

## Implementation Plan of University of Maryland Baltimore

### Powering Maryland Forward: USM's 2020 Plan for More Degrees, A Stronger Innovation Economy, A Higher Quality of Life

#### Introduction

The University of Maryland, Baltimore, as the System's campus for academic health, law and social work, has a primary responsibility for

- Job creation in funded research and clinical care provision
- Economic development through the development and commercialization of University intellectual property
- The development of the healthcare workforce
  - A critical need of the state and the nation
  - A primary employment opportunity for STEM graduates
- Stewardship and excellence

To meet the opportunities and challenges set forth in the USM 2020 strategic plan, Powering Maryland Forward, UMB proposes three major initiatives to meet the needs of the state of Maryland and the nation in degree attainment, economic development, transforming the academic model and achieving and sustaining national eminence, as well as continued investment in ongoing programs toward greater efficiency, effectiveness, and excellence.

#### Job creation through expanded research – Baltimore, Shady Grove, Global

- Focus research growth on areas of greatest underserved societal need (obesity, diabetes, etc.)
  - Basic, translational, societal intervention, law, policy & regulation
  - Leverage existing capabilities and investments to grow research and clinical excellence and eminence in the following areas; personalized medicine, genomics, the role of intestinal microbiome in health and disease; and vaccinology among others.
- Expand global research to address world-wide issues
  - Security, better health, surveillance, relationship building globally
  - Attract additional funding for economic expansion in Maryland

The University of Maryland Baltimore, as one of the three research intensive universities in the system, is poised to make a significant contribution to the health of the citizens of Maryland, the nation and the world by expanding its research programs. As we look to the future, the areas of aging, neuro-degeneration and management of organ failure, comparative medicine and outcomes research and disease prevention stand out as areas of critical need where UMB has either the current know-how or the future capacity to make a significant impact. The first two areas for significant expansion are the centers of excellence specified in the Mote report: the Center in Human Microbiome Research and the Center for Vaccine Development.

In addition, UMB requests support to expand its infrastructure that supports global initiatives. These key programs which address health education, research and service matters around the globe enhance the ability of UMB to address local issues. Global programs allow UMB to leverage the expertise we have developed for greater world-wide benefit. In addition, significant national and foundation funding is being targeted to global programs so growth in this area will fuel UMB's research growth providing further economic development in the state of Maryland. The requested \$2.33 million will provide much needed support in the areas of project acquisition, grants management and international support and compliance that will allow our renowned international programs to grow effectively and efficiently.

In addressing these research areas significant investment in new facilities, equipment, personnel and technologies will be required. In particular, significant new investments in the areas of biomedical informatics and imaging will provide targets for research and provide supporting platforms of the investigation of the research areas listed above. The campus is currently constrained in further research growth by a critical lack of space, particularly wet lab research space. Based on the program plan currently under review for Health Science Facility 3 (HSF3), a 70 percent increase in research in the next 10 years could be supported with HSF3 on line for FY17 and an additional building of similar size coming online by FY20. Doubling research would require a third building perhaps with a goal of having that building occupied and research doubled by FY2025. The two buildings would add approximately 360K sq ft of research space to the campus inventory increasing research space by 56% to support the 70 percent increase in research. The capital costs for these buildings, including less than 15 year life equipment would be \$600m. The incremental operation costs to support this space, the new principal investigators and research and administrative support ramps up from \$2 million per year in FY12 as the campus strengthens its ability to support research growth for its current investigators to \$18m in FY17 when the first new building opens and startup costs for 45 new investigators peaks.

The 70 percent increase in research at UMB will add significant economic activity in Baltimore and the State of Maryland. Total university spending of \$1.2 billion in FY09 generated nearly \$1.5 billion in indirect economic impact for a total impact on the Maryland economy of close to \$2.7 billion. The annual economic impact of the HSF 3 has been estimated at \$146m and 1,262 jobs. To support the increase of research volume two buildings of this size are needed adding an estimated 2,500 new jobs to the local economy.

#### Economic expansion through development and commercialization of intellectual property

Our broad research base affords us significant opportunities to translate discoveries into commercialized technologies which increase the economic base of the state, while also impacting positively the health and well being of the citizens of the state.

