


Maryland Life Sciences Advisory Board

MEETING OF THE BOARD

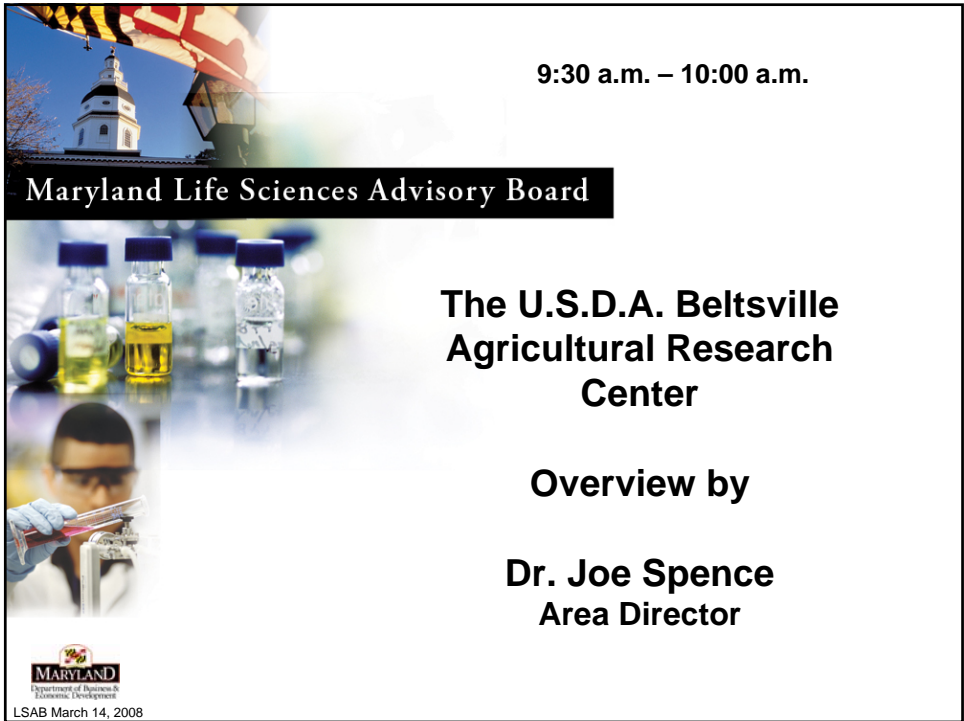
**Chair: Mr. Tom Watkins
President & CEO
Human Genome Sciences**

March 14, 2008

**Beltsville Agricultural Research Center
(USDA-BARC)**



9:30 a.m. – 10:00 a.m.




Maryland Life Sciences Advisory Board


**The U.S.D.A. Beltsville
Agricultural Research
Center**

Overview by

**Dr. Joe Spence
Area Director**



LSAB March 14, 2008



10:00 a.m. – 10:30 a.m.

Maryland Life Sciences Advisory Board

Call to Order/Roll Call

**Chairman's Opening
Remarks**

**Comments on
December 11, 2007 Meeting**

Approval of the Minutes



LSAB OUTREACH EFFORTS


- 7 WORKING GROUPS OF THE LSAB:
70+ MEMBERS OF THE BIOSCIENCE COMMUNITY
- MARYLAND BIOTECHNOLOGY CAUCUS – ANNAPOLIS
(January 2008)
- BIZ/BIO FORUM – ANNAPOLIS (February 2008)
- GBTC BOARD MEETING – BALTIMORE (March 2008)

LSAB materials including working group presentations and all upcoming announcements can be found at the Board's new website:

www.choosemaryland.org/businessinmd/Biosciences/lsab/lsab.html


- also accessible from the homepage of DBED's ChooseMaryland.org website.

