

T50T01
Maryland Technology Development Corporation

Operating Budget Data

(\$ in Thousands)

	<u>FY 08</u> <u>Actual</u>	<u>FY 09</u> <u>Working</u>	<u>FY 10</u> <u>Allowance</u>	<u>FY 09-10</u> <u>Change</u>	<u>% Change</u> <u>Prior Year</u>
General Fund	\$28,026	\$22,332	\$22,068	-\$264	-1.2%
Adjusted General Fund	\$28,026	\$22,332	\$22,068	-\$264	-1.2%
Nonbudgeted Fund	0	0	950	950	
Adjusted Nonbudgeted Fund	\$0	\$0	\$950	\$950	
Adjusted Grand Total	\$28,026	\$22,332	\$23,018	\$686	3.1%

- The fiscal 2010 general fund allowance is \$22.1 million, a decline of approximately \$264,000. Under the corporation's existing Technology Development, Transfer, and Commercialization programs, general fund support declines by approximately \$1.3 million. Offsetting this reduction, the allowance includes \$750,000 in general funds to be transferred to the University of Maryland's Maryland Industrial Partnership Program.
- The Stem Cell Research program increases by \$400,000 in general funds in the fiscal 2010 allowance.
- The fiscal 2010 allowance marks the first time that information regarding the corporation's nonbudgeted funds is provided through the State's budget system. The allowance shows that the corporation intends to use \$950,000 from the reserve fund in fiscal 2010.
- The Maryland Technology Development Corporation (TEDCO) does not report personnel data through the State budget system because the corporation's employees are not State employees; however, the corporation reports it has 12 full-time State funded positions and 2 federally funded positions.

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

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Analysis in Brief

Major Trends

Economy Dampens Follow-on Funding: Follow-on funding for businesses receiving Maryland Technology Transfer Fund support totaled \$25.8 million in fiscal 2008, representing a decline from fiscal 2007.

Patent Applications No Longer Supported by Budget: In fiscal 2008, TEDCO reported that 20 patent applications and 30 partnering agreements resulted from the Maryland University Intellectual Property Support Fund. However, the fiscal 2010 budget includes no general funds for this program. As such, the objective to encourage patent applications and partnering agreements will no longer be supported.

Issues

Stem Cell Research Fund: In fiscal 2008, the Stem Cell Research Fund supported 58 research grants that were approved from 122 applications. The Stem Cell Research Commission is in receipt of 187 letters of intent for fiscal 2009. Although it experienced a slow start in granting awards, the commission and TEDCO expect to obligate the fiscal 2009 appropriation of \$18.0 million by the end of the year. **The Department of Legislative Services (DLS) recommends that TEDCO brief the budget committees on the activity under the Stem Cell Research Fund and specifically on the prospects for a change in regulations and funding at the federal level. Further, DLS recommends that funding for the Stem Cell Research Fund be reduced by \$13.4 million to a total of \$5.0 million in the fiscal 2010 allowance. This action will assist in alleviating the State’s ongoing structural deficit while still allowing the continuance of the stem cell program.**

Use of the TEDCO Reserve Fund: The fiscal 2010 allowance shows that TEDCO expects to use \$950,000 from its reserve fund for activities during the fiscal year. Previously, the extent to which the corporation used the reserve fund was not reported as part of the budget process. **DLS recommends that TEDCO comment on the revenues and expenditures of the reserve fund and the extent to which it will be utilized to replace the loss of general funds.**

Recommended Actions

	<u>Funds</u>
1. Reduce funds under the Stem Cell Research program.	\$ 13,400,000
Total Reductions	\$ 13,400,000

Updates

One Time Funds for Emerging Technology Grants: In February 2009, the corporation issued a Request for Application for a competitive grant program for operating and capital grants for the development of nanobiotechnology research and industry in the State. There are \$3 million in funds available for the program in fiscal 2009. No further funds are provided in the fiscal 2010 allowance.

Measuring Success of Technology Transfer Programs: The 2008 *Joint Chairmen's Report* included committee narrative requesting that the corporation annually report on progress toward technology commercialization. The submitted report shows that for some of the benchmarks, Maryland's technology transfer progress is favorable in comparison to peers. However, Maryland institutions trail behind peers in patents, staffing, and patent reimbursements.

Major Grants: Committee narrative included in the 2008 *Joint Chairmen's Report* requested a complete listing of award recipients for all deals closed or projects approved in fiscal 2008.

Outside Funding for Fiscal 2009 Totals \$2.3 Million: TEDCO aims to secure federal and other funds to support its technology transfer and development efforts. Fiscal 2009 outside funding totals \$2.3 million and cumulative funding since fiscal 2001 represents over 15 to 1 leverage of TEDCO funds.

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Maryland Technology Development Corporation

Operating Budget Analysis

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.

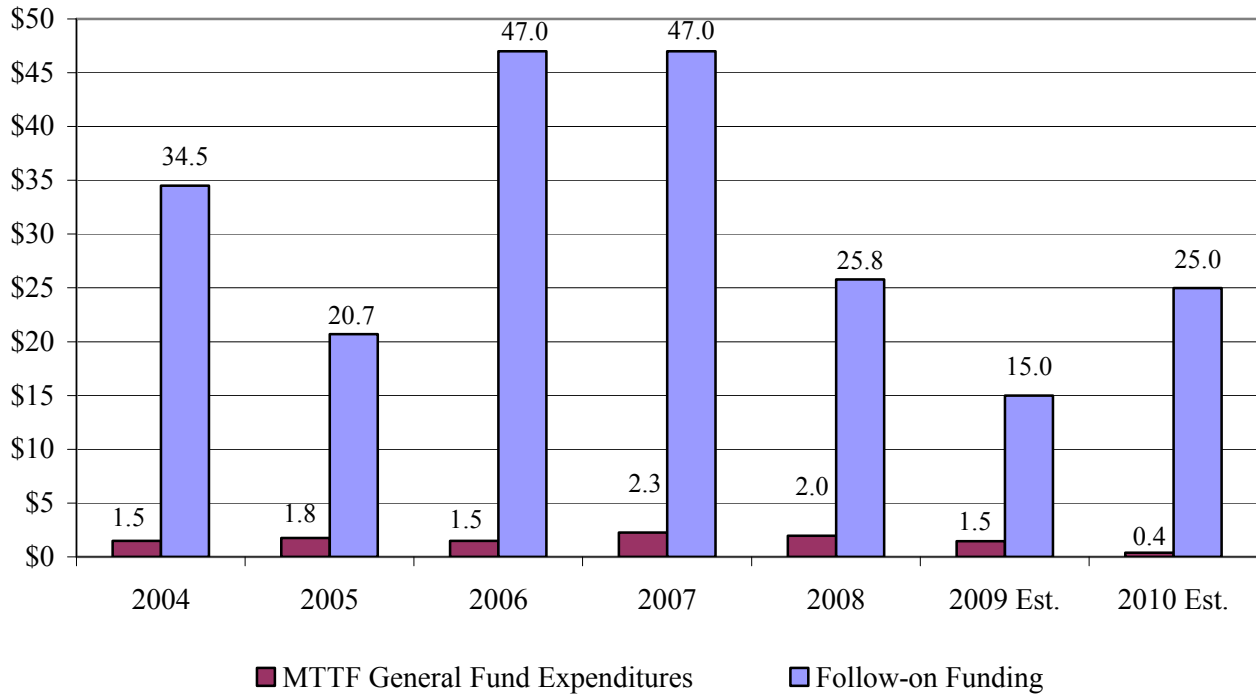
TEDCO supports stem cell research and development at Maryland's research universities and private sector research corporations in accordance with the Maryland Stem Cell Research Act of 2006. The Maryland Stem Cell Commission established an independent scientific peer review committee to review, evaluate,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