- Invest in new positions in tech transfer to support faculty and identify opportunities for licensing or commercial development
- Aggressively protect IP and fund seed projects to move promising ideas to a higher level of development to increase the likelihood and value of licensing
- Work on the legal, policy and ethical issues of new medical technologies and care paradigms

Consistent with the recommendations of the Mote report, UMB proposes establishing 100 new companies over the next 10 years. This would include five companies per year to be established through commercialization of technologies developed by UMB faculty. In addition, it is expected that the BioPark will attract an additional five companies per year for the next 10 years. We estimate that each company will create ten new jobs within three years of starting. Over this ten year period it is estimated that a minimum of 1,000 new jobs will be created from this activity bringing direct and indirect economic development to the state.

Furthermore, this enables UMB to better fulfill its mission to improve the health and well being of the citizens of Maryland by translating the cutting edge research UMB conducts to the critical health needs of Maryland's citizens in such areas as childhood obesity and cancer.

Increased commercialization will be accomplished by investing in new positions to support technology transfer to facilitate faculty opportunities for potential commercialization. This will allow UMB and its faculty to aggressively protect intellectual property and fund seed projects to move promising ideas to a higher level of development, and therefore increase the likelihood of licensing. In addition, an appropriately staffed technology transfer office will ensure that UMB continues to manage the legal, policy and ethical issues of new technologies and care modalities.

UMB's technology transfer office currently has eight full time staff. By comparison of benchmark peer's staffing compared to funding, UMB should have a staff of approximately 20. In addition, recurring support is needed for patent prosecution. It must be noted that as UMB pursues doubling its total research funding the support for technology transfer would require commensurate growth. The total recurring budget support for this program is \$2.75 million per annum initially increasing to \$5 million per annum in 10 years. UMB will continue to partner with the University of Maryland, College Park, ensuring faculty receive support from either institution's technology transfer office, whichever has the most appropriate expertise and is best positioned to support their needs.

#### Expansion of the academic health center programs to the Universities at Shady Grove

- Setting for transformation of the definition of the health care workforce through interprofessional training, research and service
- Expanded capacity to meet healthcare workforce needs and job training for STEM graduates
- Expansion of interdisciplinary research focused on leveraging and expanding the technology economy in Montgomery County

The University of Maryland Baltimore will expand its education, research, service and economic development opportunities by bringing health science programs to the Universities at Shady Grove over the next five to ten years. This will ultimately include participation from all of UMB's professional schools, representing a coordinated effort that establishes USG and Montgomery County as a major regional site for UMB activities in interprofessionalism. By bringing expertise from UMB in education, research, service and economic development to the existing and potential strengths at USG and the community, these assets can be leveraged to enhance our collective ability to train new professionals and create new research that will address the human condition. We estimate increasing student

enrollment by 250 professional graduates per annum inclusive of all UMB schools, phased in over five-year . These programs will focus on new in-state students. Partnering with other University System of Maryland institutions, such as University of Maryland, College Park, University of Maryland, Baltimore County and the University of Baltimore, UMB can increase collaboration in critical areas of health science education, research and service.

This expansion is predicated on new ongoing financial and capital support. First, it is estimated that creating a UMB health science campus will ultimately require \$15 million per annum in new state funding when fully developed. Second, we anticipate needing an additional 30,000 net assignable square feet of educational space. Finally, this will require additional capital support informational technology infrastructure support at the Universities at Shady Grove. This final item is included in the amount reflected in the information technology infrastructure described later in this document. This benefits the state with increased access to health and law profession graduates, increased economic activity, and increased collaborative research -- all developed in an interprofessional setting.

### Stewardship

UMB is committed to continuing to be a good steward of the funds made available by the state through the general funds budget, the state, federal and private funds it receives for specific sponsored programs, and the tuition revenue provided by our students and their families. To that end, we are committed to continue to review business processes and staffing to be as efficient as possible while responsibly supporting the growing education, research and clinical care activities. Additional dollar savings is not expected from this activity as the compliance reviews from the past year have demonstrated that UMB is critically understaffed in key administrative areas already. However, careful review will allow reallocation of resources from some areas to others of greater need. In order to support the unique business needs of UMB we will work with the system, other institutions and the state to develop business process guidelines that are effective, nimble and compliant. This includes articulating for the state the benefits of allowing the research intensive universities greater freedom within the guidelines of their funding agencies in areas such as personnel hiring, compensation and purchasing.