LSAB March 14, 2008




LSAB PROPOSED TIMELINE


✓	May 8, 2007	Legislation creating the Maryland Life Sciences Advisory Board signed into law	
✓	September 14, 2007	Governor's Announcement of LSAB Board Members	
✓	October 17, 2007	Inaugural meeting of the LSAB	Formation of the Working Committees and identification of major areas of focus for the Strategic plan
✓	Mid-October through November 2007	First round meetings of the Working Committees	Committee Chairs define members, convene, and set agendas
✓	December 11, 2007	Second meeting of the LSAB	Reports from Working Committees on initial meetings and progress; draft of the 2007 LSAB Annual Report
✓	December 15, 2007	Submission of the 2007 Annual Report of the LSAB	This report will give a brief summary of the actions of the Board to date
✓	January 2008 through March 2008	Second round meetings of the Working Committees	Working Committees reach initial conclusions regarding their key recommendations




LSAB March 14, 2008



LSAB PROPOSED TIMELINE

	March 14, 2008	Third meeting of the LSAB	Reports from Working Committees on key recommendations to include in the Strategic Plan and next steps
	Mid-March through early May 2008	Third round meetings of the Working Committees	Working Committees finalize key recommendations, including supporting rationale and next steps
	Mid-May 2008	Fourth meeting of the LSAB	Presentations of final Working Committee recommendations and approval of Strategic Plan outline
<p>Concentrated effort on development of complete "final" recommendations</p> 	Mid- May to mid-June 2008	LSAB and Working Committees	Preparation of initial draft of Strategic Plan; review of individual sections by relevant Working Committees; identification of key fiscal and legislative impact elements
	Mid-June 2008	LSAB and Working Committees (no LSAB meeting)	Polished draft of Strategic Plan circulated to full LSAB for comment; final fiscal and legislative impact elements developed for full review
	July 1, 2008	Final comment deadline for draft of Strategic Plan	Submission of strategic plan fiscal and legislative impact elements to DBED Office of Economic Policy & Legislation




LSAB March 14, 2008

LSAB PROPOSED TIMELINE

July 7-14, 2008	Compilation and editing of the draft Strategic Plan	
July 15, 2008	Final draft of Strategic Plan circulated for final comment	
July 21, 2008	Deadline for comments to final draft of Strategic Plan	
July 22-29, 2008	Production of proof version of Strategic Plan for presentation to Governor's Office	
July 30, 2008	Fifth meeting of the LSAB	Review of proof version of Strategic Plan and discussion of steps necessary to achieve implementation
August 4, 2008	Submission of Strategic Plan Proof to Governor's office for review and comment	
Mid-August to December	Schedule to be determined	
December 15, 2008	Submission of the 2008 Annual Report of the LSAB	Proposed submission of the final issue of the Strategic Plan

All members present if possible →

Key deadline →



LSAB March 14, 2008

LSAB MEETING AGENDA

9:30 a.m. – 10:00 a.m.	Beltsville Agricultural Research Center Overview	Joe Spence
10:00 a.m. – 10:30 a.m.	Call to Order Chairman's Opening Remarks December 2007 Meeting Approval of Minutes	Tom Watkins
10:30 a.m. – 11:30 a.m.	<u>Working Group Reports I</u>	
10:30 a.m. – 10:50 a.m.	Technology Transfer and Translational Research/Academic Institutions & NGOs	Steve Desiderio
10:50 a.m. – 11:10 a.m.	Start-up & Early Stage Pipeline Programs	David Iannucci
11:10 a.m. – 11:30 a.m.	Capital Formation	Ken Carter
11:30 a.m. – 12:15 p.m.	Dr. Leslie Alexandre	



LSAB March 14, 2008



LSAB MEETING AGENDA

12:15 p.m. – 1:00 p.m.	Working Lunch Dr. Alexandre Q&A	
1:00 p.m. – 3:00 p.m.	Working Group <u>Reports II</u>	
1:00 p.m. – 1:20 p.m.	Leveraging Maryland's Unique Federal Resources	George Korch Norka Ruiz-Bravo
1:20 p.m. – 1:40 p.m.	Workforce Development & Education Programs	Hercules Pinkney for Philippe Jacon
1:40 p.m. – 2:00 p.m.	Business & Regulatory Environment	Lawrence Mahan for Chuck Fleischman
2:00 p.m. – 2:20 p.m.	Marketing and Promotion of Maryland Globally	Larry Diamond
2:20 p.m. – 3:00 p.m.	Advancing Leadership – Creating New Vision	Tom Watkins Board Discussion
3:00 p.m. – 3:15 p.m.	Next Steps	

LSAB March 14, 2008




10:30 a.m. – 11:30 a.m.