Performance Analysis: Managing for Results

Economy Dampens Follow-on Funding

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 funds include federal grants, venture capital and other equity investments, and Department of Business and Economic Development (DBED) funds. TEDCO tracks leveraged funds for up to seven years for each MTTF recipient. **Exhibit 1** shows follow-on funding for MTTF recipients relative to the amount of general fund investment for the program.

Exhibit 1
Follow-on Funding for Recipients of TEDCO Investments
Fiscal 2004-2010
(\$ in Millions)



MTTF: Maryland Technology Transfer Fund
TEDCO: Maryland Technology Development Corporation

Note: Follow-on funding is measured for companies receiving Maryland Technology Transfer Fund awards.

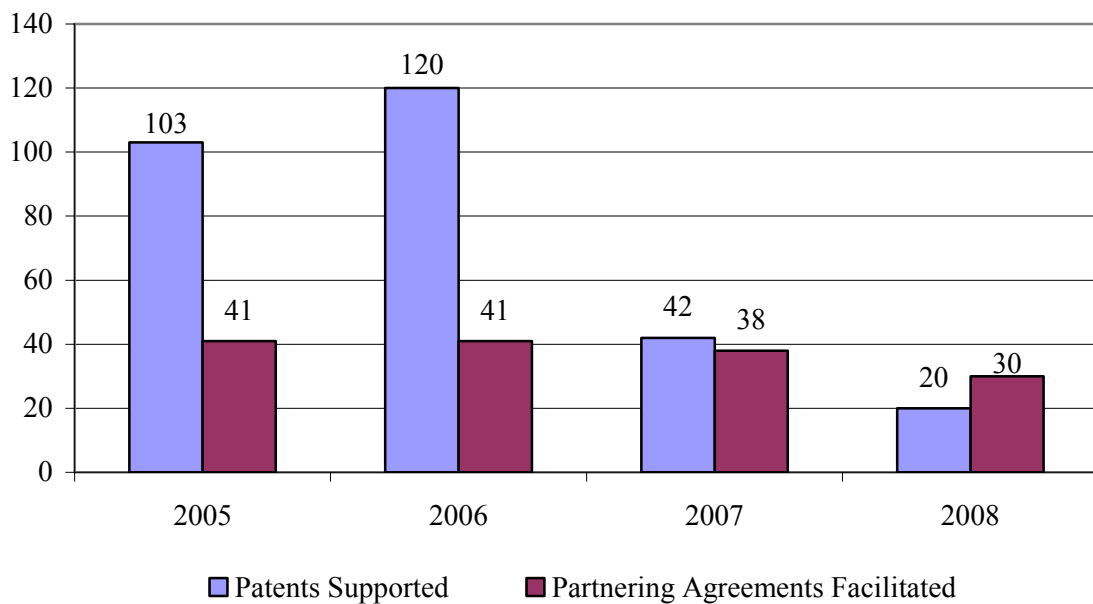
Source: TEDCO; Governor’s Budget Books, Fiscal 2007-2010

Fiscal 2006 and 2007 marked recent highs for follow-on funding of MTTF recipients. However, likely due in part to the economic climate, follow-on funding opportunities fell in fiscal 2008. Additionally, general funds available under the program fell in fiscal 2008. That trend continues through the fiscal 2010 allowance. It should be noted, however, that the MTTF program is supplemented by nonbudgeted funds from the corporation’s reserve funds and that the follow-on funding reflects the entire investment by the corporation. This measure is of particular importance to the corporation because success in raising downstream funding is a key criterion in evaluating second award proposals.

Patent Applications No Longer Supported by Budget

As part of its goal to support technology transfer, the corporation has an objective of encouraging patent applications and partnering agreements. In fiscal 2008, the corporation reported that 20 patents and 30 partnering agreements resulted from the Maryland University Intellectual Property Support Fund as shown in **Exhibit 2**.

Exhibit 2
Patents Supported and Partnering Agreements Facilitated by TEDCO
Fiscal 2005-2008



TEDCO: Maryland Technology Development Corporation

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 2005-2010

Program funding began in fiscal 2004 as a three-year commitment for \$500,000 annually. 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. This finding holds true in the more recent report from the corporation on technology transfer performance as discussed under Update 1 in this analysis.

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Funding fell considerably in fiscal 2007 as the three-year commitment expired, and the performance measures fell commensurately. The program is no longer supported by general funds. As such, the corporation expects no further activity beyond fiscal 2008. Furthermore, according to the Governor's budget books, TEDCO is no longer reporting on partnering agreements between companies and research institutions because the data is not reliable. Based on the lack of funding and reliable data, the corporation should consider altering its performance measures.

The corporation should comment on any strategies for continuing to support patent applications despite the lack of general fund support.

Fiscal 2009 Actions

Impact of Cost Containment

The cost containment effort reduced funds for the Maryland Stem Cell Research Fund from \$19.0 million to \$18.0 million. Also, the University Technology Development Fund was reduced by \$200,000, halving the number of recipients for the year. Also, the Maryland Technology Transfer Fund relinquished \$225,000, leaving \$1.45 million for the program. Finally, the agency was able to save an additional \$35,000 in reduced printing, web hosting, and equipment costs.

