeronautics and Space Administration  
NSF: National Science Foundation  
SBA/FHLBAI: U.S. Small Business Administration/Federal Home Loan Bank of Atlanta  
SBIR: Small Business Innovative Research  
UMBC: University of Maryland Baltimore County  
UMCP: University of Maryland, College Park  
USDA: U.S. Department of Agriculture

Source: Maryland Technology Development Corporation

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## ***Current and Prior Year Budgets***

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### **Current and Prior Year Budgets Maryland Technology Development Corporation (\$ in Thousands)**

	<b><u>General Fund</u></b>	<b><u>Special Fund</u></b>	<b><u>Federal Fund</u></b>	<b><u>Reimb. Fund</u></b>	<b><u>Total</u></b>
<b>Fiscal 2007</b>					
Legislative Appropriation	\$20,861	\$0	\$0	\$0	\$20,861
Deficiency Appropriation	0	0	0	0	0
Budget Amendments	2,275	0	0	0	2,275
Reversions and Cancellations	0	0	0	0	0
<b>Actual Expenditures</b>	<b>\$23,136</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$23,136</b>
<b>Fiscal 2008</b>					
Legislative Appropriation	\$28,526	\$0	\$0	\$0	\$28,526
Cost Containment	-500	0	0	0	-500
Budget Amendments	0	0	0	0	0
<b>Working Appropriation</b>	<b>\$28,026</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$28,026</b>

Note: Numbers may not sum to total due to rounding.

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**Fiscal 2007**

A fiscal 2007 general fund budget amendment increased the legislative appropriation by \$2.3 million in the Maryland Technology Incubator Program. This represented general funds provided subsequent to de-authorization of taxable bonds for technology incubation facilities.

**Fiscal 2008**

In fiscal 2008, general funds decrease \$500,000 due to cost containment. This reduces grants in Technology Development, Transfer, and Commercialization and the Incubator Program.

**Object/Fund Difference Report  
Maryland Technology Development Corporation**

<u>Object/Fund</u>	<u>FY07 Actual</u>	<u>FY08 Working Appropriation</u>	<u>FY09 Allowance</u>	<u>FY08-FY09 Amount Change</u>	<u>Percent Change</u>
<b>Objects</b>					
12 Grants, Subsidies, and Contributions	\$ 23,136,000	\$ 28,026,000	\$ 27,792,000	-\$ 234,000	-0.8%
<b>Total Objects</b>	<b>\$ 23,136,000</b>	<b>\$ 28,026,000</b>	<b>\$ 27,792,000</b>	<b>-\$ 234,000</b>	<b>-0.8%</b>
<b>Funds</b>					
01 General Fund	\$ 23,136,000	\$ 28,026,000	\$ 27,792,000	-\$ 234,000	-0.8%
<b>Total Funds</b>	<b>\$ 23,136,000</b>	<b>\$ 28,026,000</b>	<b>\$ 27,792,000</b>	<b>-\$ 234,000</b>	<b>-0.8%</b>

Note: The fiscal 2008 appropriation does not include deficiencies.

**Fiscal Summary**  
**Maryland Technology Development Corporation**

<u>Program/Unit</u>	<u>FY07 Actual</u>	<u>FY08 Wrk Approp</u>	<u>FY09 Allowance</u>	<u>Change</u>	<u>FY08-FY09 % Change</u>
01 Tech. Development, Transfer, and Commercialization	\$ 5,861,000	\$ 5,026,000	\$ 4,792,000	-\$ 234,000	-4.7%
02 Maryland Technology Incubator Program	2,275,000	0	0	0	0%
03 Stem Cell Research Fund	15,000,000	23,000,000	23,000,000	0	0%
<b>Total Expenditures</b>	<b>\$ 23,136,000</b>	<b>\$ 28,026,000</b>	<b>\$ 27,792,000</b>	<b>-\$ 234,000</b>	<b>-0.8%</b>
General Fund	\$ 23,136,000	\$ 28,026,000	\$ 27,792,000	-\$ 234,000	-0.8%
<b>Total Appropriations</b>	<b>\$ 23,136,000</b>	<b>\$ 28,026,000</b>	<b>\$ 27,792,000</b>	<b>-\$ 234,000</b>	<b>-0.8%</b>

Note: The fiscal 2008 appropriation does not include deficiencies.