Maryland Life Sciences Advisory Board

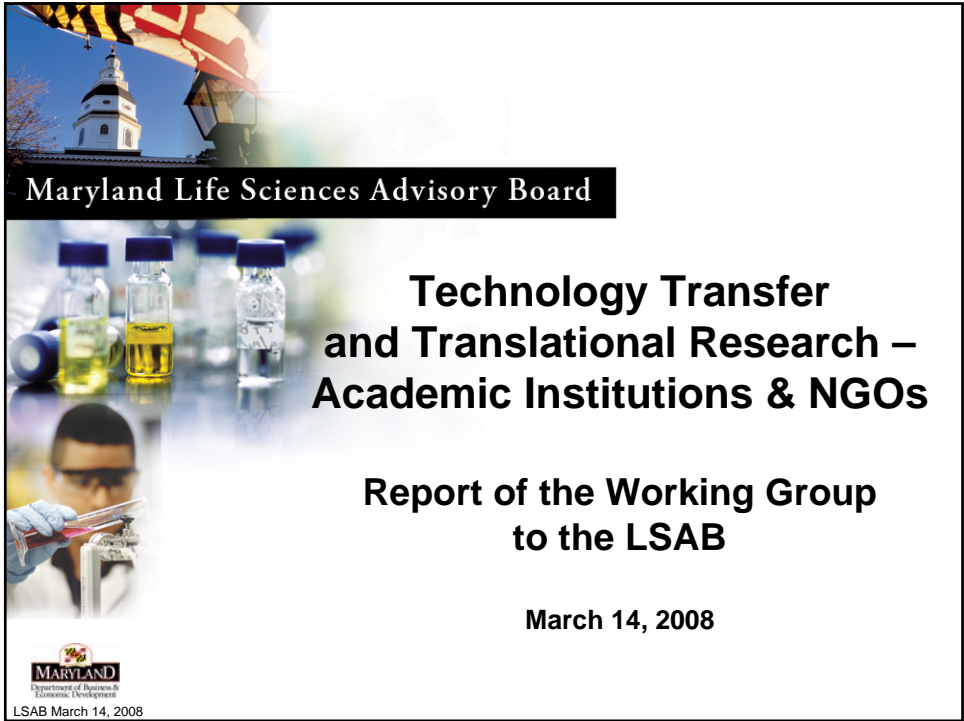


Working Group Reports I

- Technology Transfer and Translational
Research /Academic Institutions & NGOs**
- Start-up & Early Stage Pipeline Programs**
- Capital Formation**

LSAB March 14, 2008






Maryland Life Sciences Advisory Board

**Technology Transfer
and Translational Research –
Academic Institutions & NGOs**

**Report of the Working Group
to the LSAB**

March 14, 2008


LSAB March 14, 2008



**Technology Transfer
and Translational Research**

Working Group Members

Stephen Desiderio (Chair)	<i>JHU</i>	
Norma Allewell	<i>UMD-CP</i>	
Nina Lamba	<i>CCL Biomedical</i>	
Hercules Pinkney	<i>Montgomery College</i>	
Jim Poulos	<i>TEDCO</i>	
Renée Winsky	<i>TEDCO</i>	
Jim Hughes	<i>UMB</i>	
Govind Rao	<i>UMBC</i>	
Gayatri Varma	<i>UMD</i>	
Stephen Auvil	<i>UMBC</i>	
Brian Darmody	<i>UMD</i>	
Brad Peganoff	<i>UMBI</i>	
David Ramsay	<i>UMB</i>	Ted Roumel <i>UMBI</i>
Janet Woodcock	<i>FDA</i>	Martha Connolly <i>UMD</i>
Wes Blakeslee	<i>JHU</i>	Mike Rollor <i>UMB</i>


LSAB March 14, 2008



Technology Transfer and Translational Research

Objectives


Develop recommendations that have significant impact in the following areas:

- Technology Transfer: Infrastructure, Process, Metrics of Success
- Translational Research: Definition, Funding, Staffing, Research Center Infrastructure
- Collaboration & Partnerships: Academic-Academic, Academic-Private
- State Role: Supporting technology transfer, translational research and individual programs.