Proposed Budget

The fiscal 2010 allowance is, in large part, budgeted as a State general fund grant of \$22.1 million. Of this amount, \$18.4 million is dedicated to the Stem Cell Research Fund, an increase of \$400,000. The remaining \$3.7 million in general funds is for Technology Development, Transfer, and Commercialization, which represents a decrease of \$664,000 from fiscal 2009. **Exhibit 3** summarizes the major changes and shows the corporation's general fund budget by program.

The fiscal 2010 allowance also includes \$950,000 in nonbudgeted funds. The corporation has always supplemented operations with nonbudgeted funds from its reserves; however, fiscal 2010 marks the first time in which the information about these funds are shown explicitly in the budget information.

Exhibit 3
TEDCO General Fund Budget
Fiscal 2007-2010
(\$ in Thousands)

Operations	2007	2008	Working Appropriation 2009	Allowance 2010	Change 2009-10	% Change 2009-10
Program Development and Outreach	\$322	\$241	\$237	\$160	-\$77	-32.6%
Technology Transfer Programs and Svcs.	1,374	1,337	1,383	1,398	14	1.0%
Business Incubation	562	679	638	652	14	2.2%
Executive Management	303	344	349	308	-40	-11.5%
Operations Subtotal	\$2,561	\$2,601	\$2,607	\$2,518	-\$89	-3.4%
Investments						
Maryland Technology Transfer Fund	\$2,250	\$1,950	\$1,450	\$400	-\$1,050	-72.4%
Univ. Technology Development Fund	450	400	200	0	-200	-100.0%
Univ. Intellectual Property Support Fund	100	75	75	0	-75	-100.0%
Working Capital Loan Fund	500	0	0	0	-	-
Maryland Industrial Partnership Program		0	0	750	750	-
Investments Subtotal	\$3,300	\$2,425	\$1,725	\$1,150	-\$575	-33.3%
Capital – Business Incubator Investment Program	\$2,275	\$0	\$0	\$0	-	-
Total Operations, Investments, and Capital	\$8,136	\$5,026	\$4,332	\$3,668	-\$664	-15.3%
Stem Cell Research Fund	\$15,000	\$23,000	\$18,000	\$18,400	\$400	2.2%
Grand Total	\$23,136	\$28,026	\$22,332	\$22,068	-\$264	-1.2%

TEDCO: Maryland Technology Development Corporation

Source: Maryland Technology Development Corporation

The corporation does not submit personnel data through the State budget process, but the agency reports that it has 12 full-time State funded positions, 2 of which are dedicated to the Stem Cell Research program. The fiscal 2010 allowance for salaries and wages is approximately \$1.6 million, an increase of \$267,000 over the fiscal 2009 working appropriation. The increase is due, in part, to the fact that the cost-of-living adjustment was subsidized in fiscal 2009 by nonbudgeted funds. Health insurance costs are also increasing. Salaries and wages include all employer payroll taxes; health, life, and disability insurance; 401(k) management; workers' compensation and unemployment insurance; and education benefits.

No General Fund Support for the University Technology Development Fund; Other Programs Also Decline

TEDCO has four primary investment programs that are or have been supported by general funds. Overall, investment programs decrease over \$1.3 million in the fiscal 2010 allowance, not including the stem cell research fund or the Maryland Industrial Partnership program discussed later in this analysis.

Maryland Technology Transfer Fund: MTTF awards seed funding to early-stage companies that partner with universities or federal laboratories in Maryland. The allowance includes \$400,000 for this program. This represents over a \$1.0 million decrease from fiscal 2009. 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. The corporation advises that it will subsidize the general fund component of this program with a portion of the \$950,000 in nonbudgeted funds.

University Technology Development Fund: The University Technology Development Fund (UTDF) provides pre-seed funding for technologies at the earliest stages of the development process. The allowance provides no general funds for this program. Funds for this program were reduced in fiscal 2009 from the original appropriation of \$400,000 to \$200,000 as a result of cost containment. Again, the corporation advises that it will subsidize this program with a portion of the \$950,000 in nonbudgeted funds.

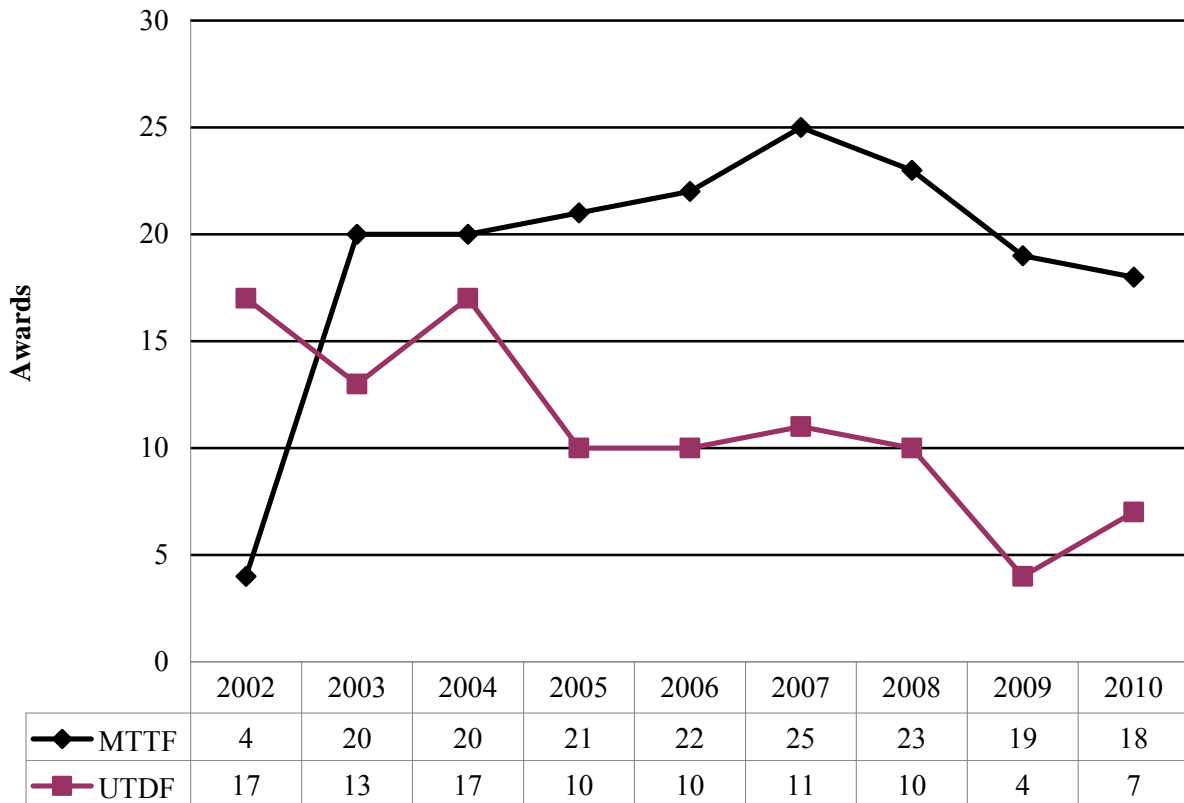
Program awards go to university technology licensing offices, with initial awards up to \$50,000 each. The offices use the funds to support early stage proof of concept testing, prototype development, feasibility demonstrations, and similar activities.