**Maryland Technology Development Corporation (TEDCO)  
Fiscal 2007 Award Recipients**

	<u>Amount</u>	<u>Funding by Other Sources</u>	<u>MD State Appropriation</u>
<b>Incubator Feasibility Study</b>			
East Baltimore Dev Inc (EBDI)	\$25,000.00		\$25,000.00
TechCenter at UMBC	<u>25,000.00</u>		<u>25,000.00</u>
	50,000.00		50,000.00
<b>Incubator Business Assistance</b>			
Hagerstown TIC	20,000.00		20,000.00
UMCP TAP	20,000.00		20,000.00
Neotech - Howard CO EDA	20,000.00		20,000.00
Garret Information Enterprise Center	20,000.00		20,000.00
TechCenter at UMBC	25,000.00		25,000.00
PG Co Tech Assistance Center	20,000.00		20,000.00
Frederick Innovative Tech Center	20,000.00		20,000.00
CIC (Chesapeake Innovation Ctr)	20,000.00		20,000.00
TowsonGlobal	5,000.00		5,000.00
Emerging Technology Center	<u>25,000.00</u>		<u>25,000.00</u>
	195,000.00		195,000.00
<b>Maryland Technology Transfer Fund (MTTF)</b>			
Chesapeake Green Fuels	75,000.00		75,000.00
ChromoTrax Inc	75,000.00		75,000.00
Foligo Therapeutics	75,000.00		75,000.00
Zylacta	75,000.00		75,000.00
CCC Diagnostics (J&J)	75,000.00	25,000.00	50,000.00
Biomedica Mgt Corp (J&J)	75,000.00	37,500.00	37,500.00
Leukosight Inc	75,000.00		75,000.00
Nano Solutions	75,000.00		75,000.00
Cryptotolex	74,600.00		74,600.00
Audioeye	74,900.00		74,900.00
Immunomic Therapeutics Inc	75,000.00		75,000.00
MobiLaps LLC	75,000.00		75,000.00
Dockside Vision	74,625.33		74,625.33
Sensics (Phase II)	50,000.00		50,000.00
Sensics (DAC)	50,000.00		50,000.00
Hygea BioPharma Inc	75,000.00		75,000.00
Nano Solutions	75,000.00		75,000.00
BCG Wireless LLC	75,000.00		75,000.00
Powergrid Fitness (Interaction Lab)	75,000.00		75,000.00
InfraTrac Inc	75,000.00		75,000.00
Neuronascent Inc (J&J)	100,000.00	50,000.00	50,000.00
WellDoc Communications (J&J)	75,000.00	37,500.00	37,500.00

*T50T01 – TEDCO – Maryland Technology Development Corporation*

Appendix 4 (Cont.)

	<u>Amount</u>	<u>Funding by Other Sources</u>	<u>MD State Appropriation</u>
Instant Access Networks	70,000.00		70,000.00
eClinForce.com	75,000.00		75,000.00
SEGMA LLC	74,991.00		74,991.00
Quickpath Technologies	75,000.00		75,000.00
Signal Storage Innovations	<u>75,000.00</u>		<u>75,000.00</u>
	1,994,116.33	150,000.00	1,844,116.33
<b>University Technology Development Fund (UTDF)</b>			
UMCP – Erhman	50,000.00		50,000.00
UMBC – Freeland	50,000.00		50,000.00
UMCP – Eichhorn	50,000.00		50,000.00
UMB – Dr. Hayashi	50,000.00		50,000.00
JHU – T Abraham	50,000.00		50,000.00
UMCP – Lo	50,000.00		50,000.00
JHU – Yarema	50,000.00		50,000.00
APL – J Spedden	60,000.00		60,000.00
UMCP – DeShong	50,000.00		50,000.00
JHU – D Berkowitz	<u>50,000.00</u>		<u>50,000.00</u>
	510,000.00		510,000.00
<b>Patent Program</b>			
UMBC	12,500.00		12,500.00
UMBI	20,000.00		20,000.00
Univ. of MD (Tech Comm.) College Park	44,000.00		44,000.00
JHU APL	11,500.00		11,500.00
UMB	40,000.00		40,000.00
JHU	<u>31,000.00</u>		<u>31,000.00</u>
	159,000.00		159,000.00
<b>Tech Start</b>			
APL - Sensing Machines	15,000.00		15,000.00
UMCP - DeShong, Stein	15,000.00		15,000.00
UMCP - Davis	15,000.00		15,000.00
NIH - HumanWorkFlows - Heller	15,000.00		15,000.00
UMBC - Zhu, Ohnmacht, Auvil	<u>15,000.00</u>		<u>15,000.00</u>
	75,000.00		75,000.00
TOTALS	<u>2,983,116.33</u>	<u>150,000.00</u>	<u>2,833,116.33</u>
<b>Working Capital Loan Fund</b>			
Denkmeier Optical Inc	50,000.00	25,000.00	25,000.00
My Ad Box Inc	50,000.00	25,000.00	25,000.00
ADF Solutions Inc	<u>50,000.00</u>	<u>0.00</u>	<u>50,000.00</u>
	150,000.00	50,000.00	100,000.00

(1) Johnson & Johnson shared the cost with TEDCO for this project, leveraging state dollars for other MTTF Projects.

(2) Funded by Economic Development Administration (EDA).