Recognize that recommendations for life sciences can not be to the detriment of other technology transfer and translational research areas.




LSAB March 14, 2008



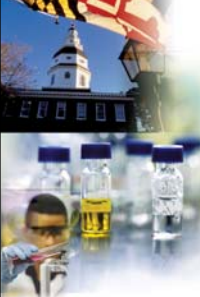
Technology Transfer and Translational Research

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Definition of metrics for successful technology transfer outcomes, both short-term and long-term, and potential differences between vested parties (State, University, etc.) 	<ul style="list-style-type: none"> • Recommend vested parties achieve consensus around shared metrics of success. • Recommend any institution's annual reporting of technology transfer outcomes should account separately for those relating to "bioscience" (broadly defined). Thus meaningful metrics can be transmitted to the LSAB.



LSAB March 14, 2008



Technology Transfer and Translational Research


Recommendations Under Consideration


Identified Need

- Address differences in capacity and capabilities of MD's technology transfer offices.

Possible Solutions

- Increase ability to do internal search and evaluation within university research labs. This requires a closer relationship between senior technology transfer staff and researchers than is currently common at most Maryland institutions.
- Adopt uniform application and increased participation of outside review boards to assist in technology assessment post disclosure and for IP in the hands of the technology transfer office.


 LSAB March 14, 2008



Technology Transfer and Translational Research


Recommendations Under Consideration


Identified Need

- Address private sector experience with MD technology transfer offices such as policy complexity, efficiency, etc.

Possible Solutions

- Maintain appropriate staff levels, especially experienced, sector knowledgeable staff .
- Eliminate the multiplicity of IP policies that exist that create administrative overload – strive for simplified uniform policy.
- Establish a more supportive academic environment for faculty involvement (e.g. company creation)



 LSAB March 14, 2008




Technology Transfer and Translational Research

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Maryland would benefit greatly from a <i>“translational research fund”</i> to push technology transfer efforts to commercialization outcomes . 	<ul style="list-style-type: none"> • The purpose of the fund needs to be clearly defined and confusion eliminated from the existing NIH/CTSA “translational” concept and initiative. • Structure fund to leverage other sources of funding.




LSAB March 14, 2008




Technology Transfer and Translational Research

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Maryland would benefit greatly from a <i>“translational research fund”</i> to push technology transfer efforts to commercialization outcomes . <p style="text-align: center;">(continued)</p>	<ul style="list-style-type: none"> • Detailed definition of the applicant (university, private sector, federal sector, or combinations thereof) must be undertaken • Define the source and potential phasing of funding: public, public-private partnerships.




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Technology Transfer and Translational Research

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Accelerate commercialization outcomes from university, private sector, and federal R&D efforts, especially from rate-limiting environments. 	<ul style="list-style-type: none"> • Consider the creation of a “Maryland Translational Research Center(s)” • Define business structure, infrastructure needs, personnel, sustainability, location(s), etc. possibly through a “phase I” feasibility analysis.


 LSAB March 14, 2008




Technology Transfer and Translational Research

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Increase cross border relationships and collaborative partnerships between MD’s R&D institutions within and outside the State. 	<ul style="list-style-type: none"> • The working group feels that, <i>appropriately structured</i>, maintaining focus of recommendations on technology transfer, translational research funding, and potential commercialization centers will drive solutions to this need.