Exhibit 4 shows the number of program awards under the MTTF and the UTDF. The corporation expects to make fewer awards in fiscal 2009.

University Intellectual Property Support Fund: The Maryland University Intellectual Property Support Fund provides pre-seed funding for universities’ patent application activities. TEDCO’s three-year, \$500,000 annual commitment to the program ended in fiscal 2006. However, funding for this program continued in the fiscal 2007 through 2009 budgets, albeit at a lower level. The fiscal 2010 allowance includes no general funds for this program.

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 that 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.

**Exhibit 4
MTTF and UTDF Awards
Fiscal 2002-2010**



MTTF: Maryland Technology Transfer Fund
 UTDF: University Technology Development Fund

Source: Maryland Technology Development Corporation

Corporation Responsible for New Grant Program

The fiscal 2010 allowance includes \$750,000 in general funds to be transferred to the University of Maryland’s Maryland Industrial Partnership program. The program is designed to accelerate commercialization by matching funds for university-based research projects that help companies develop new products. These funds were previously budgeted under the budget of the Maryland Higher Education Commission; however, given TEDCO’s expertise with technology commercialization, it was deemed a better fit to be overseen by the corporation. It should be noted that the funding level for this program was reduced from \$1.0 million in fiscal 2009 to the current allowance level of \$750,000.

Issues

1. The Stem Cell Research Fund

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 fiscal 2010 allowance includes \$18.4 million in general funds to support grants under the Stem Cell Research Fund. The commission is authorized to award three types of grants:

- ***Investigator-initiated Research Grants*** are designed for investigators with preliminary data and well-established research in the stem cell field. The maximum annual grant amount is \$300,000 a year, for up to five years.
- ***Exploratory Research Grants*** are designed for investigators who are new to the stem cell field and for exploratory projects without preliminary data. The maximum annual grant amount is \$100,000 a year, for up to two years.
- ***Post-doctoral Research Grants*** are for exceptional pre-doctoral students and post-doctoral fellows who wish to conduct post-doctoral research on human stem cells in the State of Maryland with maximum support of \$55,000 a year, for up to two years.

Since the inception of the program in 2007, interest in funding has been strong; however, grants were extremely slow to close due, in part, to a thorough evaluation process and the need to draft program regulations. **Exhibit 5** shows that the fiscal 2007 appropriation of \$15.0 million was not obligated until fiscal 2008. An additional \$23.0 million was appropriated in fiscal 2008. By the end of that fiscal year, almost \$1.5 million went unobligated and was, therefore, carried forward to fiscal 2009. The corporation advises that the fund balance as well as the fiscal 2009 appropriation of \$18.0 million will be obligated by the end of the fiscal year.

Exhibit 5
Stem Cell Research Fund Balance Summary
Fiscal 2007-2010

	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u> <u>Allowance</u>
Carryforward Balance	\$0	\$14,725,269	\$1,469,759	\$0
General Fund Appropriation	15,000,000	23,000,000	18,000,000	18,400,000
Total Available	\$15,000,000	\$37,725,269	\$19,469,759	\$18,400,000
Fiscal 2007 Grant Obligations	\$0	\$13,986,916		
Fiscal 2008 Grant Obligations		21,777,380		
Fiscal 2009 Grant Obligations Est.			\$18,908,759	\$17,839,000
Total Grant Obligations	\$0	\$35,764,296	\$18,908,759	\$17,839,000
Administrative Expenses	\$274,731	\$491,214	\$561,000	\$561,000
Fund Balance	\$14,725,269	\$1,469,759	\$0	\$0

Note: Obligations represent the amount of funds to be awarded under signed agreements.

Source: Maryland Technology Development Corporation

In fiscal 2008, the corporation received 122 applications for funding. From these applications, the commission recommended, and the corporation's board approved funding for 58 research grants. Grant agreements have been executed and the research is underway. A listing of the grantees can be found under Update 2 of this analysis.

For fiscal 2009, the corporation received 187 letters of intent in response to the request for applications. The corporation advises that after an independent scientific peer review, all grants will be obligated by the end of the fiscal year.

The Department of Legislative Services (DLS) recommends that TEDCO brief the budget committees on the activity under the Stem Cell Research Fund and specifically on the prospects for a change in regulations and funding at the federal level.

Further, DLS recommends that funding for the Stem Cell Research Fund be reduced by \$13.4 million to a total of \$5.0 million in the fiscal 2010 allowance. This action will assist in alleviating the State's ongoing structural deficit while still allowing the continuance of the stem cell program.

2. Use of the TEDCO Reserve Fund

As a “body politic and corporate and constituted as a public instrumentality of the State,” TEDCO has a greater degree of flexibility under the State’s budgetary structure than a State agency. The statute authorizes the corporation to fix and collect rates, rentals, fees, royalties, and charges for services and resources it provides or makes available. The corporation accounts for such revenues as well as fund balances in its reserve fund.

The 2008 *Joint Chairmen’s Report* (JCR) included narrative that asked the corporation to report on the fund balances for TEDCO activities including interest earnings, federal funds, and private funding leveraged to meet the agency’s goals. Furthermore, the fiscal 2010 budget submission includes information on the level of nonbudgeted funds that the corporation expects to use over the course of the fiscal year. This information was not provided in previous budget submissions.