To deal with the increasing complexity and exposure at UMB due to the diversity and scope of its research and clinical care activities we will develop a robust enterprise risk management framework and process that allow for informed decisions on activities based on the risk profile and mitigation opportunities.

Support for the increasingly complex and expensive educational and research programs at the university will require development of all available funding streams. The work ongoing and proposed at UMB includes many areas that should be good targets for philanthropic support. Development of that income potential requires investing in both front-line and support personnel to develop a philanthropic gift development organization capable of raising significant funds to support the new operating and capital needs of the university. The University and the School of Medicine have already committed to raising \$65 million in outside funds toward the capital dollars needed for HSF3. A robust development

enterprise should be able to repeat that for each of the future research buildings as well as raising some funds to support targeted program growth and to endow faculty leadership positions. The lead time for development of a philanthropic pipeline is significant and it is not anticipated that funds from this source would be available to support operating budget needs in the first five years of the strategic plan period but that they would ramp up in the second five-year period.

### Excellence

The foundation of excellence at UMB is first and foremost its people. UMB aspires to be a premiere employer, recognized as an excellent place to work. The first foundation for that distinction is a compensation and benefits package which is competitive both with the other academic institutions and the private sector employers with which we compete. Compensation alone however is not sufficient to ensure a great quality work environment. UMB will also invest in creating a work environment and culture that values civility, respect for all employees and provides support mechanisms such as parenting support, childcare programs and work life balance support, all of which demonstrate that respect. Another critical factor in supporting our employees and students is investment in pedestrian safety, traffic flow, campus and community retail amenities and green space upgrades outlined in the campus master plan. Finally, as the state's health care campus, UMB needs to be in a leadership position in developing and implementing healthy workplace and healthy lifestyle initiatives for our employees and campus community. We should practice and demonstrate the very best in healthy lifestyles and develop relationships with our insurance providers and health care data systems that demonstrate not only the benefits of good health but also the economic benefits of healthy lifestyles.

The IT cyberinfrastructure of our campus is another critical component of excellence which will require investment over the next five to 10 years to support the creative expansion of educational programs, particularly in geographically diverse areas and to support growing and increasingly data- intensive research. We are currently at capacity on our network backbone during peak load periods and even at steady-state are running at closer to maximum capacity than is sustainable in the long term. Investment in network capacity, equipment upgrades and data service fees are required immediately to increase capacity to 10Gbps. Additionally, to assure the 24/7, 365 access required to support our education and research objectives a redundant wiring backbone is required to complement the infrastructure already in place. The final critical investment in the IT area is in upgrading the enterprise software which is the foundation of our business systems. The human resources module is already critically out of date and the finance systems will need to be updated as soon as the HR implementation is complete.

Over the past 15 years the system and the state have made significant investments in new facilities for education and research on the UMB campus. Unfortunately in the past several years the funding to maintain these facilities has been severely limited and a backlog of deferred maintenance is growing. There is a significant backlog from the past two years of budget constraints, and the current budget is underfunded. Two of our major research buildings are already 30 years old with the original mechanical infrastructure systems in need of significant upgrades. Complete overhauls of these systems could range up to \$100m per building. Even at a time when we are requesting significant investment in new

facilities to support research growth it is equally important to provide the funding required to maintain what we already have. As part of the maintenance and the new investments over the 10 years we will also have to address, in conjunction with the city of Baltimore and our major utility providers, critical infrastructure deficiencies, including the extreme age of the water delivery infrastructure, the fact that the next major building (HSF3) will max out our electrical feeder capacity and continued need to focus on renewal and sustainable sources of power. These major infrastructure projects require an investment of approximately \$30m.