The information detailed in **Exhibit 6** was provided by TEDCO as a result of the JCR item. It shows the corporation’s revenue by source and expenditures by program. The exhibit shows that the corporation had an ending balance of about \$5.0 million in its reserve fund by the end of fiscal 2008. A similar balance is expected by the end of fiscal 2009. The revenues include federal grants, interest income, registration fees for events held by the corporation, loan repayments from MTFF recipients, royalties, and sponsorships. The fund balance also includes unspent capital proceeds (\$1.25 million) from the Incubator Development program.

The fiscal 2010 allowance includes \$950,000 in nonbudgeted funds. The corporation has always supplemented operations with nonbudgeted funds from its reserves; however, fiscal 2010 marks the first time in which the information about these funds is shown explicitly in the budget information. A portion of these funds, as always, will be used to fund the corporation’s TechStart program. The program funds university-based or federal lab-based teams to determine whether specific technologies would have the potential to be commercialized through a start-up company. The funds will also be used to replace the loss of general funds in the fiscal 2010 allowance, with specific focus on the University Technology Development Fund.

DLS recommends that TEDCO comment on the revenues and expenditures of the reserve fund and the extent to which it will be utilized to replace the loss of general funds.

**Exhibit 6
TEDCO Fund Balance Worksheet
Fiscal 2007-2009**

	<u>2007*</u>	<u>2008*</u>	<u>2009 Est.**</u>
Beginning Balance	\$2,837,025	\$4,407,928	\$5,061,283
Revenue			
State Grant Revenue – Programs/Operations	\$7,873,500	\$7,063,873	\$4,332,000
State Grant Revenue – Stem Cell	274,731	22,913,902	18,000,000
Other Grant Revenue	873,177	620,844	-
Other Revenue	593,345	431,163	-
Investment Earnings	114,162	548,770	-
Total Revenue	\$9,728,915	\$31,578,552	\$22,332,000
Total Funds Available	\$12,565,940	\$35,986,480	\$27,393,283
Expenditures/Encumbrances			
Tech Transfer	\$4,058,264	\$4,696,812	\$3,100,400
Business Incubation	3,004,123	2,332,468	644,400
Stem Cell	274,731	23,004,890	18,000,000
General and Administrative Expense	614,082	586,593	323,667
Program Development and Outreach	171,511	264,611	233,400
Depreciation and Amortization Expense	35,301	39,823	30,133
Total Expenditures/Encumbrances	\$8,158,012	\$30,925,197	\$22,332,000
Ending Balance	\$4,407,928	\$5,061,283	\$5,061,283

*Independently audited financials (includes federal funds)

**Appropriation (includes October 15, 2008 Board of Public Works reductions)

TEDCO: Maryland Technology Development Corporation

Source: Maryland Technology Development Corporation

Recommended Actions

	<u>Amount Reduction</u>	
1. Reduce funds under the Stem Cell Research program. This action will assist in alleviating the State's ongoing structural deficit, still allowing the continuance of this discretionary program at a modest level.	\$ 13,400,000	GF
Total General Fund Reductions	\$ 13,400,000	

Updates

1. One Time Funds for Emerging Technology Grants

Chapter 446 of 2008 established the Coordinating Emerging Nanobiotechnology Research in Maryland Program (CENTR) and Fund. The Act requires that the program be administered by TEDCO for the purpose of providing operating and capital grants for nanobiotechnology research projects. Specifically, the purpose of the CENTR program is to support advanced nanobiotechnology research at higher education institutions and promote Maryland as a key location for private-sector firms in the industry.

Subject to available funding in the CENTR Fund, TEDCO is required to award grants to private entities and higher education institutions in Maryland to (1) leverage federal funding for the establishment of new research centers; (2) provide pilot funding within higher education institutions in order to provide the data necessary for the development of larger grant funding proposals; (3) foster public-private partnerships; and (4) assist in nanobiotechnology transfer for commercial applications.

TEDCO may also award operating grants to higher education institutions for (1) discovery educational grants that require collaboration and matching funds from private entities; (2) grants that focus on specific applications of nanobiotechnology and require collaboration and matching funds from private entities; and (3) the development of functional and cost-effective prototypes supported by a two-for-one match in funds by private entities.

The legislation did not provide a funding source for the program. Through the budget negotiation process, the following language was attached as a compromise to the appropriation for the Department of Business and Economic Development's (DBED) Maryland Economic Development Assistance Authority and Fund.

“Further provided that \$3,000,000 of this appropriation made for the purpose of providing business assistance, may not be expended for that purpose but instead may only be used as operating and capital grants for the development of nanobiotechnology research and industry that shall be awarded under a competitive process developed in consultation with the Maryland Technology Development Corporation. Funds not expended for this restricted purpose may not be transferred by budget amendment or otherwise to any other purpose, and shall be cancelled.”

In February 2009 TEDCO, in consultation with DBED, released a Request for Application for candidates for what is now called the 2009 Maryland Nanobiotechnology Research and Industry Competition Grants. The notice specifies that applications must be Maryland-sited and may include any institute of higher education, public or private; nonprofit organizations; or for-profit entities, including small businesses. Each award is capped at \$250,000.

No further funding is provided in the fiscal 2010 allowance for the emerging technology competitive grants.

2. Measuring Success of Technology Transfer Programs

The 2008 *Joint Chairmen's Report* included committee narrative that requested that the corporation annually report on progress toward technology commercialization. The narrative noted that there are no statewide performance measures that demonstrate the return on the State's investments in university-based research centers and business incubators.

The first report was submitted in January 2009. The report focused on the comparison of USM to a variety of peer institutions with regard to technology transfer activity. Under the guidance of the committee narrative, the report detailed the comparison using the following variables: average research expenditures; invention disclosure rate; patent applications; licensing rates; reimbursed patent expenditures; staffing; and number of start-ups.

The data shows that for some of the benchmarks, Maryland's technology transfer progress is favorable in comparison to peers. For example, Maryland outpaces most of its peers in terms of average research expenditures, averaging about \$771.0 million in fiscal 2007. This may be the impetus of the success in another variable: start-ups. Maryland exceeds its peers in every year since fiscal 2003 in the number of start-ups per \$100.0 million in research expenditures.

In other variables, the State does not fare as well. Maryland institutions trail behind peers in patents, staffing, and patent reimbursements. This is of concern given the amount of research expenditures. It should follow that large investments lead to success in each variable.

There are steps underway to improve technology transfer in the State. According to the report, several universities have developed programs tailored to specific technology transfer needs. For example, the University of Maryland Baltimore County has developed ACTiVATE, a hands-on entrepreneurial program for women-owned start-up companies. Additionally, all the technology transfer offices in the State have joined together to create a newsletter and web site to make available intellectual property information in one source.

3. Major Grants

Committee narrative included in the 2008 *Joint Chairmen's Report* requested a complete listing of award recipients for all deals closed or projects approved in fiscal 2008. As requested, **Exhibit 7** shows such awards for all TEDCO's programs, including those funded by general, nonbudgeted, and federal funds. Some programs, such as the Stem Cell Research Fund, award funds by multiple years; therefore, funding levels do not necessarily match appropriation amounts.

Exhibit 7
Maryland Technology Development
Fiscal 2008 Award Recipients

	<u>Award Amount</u>	<u>Funding by Other Sources</u>	<u>State and TEDCO Funding</u>
Incubator Feasibility Study			
Carroll County	\$25,000		\$25,000
Emerging Technology Center (Baltimore)	25,000		25,000
Dorchester County Economic Development	16,000		16,000
	\$66,000		\$66,000
Incubator Development Fund			
Germantown Innovation Center	\$600,000		\$600,000
	\$600,000		\$600,000
Incubator Assistance			
Emerging Technology Centers	\$30,000		\$30,000
Hagerstown Technical Innovation Center	30,000		30,000
Garrett Information Enterprise Center	25,000		25,000
Neotech – Howard County EDA	25,000		25,000
Prince George’s County Tech. Assistance Center	25,000		25,000
Frederick Innovative Tech. Centers	25,000		25,000
Chesapeake Innovation Center	15,000		15,000
TowsonGlobal	15,000		15,000
University of Maryland Baltimore County	30,000		30,000
ETC/UMB BioInnovation Center	7,500		7,500
Maryland Business Incubation Association	10,000		10,000
Technology Advancement Program (UMCP)	30,000		30,000
Montgomery County Incubator Network	30,000		30,000
	\$297,500		\$297,500
Maryland Technology Transfer Fund			
AID Networks LLC	\$74,990		\$74,990
CertusNet Inc	75,000		75,000
ThoughtQuest LLC	75,000		75,000
New Agriculture Inc	75,000		75,000
Oxicool Inc	75,000		75,000
Widearea Data Systems LLC	75,000		75,000
BioMedica Mgmt Corp	100,000	\$50,000	50,000 (1)
Soteria Network Technologies	75,000		75,000

T50T01 – Maryland Technology Development Corporation

	<u>Award Amount</u>	<u>Funding by Other Sources</u>	<u>State and TEDCO Funding</u>	
Hememics Biotechnologies	\$75,000		\$75,000	
Encore Path Inc.	74,345		74,345	
Baltimore Animal Medicine (BamVet)	75,000		75,000	
20/20 Gene Systems	150,000	\$75,000	75,000	(1)
Sensics Inc	75,000		75,000	
Vivomind	75,000		75,000	
3CLogic Inc.	75,000		75,000	
Expression Pathology	75,000		75,000	
ChromoTrax Inc.	50,000		50,000	
Traxion Therapeutics Inc.	74,018		74,018	
CC Biotech LLC	75,000		75,000	
SentiMetrix Inc.	75,000		75,000	
InvisiTrack Inc.	75,000		75,000	
CertusNet Inc. (Phase 2 award)	75,000		75,000	
Pique Inc.	75,000		75,000	
	\$1,798,353	\$125,000	\$1,673,353	
Ft. Detrick Technology Transfer Initiative (Round 2)				
Theradigm, Inc.	\$50,000	\$50,000	\$0	(2)
APE – Bridgepath LLC	50,000	50,000	0	(2)
	\$100,000	\$100,000	\$0	
Maryland Research and Applied Sciences Consortium (Maryland's HBCUs)				
University of Maryland Eastern Shore – Dr. Hearne	\$9,026	\$9,026	\$0	(2)
University of Maryland Eastern Shore – Dr. Pitula	2,950	2,950	0	(2)
	\$11,976	\$11,976	\$0	
University Technology Development Fund				
University of Maryland, Baltimore – P. Kaufman	\$75,000		\$75,000	
Johns Hopkins University – Hai Quan Mao	50,000		50,000	
University of Maryland, College Park – M. Dagenais	50,000		50,000	
University of Maryland, College Park – N. Wereley	50,000		50,000	
University of Maryland, College Park – D. English	50,000		50,000	
University of Maryland Baltimore County – L. Zhu	50,000		50,000	
Johns Hopkins University – J. Elisseeff	50,000	\$12,500	37,500	(3)
Johns Hopkins University – Igal Madar	50,000		50,000	
University of Maryland, Baltimore – Nabile Safdar	50,000		50,000	
APL – O’Driscoll	60,000		60,000	
	\$535,000	\$12,500	\$522,500	

T50T01 – Maryland Technology Development Corporation

	<u>Award Amount</u>	<u>Funding by Other Sources</u>	<u>State and TEDCO Funding</u>	
TechStart Program				
Univ. of Maryland, College Park – Sita, Chung, Varma	\$15,000		\$15,000	
Johns Hopkins Univ. – Devenport (Syan Biosciences)	15,000		15,000	
Johns Hopkins Univ. – Steve Kubisen	15,000		15,000	
Univ. of Maryland, Baltimore – Gliknik, Elizabeth Good	15,000		15,000	
Univ. of Maryland Baltimore County – Martin / Willabus	15,000		15,000	
	\$75,000		\$75,000	
Battelle (Study of Life Sciences Community in MD)	\$169,544	\$84,772	\$84,772	(4)
ACTiVATE	50,000		50,000	
	\$219,544	\$84,772	\$134,772	
Working Capital Loan Fund				
LiveHealthier	\$50,000	\$0	\$50,000	
Soteria Network Technologies	50,000	25,000	25,000	(5)
	\$100,000	\$25,000	\$75,000	
Totals	\$3,803,373	\$359,248	\$3,444,125	
Stem Cell Research Fund				
<i>Investigator Initiated Grants (Three-year Funding)</i>				
Johns Hopkins University – T. Dawson	\$1,725,000		\$1,725,000	
Johns Hopkins University – V. Dawson	1,597,810		1,597,810	
Johns Hopkins University – E. Zambidis	1,725,000		1,725,000	
Johns Hopkins University – J. Rothstein	1,010,173		1,010,173	
Johns Hopkins University – N. Maragakis	976,243		976,243	
University of Maryland, Baltimore – L. Aurelian	626,789		626,789	
Johns Hopkins University – S. Baylin	1,725,000		1,725,000	
Johns Hopkins University – D. Kraitchman	1,378,731		1,378,731	
Kennedy Krieger – J. Lattera	751,699		751,699	
Johns Hopkins University – J. Isaacs	910,522		910,522	
University of Maryland, Baltimore – R. Eckert	941,315		941,315	
<i>Exploratory Grants (Two-year Funding)</i>				
Johns Hopkins University – N.Thakor	\$229,190		\$229,190	
Johns Hopkins University – N. Gaiano	230,000		230,000	
Johns Hopkins University – C. Dang	230,000		230,000	
Johns Hopkins University – A. Levchenko	230,000		230,000	
Johns Hopkins University – V. Raman	229,609		229,609	
Johns Hopkins University – M.R. Abraham	230,000		230,000	
Johns Hopkins University – J. Elisseeff	227,601		227,601	