The system has laid out expansive and transformational goals for the next 10 year period and the University of Maryland, Baltimore is excited and energized to step up to these challenges. We recognize that the investment required to increase research by 70% and provide greatly expanded educational opportunities to address the economic development, workforce shortages and educational attainment goals is significant. However, we also believe that the outcomes for the State of Maryland in addressing critical health issues, economic impact, and leadership at the national and international level in developing the workforce for the future of our country are so compelling that the investment is justified. We look forward to working with our sister institutions; the university system and the state in making this bold plan a reality for the benefit of Maryland.

**Strategic Plan - Implementation Plan - University of Maryland, Baltimore**  
**Fiscal & Personnel Summary**  
**FY 2012 - FY 2016**  
(in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Revenue:</b>					
State Supported Appropriation					
Current Services (1)	\$9,459	\$10,059	\$10,698	\$11,379	\$12,106
Strategic Enhancements (2)	7,614	8,085	8,586	9,120	9,688
Tuition Supplement - market correction					
UG tuition rate	0	0	0	0	0
Additional revenue	0	0	0	0	0
<b>Subtotal - annual increase</b>	<b>\$17,074</b>	<b>\$18,144</b>	<b>\$19,284</b>	<b>\$20,499</b>	<b>\$21,793</b>
<b>Grand Total State Supported Appropriation &amp; HEIF</b>	<b>\$197,372</b>	<b>\$211,188</b>	<b>\$225,971</b>	<b>\$241,789</b>	<b>\$258,715</b>
<b>Tuition</b>	<b>\$108,195</b>	<b>\$112,523</b>	<b>\$117,024</b>	<b>\$121,705</b>	<b>\$126,573</b>

<b>Incremental Expenditures:</b>					
Current Services Budget	9,459	10,059	10,698	11,379	12,106
<b>Strategic Plan Themes - Dollars</b>					
55% College Degree Completion - SG expansion	3,000	3,000	3,000	3,000	3,000
Research & Competitiveness - double research expansion of technology transfer infrastructure for global programs support	2,146	1,675	273	1,879	5,918
Academic Transformation	2,750	250	250	250	250
Stewardship	2,330	60	100	100	0
Quality - people	0	0	0	0	0
Network upgrade	600	600	300	0	0
ERP system upgrades (HR and finance) facilities deferred mntce	410	410	250	250	0
	6,500	1,000	0	0	-1,000
	1,000	0	0	0	0
	8,800	0	0	0	0
	0	0	0	0	0
Subtotal SP Enhancements	27,536	6,995	4,173	5,479	8,168
<b>Total Annual Incremental Expenditures</b>	<b>\$36,995</b>	<b>\$17,054</b>	<b>\$14,871</b>	<b>\$16,858</b>	<b>\$20,274</b>
<b>Grand Total State Funded Expenditures</b>	<b>\$325,489</b>	<b>\$342,543</b>	<b>\$357,414</b>	<b>\$374,272</b>	<b>\$394,546</b>
<b>Funding Gap</b>	<b>(\$19,922)</b>	<b>(\$18,831)</b>	<b>(\$14,418)</b>	<b>(\$10,778)</b>	<b>(\$9,258)</b>

<b>Strategic Plan Themes - Personnel:</b>					
55% College Degree Completion	30.00	30.00	30.00	30.00	30.00
Research & Competitiveness	8.00	50.00	50.00	255.00	255.00
Academic Transformation	0.00	0.00	0.00	0.00	0.00
Stewardship & Quality	4.00	4.00	2.00	0.00	0.00
Quality	4.00	4.00	2.00	2.00	0.00
<b>Total Personnel Increase</b>	<b>46.00</b>	<b>88.00</b>	<b>84.00</b>	<b>287.00</b>	<b>285.00</b>

<b>Budget Indicators:</b>					
UG resident tuition rate	4%	4%	4%	4%	4%
Enrollment growth - FTES	0	62	62	63	63
Institutional Financial Aid Increase	\$0	\$400	\$524	\$649	\$774
Funding guideline attainment	69%	69%	69%	70%	71%

**Assumptions: State General Funds will increase 7% but tuition increase will be capped at 4%**

1. Current Services (mandatory costs) will be funded by a 4% general fund and a 2% max tuition increase (note: state-supported increase of %
2. General Funds of 3% and Tuition up to 2%
3. COLA funding provided by State in addition to current services.