T50T01 – Maryland Technology Development Corporation

	<u>Award Amount</u>	<u>Funding by Other Sources</u>	<u>State and TEDCO Funding</u>
Johns Hopkins University – D. Artemov	\$227,948		\$227,948
Johns Hopkins University – A. Quinones/Hinojosa	230,000		230,000
Johns Hopkins University – M. Pomper	230,000		230,000
University of Maryland, Baltimore – S. Atamas	224,750		224,750
University of Maryland, Baltimore – S. Zhan	230,000		230,000
Johns Hopkins University – L. Tung	230,000		230,000
Johns Hopkins University – L. Resar	230,000		230,000
Johns Hopkins University – D. Loeb	230,000		230,000
Johns Hopkins University – F. Bunz	230,000		230,000
Univ. of Maryland Biotechnology Institute – I. Baskakov	230,000		230,000
Johns Hopkins University – K. Whartenby	230,000		230,000
University of Maryland, Baltimore – S. Martin	230,000		230,000
Johns Hopkins University – C. Rudin	230,000		230,000
University of Maryland, Baltimore – Y. Qiu	230,000		230,000
Johns Hopkins University – P. Walczak	230,000		230,000
Johns Hopkins University – A. Friedman	230,000		230,000
University of Maryland, Baltimore – S. Netzel-Arnett	230,000		230,000
Johns Hopkins University – S. Yegnasubramanian	230,000		230,000
Johns Hopkins University – Y. Young Jang	230,000		230,000
Johns Hopkins University – C. Kerr	230,000		230,000
University of Maryland, Baltimore – P. Yarowsky	230,000		230,000
University of Maryland, Baltimore – D. Litwack	230,000		230,000
University of Maryland, Baltimore – H. Xu	230,000		230,000
University of Maryland, College Park – C. Keefer	230,000		230,000
Univ. of Maryland Biotechnology Institute – M. Monteiro	230,000		230,000
 <i>Post-Doctoral Fellowship Grants (Two-year Funding)</i>			
Johns Hopkins University – T. Juopperi	\$110,000		\$110,000
Johns Hopkins University – M. Bonaguidi	110,000		110,000
Johns Hopkins University – J. Carmen	110,000		110,000
Johns Hopkins University – J. Gerber	110,000		110,000
Johns Hopkins University – J. Alder	110,000		110,000
Johns Hopkins University – J. Zou	110,000		110,000
Johns Hopkins University – K. Scheibner	110,000		110,000
Johns Hopkins University – H. Guerrero	110,000		110,000
Johns Hopkins University – B. Joseph	110,000		110,000
Johns Hopkins University – M. Pryzhkova	110,000		110,000
University of Maryland, Baltimore – C. Plachez	110,000		110,000
University of Maryland, Baltimore – S. Muratoglu	110,000		110,000

T50T01 – Maryland Technology Development Corporation

	<u>Award Amount</u>	<u>Funding by Other Sources</u>	<u>State and TEDCO Funding</u>
Johns Hopkins University – F. Vesuna	\$110,000		\$110,000
Johns Hopkins University – M. Harraz	110,000		110,000
Johns Hopkins University – V. Machairaki	110,000		110,000

(1) Johnson & Johnson shared the cost with TEDCO for these projects, leveraging State dollars for other Maryland Technology Transfer Fund Projects.

(2) Funded 100% by U.S. Department of Defense

(3) Bloodstone, a venture investor, shared the cost with TEDCO for this project, leveraging state dollars for other University Technology Development Fund Projects.

(4) Funded 50% by the Department of Business and Economic Development

(5) Funded 50% by U.S. Department of Commerce, Economic Development Administration

APL: Applied Physics Lab

EDA: Economic Development Authority

ETC/UMB: Emerging Technology Center/University of Maryland, Baltimore

HBCU: Historically Black Colleges and Universities

TEDCO: Maryland Technology Development Corporation

UMCP: University of Maryland, College Park

Source: Maryland Technology Development Corporation

4. Outside Funding for Fiscal 2009 Totals \$2.3 Million

The corporation aims to secure federal and other funds to support its technology transfer and development efforts. **Exhibit 8** shows that, from August 2000 to February 2009, TEDCO had secured \$15.6 million from outside funding sources. Outside funding specifically for fiscal 2009 is \$2.3 million. The cumulative funding represents over a 15 to 1 leverage of TEDCO funds for its programs.

Exhibit 8
TEDCO Outside Funding Sources

<u>Program</u>	<u>Amount</u>	<u>Source</u>	<u>TEDCO Match</u>	<u>Leverage</u>	<u>Year Funded</u>	<u>Term of Grant</u>
BioDefense Technology Transfer Initiative ♦	\$1,500,000	U.S. Army		\$0	Fiscal 2009	TBD
Naval Aviation Technology Exploration Initiative ♦	800,000	U.S. Navy		0	Fiscal 2009	TBD
Fort Detrick Technology Transfer Enhancement ♦	460,084	DTRA		0	Fiscal 2008	1 year
Maryland Minority R&D Initiative ♦	592,337	SBA		0	Fiscal 2007	2 years
TEDCO/MRASC Initiative ♦	1,000,000	U.S. Army		0	Fiscal 2007	2 years
Fort Detrick Technology Transfer Initiative II ♦	1,500,000	U.S. Army		0	Fiscal 2007	2 years
Fort Detrick Technology Transfer Initiative I ♦	799,697	U.S. Army		0	Fiscal 2005	2 years
Working Capital Loan Fund ♦	325,000	EDA	325,000		Fiscal 2005	2 years
NAVAir Technology Commercialization Initiative ♦	1,311,866	U.S. Navy		0	Fiscal 2005	18 months
NAVAir Technology Commercialization Initiative	1,000,000	U.S. Navy		0	Fiscal 2002	2 years
Aberdeen Technology Transfer Initiative II	1,100,000	U.S. Army		0	Fiscal 2005	18 months
Aberdeen Technology Transfer Initiative I	965,000	U.S. Army		0	Fiscal 2004	1 year
ACTiVATE (with UMBC)	600,000	NSF	60,000		Fiscal 2005	2 years
Maryland Technology Partnership for Innovation	600,000	NSF	60,000		Fiscal 2004	2 years
Maryland Technology Partnership for Innovation	600,000	NSF	60,000		Fiscal 2001	2 years
New Markets Growth Fund (Dingman Center – UMCP) ♦♦	500,000	SBA/FHLBAtl		0	Fiscal 2002	3 years
Mountain Maryland SBIR Initiative ♦	78,950	SBA	42,720		Fiscal 2005	1 year
Maryland Minority SBIR Initiative ♦	225,000	SBA	150,000		Fiscal 2002 and 2003	2 years
Mid-Atlantic Regional Technology Transfer Center ♦	439,000	NASA		0	Fiscal 2001	4 years
eReadiness Maryland ♦	210,000	private/EDA	100,000		Fiscal 2001	2 years
eReadiness Study of Western Maryland	50,000	EDA/ARC	25,000		Fiscal 2003	1 year
eReadiness Study of the Eastern Shore	25,000	USDA	15,000		Fiscal 2003	1 year
Rural Business Incubation Initiative ♦	494,739	SBA		0	Fiscal 2005	18 months

<u>Program</u>	<u>Amount</u>	<u>Source</u>	<u>TEDCO Match</u>	<u>Leverage</u>	<u>Year Funded</u>	<u>Term of Grant</u>
Best Practices in Business Incubation ♦	\$200,000	EDA	\$160,000		Fiscal 2002	2 years
Council of State Governments ♦	50,000	CSG	0		Fiscal 2004	1 year
Council of State Governments ♦	99,997	CSG	0		Fiscal 2005	1 year
American Society of Mechanical Engineers - Fellow ♦	40,000	ASME	0		Fiscal 2002	2 years
Total Approved August 2000 thru February 2009	\$15,566,670		\$997,720			

- ♦fund flow through TEDCO
- ♦♦\$166,000 flows through TEDCO

ASME: American Society of Mechanical Engineers
 CSG: Council of State Governments
 DTRA: Defense Treat Reduction Agency
 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/FHLBATL: U.S. Small Business Administration/Federal Home Loan Bank of Atlanta
 SBIR: Small Business Innovative Research
 TEDCO: Maryland Technology Development Corporation
 UMBC: University of Maryland Baltimore County
 UMCP: University of Maryland, College Park
 USDA: U.S. Department of Agriculture

Source: Maryland Technology Development Corporation

Current and Prior Year Budgets

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

	<u>General Fund</u>	<u>Special Fund</u>	<u>Federal Fund</u>	<u>Reimb. Fund</u>	<u>Total</u>
Fiscal 2008					
Legislative Appropriation	\$28,526	\$0	\$0	\$0	\$28,526
Deficiency Appropriation	0	0	0	0	0
Budget Amendments	-500	0	0	0	-500
Cost Containment	0	0	0	0	0
Reversions and Cancellations	0	0	0	0	0
Actual Expenditures	\$28,026	\$0	\$0	\$0	\$28,026
Fiscal 2009					
Legislative Appropriation	\$23,792	\$0	\$0	\$0	\$23,792
Cost Containment	-1,460	0	0	0	-1,460
Budget Amendments	0	0	0	0	0
Working Appropriation	\$22,332	\$0	\$0	\$0	\$22,332

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

Fiscal 2008

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

Fiscal 2009

The cost containment effort reduced funds for the Maryland Stem Cell Research Fund from \$19.0 million to \$18.0 million. Also, the University Technology Development Fund was reduced by \$200,000, halving the number of recipients for the year. Also, the Maryland Technology Transfer Fund relinquished \$225,000, leaving \$1.45 million for the program. Finally, the agency was able to save an additional \$35,000 in reduced printing, web hosting, and equipment costs.

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

<u>Object/Fund</u>	<u>FY08 Actual</u>	<u>FY09 Working Appropriation</u>	<u>FY10 Allowance</u>	<u>FY09 - FY10 Amount Change</u>	<u>Percent Change</u>
Objects					
12 Grants, Subsidies, and Contributions	\$ 28,026,000	\$ 22,332,000	\$ 23,018,192	\$ 686,192	3.1%
Total Objects	\$ 28,026,000	\$ 22,332,000	\$ 23,018,192	\$ 686,192	3.1%
Funds					
01 General Fund	\$ 28,026,000	\$ 22,332,000	\$ 22,068,192	-\$ 263,808	-1.2%
07 Nonbudgeted Fund	0	0	950,000	950,000	N/A
Total Funds	\$ 28,026,000	\$ 22,332,000	\$ 23,018,192	\$ 686,192	3.1%

Note: The fiscal 2009 appropriation does not include deficiencies. The fiscal 2010 allowance does not include contingent reductions.

Fiscal Summary
TEDCO – Maryland Technology Development Corporation

<u>Program/Unit</u>	<u>FY08 Actual</u>	<u>FY09 Wrk Approp</u>	<u>FY10 Allowance</u>	<u>Change</u>	<u>FY09 - FY10 % Change</u>
01 Tech. Development, Transfer and Commercialization	\$ 5,026,000	\$ 4,332,000	\$ 4,618,192	\$ 286,192	6.6%
03 Maryland Stem Cell Research Fund	23,000,000	18,000,000	18,400,000	400,000	2.2%
Total Expenditures	\$ 28,026,000	\$ 22,332,000	\$ 23,018,192	\$ 686,192	3.1%
General Fund	\$ 28,026,000	\$ 22,332,000	\$ 22,068,192	-\$ 263,808	-1.2%
Nonbudgeted Fund	0	0	950,000	950,000	N/A
Total Appropriations	\$ 28,026,000	\$ 22,332,000	\$ 23,018,192	\$ 686,192	3.1%

Note: The fiscal 2009 appropriation does not include deficiencies. The fiscal 2010 allowance does not include contingent reductions.