This plan does not achieve the doubling of research in 10 years, by 2020. Based on HSF3 coming on line in FY2017 and HSF 4 in FY20 research grows by 70% over the 10 year period with doubling being achieved in 2025 with the addition of a 3rd new research building.

Strategic Plan - Implementation Plan - University of Maryland, Baltimore

Institutional Strategies		Economic Competitiveness	College Completion	Academic Transformation	Stewardship	Quality and Eminence
<b>Theme 1 - College Completion</b>						
1.a. Expand access/enrollment						
Primary Institutional strategies:						
-- outreach to new and underserved areas and populations						
P						
1.b. Increase affordability						
1.c. Improve degree completion						
Shady Grove expansion						
<b>Theme 2 - Economic Competitiveness</b>						
2.a. Develop and recruit new companies						
Primary Institutional strategies:						
-- implement Moot report						
P						
--						
2.b. Enhance R&D competitiveness						
Primary Institutional strategies:						
-- Establish National Research Centers						
P						
-- Increase research space						
P						
-- support recruitment, support and retention of faculty						
P						
2.c. Strengthen tech transfer						
Primary Institutional strategies:						
-- Increase number of Tech Transfer staff						
P						
-- Address funding deficit for patent protection						
P						
-- proof of concept and early stage funding						
P						
2.d. Increase graduates in critical areas						
Primary Institutional strategies:						
-- Expand high demand STEM programs						
P						
-- Establish new health professions program						
P						
-- strengthen programs to alleviate work force shortages						
P						
Shady Grove expansion interprofessional programs Shady Grove and interprofessional programs						
<b>Theme 3 - Academic Transformation</b>						
3.a. Course Re-design & related strategies						
3.b. Systematic support of transformation						
3.c. Develop & implement Maryland Compact						
<b>Theme 4 - Stewardship</b>						
4.a. Effectiveness and Efficiency						
Primary Institutional strategies:						
-- Expanded cost containment effort						
P						
--						
4.b. Expand philanthropic efforts						
Primary Institutional strategies:						
-- Increase staffing, both front line and support						
P						
-- Examine funding mechanisms beyond state support						
P						
<b>Theme 5 - Quality and Eminence</b>						



Strategic Plan - Implementation Plan - University of Maryland, Baltimore

		Institutional Strategies				Quality and Eminence
		College Completion	Economic Competitiveness	Academic Transformation	Stewardship	
<b>5.a. Recruit "best and brightest" students</b>						
<b>5.b. Attract &amp; retain quality faculty</b>						
Primary Institutional strategies:						
	-- competitive salaries				x	<b>P</b>
	-- hiring and retention practices				x	<b>P</b>
	-- "best places to work" initiatives					<b>P</b>
<b>5.c. Attract &amp; retain quality staff</b>						
Primary Institutional strategies:						
	-- competitive salaries				x	<b>P</b>
	-- hiring and retention practices				x	<b>P</b>
	-- "best places to work" initiatives					<b>P</b>
<b>5.d. Build &amp; maintain world-class facilities</b>						
Primary Institutional strategies:						
	-- Increase Facilities Renewal to 5% of replacement				<b>x</b>	<b>P</b>
	-- Upgrade network infrastructure to support geographically dispersed programs					
	-- Upgrade ERP systems to support more diverse and complex workforce					

**Strategic Plan - Implementation Plan - University of Maryland, Baltimore  
Impact of FY 2012 Budget on Institutional Strategies**

	Narrative of impact	If applicable, Dollar impact in FY 2012	If applicable, impact on Enrollment in FY 2012
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**Theme 1 - College Completion**

Financial Aid  
Admissions Denied  
STEM Admissions Denied  
*Institutional specific*

<p>1. Health Science Campus at Shady Grove 2. 3. (more)</p>	<p>While UMB will continue with some level of planning no steps toward implementation can be taken without funding. This will not impact enrollment in FY12 but will delay enrollment growth that was planned to begin in FY13.</p>
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**Theme 2 - Economic Competitiveness**

Tech Transfer/Company Creation

The Office of Technology Transfer will not be appropriately staffed to support identification, protection and development of intellectual property generated by the university

-4 companies

Grant/Contract Funding  
*Institutional specific*

1.  
2.  
3.  
(more)

Instead of strengthening our efforts to retain our productive research faculty and key support staff resources and investing in specific programs to increase the productivity of our existing faculty to generate additional research funding and economic activity we will be looking to decrease our expenditures where ever possible.

**Theme 3 - Academic Transformation**

Courses Re-designed  
*Institutional specific*

- 1.
  - 2.
  - 3.
- (more)

**Theme 4 - Stewardship**

*Institutional specific*

1. Implementation of enterprise risk management	Inventory of current compliance areas and assessment of risk status will continue but risk mitigation will be limited by not having staffing in the subject matter areas to design and implement new programs.
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2. Establishing a robust philanthropic support base for the activities of the campus.	Reallocation of currently budgeted resources will allow a few changes in this area but progress will be limited without new funding.
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3.  
(more)

**Theme 5 - Quality and Eminence**

Faculty complement

Student quality

*Institutional specific*

1. Excellent place to work initiative - market competitive compensation	There is no funding to address this goal. We will continue to experience retention issues in areas with specialized skillsets critical to research and program development.
2. Excellent place to work initiative - quality work environment	Progress limited to small initiatives that can be managed by the current staffing and budget.
3. Excellent place to work initiative - healthy work place initiative	Progress limited to small initiatives that can be managed by the current staffing and budget.
4. Upgrade the network backbone to 10 Gps	The capacity of our network to handle the flow of data intensive research information and to facilitate educational interactions at geographically diverse locations will be limited because we are at the maximum capacity of our current network.
5. Upgrade HRMS	The campus current implementation of our core HR management system is several upgrades behind its upgrade schedule. The system will soon be unsupported from the vendor and does not support critical HR functions including applicant tracking and self service.
6. Increase operating budget for facilities renewal toward the 5% goal	Budget will remain at the current \$2m or .2% of current replacement value. We have 2 major research facilities that house the majority of our on campus wet lab research that are greater than 30 years old and have constant issue supporting current research. The maintenance status of these buildings limits the amount of research we can accommodate on campus and is a clear deterrent in recruiting new researchers.

(more)

**Strategic Plan - Implementation Plan - University of Maryland, Baltimore  
Fiscal & Personnel Summary  
FY 2012 Impact Statement  
(in thousands)**

	FY 2012 IP Original	FY 2012 Allowance
<b>Revenue:</b>		
State Supported Appropriation		\$5,020
Current Services	\$9,459	
Strategic Enhancements	7,614	0
Tuition Supplement - market correction		
UG tuition rate	0%	
Additional revenue	0	0
<b>Subtotal - annual increase</b>	<b>\$17,073</b>	<b>\$5,020</b>
<b>Grand Total State Supported Appropriation</b>	<b>\$305,567</b>	<b>\$293,514</b>

<b>Incremental Expenditures:</b>		
Current Services Budget	9,459	10,062
Strategic Plan Themes - Dollars		
55% College Degree Completion	3,000	0
Research & Competitiveness	7,226	0
Academic Transformation	0	0
Stewardship	600	(5,042)
Quality	<u>16,710</u>	<u>0</u>
Subtotal SP Enhancements	27,536	(5,042)
<b>Total Annual Incremental Expenditures</b>	<b>\$36,995</b>	<b>\$5,020</b>

<b>Strategic Plan Themes - Personnel:</b>		
55% College Degree Completion	30.00	0.00
Research & Competitiveness	8.00	0.00
Academic Transformation	0.00	0.00
Stewardship	4.00	0.00
Quality	<u>4.00</u>	<u>0.00</u>
<b>Total Personnel Increase</b>	<b>46.00</b>	<b>0.00</b>

<b>Budget Indicators:</b>		
UG resident tuition rate	4.0%	3.0%
Enrollment growth	0	0
Institutional Financial Aid Increase(CSB+Enhancements)	\$0	\$0
Funding guideline attainment	69%	69%