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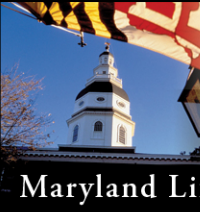
Technology Transfer and Translational Research

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none">• State support of individual institutions' efforts to expand awareness of MD technology transfer and commercialization opportunities.	<ul style="list-style-type: none">• Encourage the State to continue and increase support to "showcase" events, marketing efforts, and global awareness of the potential of Maryland's rich R&D environment.



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Maryland Life Sciences Advisory Board

Start-up & Early Stage Pipeline Programs

Report of the Working Group to the LSAB

March 14, 2008






Start-up & Early Stage Pipeline Programs

Working Group Members

<p>David Iannucci (Chair) Martha Connolly Nina Lamba Jim Poulos Renée Winsky Phillip Singerman Jonathan Cohen Steve Bende Robbie Melton Judith Fulton Joe Hernandez Scott Allocco John Weiss Richard Thorp</p>	<p><i>Baltimore County OED</i> <i>UMD</i> <i>CCL Biomedical</i> <i>TEDCO</i> <i>TEDCO</i> <i>Toucan Capital</i> <i>20/20 Gene Systems</i> <i>Bacilligen</i> <i>TEDCO</i> <i>Eager Street Group</i> <i>Innovative Biosensors</i> <i>BioMarker Strategies</i> <i>Merrick Business School, UB;</i> <i>llsbio, LLC</i></p>
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 LSAB March 14, 2008




Start-up & Early Stage Pipeline Programs


Objectives

Maryland has developed significant programs over the past 10-15 years to stimulate specific needs within the early stages of the business development process. Some of these “pipeline” programs have become models and replicated by others nationally and internationally.

We must now:

- Assess the sources of and foster Maryland’s entrepreneurial talent.
- Assess the relevancy, flexibility, and funding of current programs.
- Identify and fill gaps in Maryland’s start-up and early stage pipeline programs to provide continuity to the business development process.
- Accumulate and disseminate comprehensive knowledge of these programs to Maryland’s life sciences entrepreneurs.



 LSAB March 14, 2008




Start-up & Early Stage Pipeline Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Identify the sources of and develop Maryland's entrepreneurial talent pool in the life sciences 	<ul style="list-style-type: none"> • Expand and refine current model programs involved in the development of entrepreneurs such as ACTIVATE, Capital Access Network, MIPS, business school initiatives (Macklin, Dingman, JHU). • Promote Maryland's entrepreneur development programs to life sciences researchers in federal and academic laboratories (e.g. Macklin NIH Bench to Business Seminar)



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Start-up & Early Stage Pipeline Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Assess the relevancy and impact of current programs in the context of: <ul style="list-style-type: none"> - continuity and connectivity - type of company (business model) served 	<ul style="list-style-type: none"> • Acquire and consolidate current program data. Identify missing but relevant data. Recommend common denominators and reporting metrics to data sets where possible. • Work with Capital Formation and other working groups to achieve a consensus view of different business models and needs for successful initiation and growth.


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Start-up & Early Stage Pipeline Programs


Recommendations Under Consideration

Possible Solutions (continued)

- Conduct an analysis of impact, relevancy, flexibility, and funding of current programs (in progress).
- Perform “gap analysis” on existing programs for different company business models (refer to Capital Formation definition efforts).
- Recommend “gap filling” programs (currently under review and connected to other working group efforts).




LSAB March 14, 2008




Start-up & Early Stage Pipeline Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Continuity and connectivity of seed and early stage programs and infrastructure. 	<ul style="list-style-type: none"> • Recommend cross-representation of members on the various Boards and Review Boards of the different programs. Members need a clear understanding of their roles on each to avoid negative “snowballing” effects on applicants if turned down by one program and its criteria.



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Start-up & Early Stage Pipeline Programs


Recommendations Under Consideration

Possible Solutions (continued)

- Develop common elements of application and transmission of data between programs to lessen administrative burden on the applicant. Support sequential processes regardless of entry point.
- Reduce onerous administrative and reporting demands to streamline applicant and awardees interactions.
- Create the “one stop” entrepreneur (virtual?) shop for pipeline programs.


 Avoid: *“Time is money and this money is not worth the time.”*


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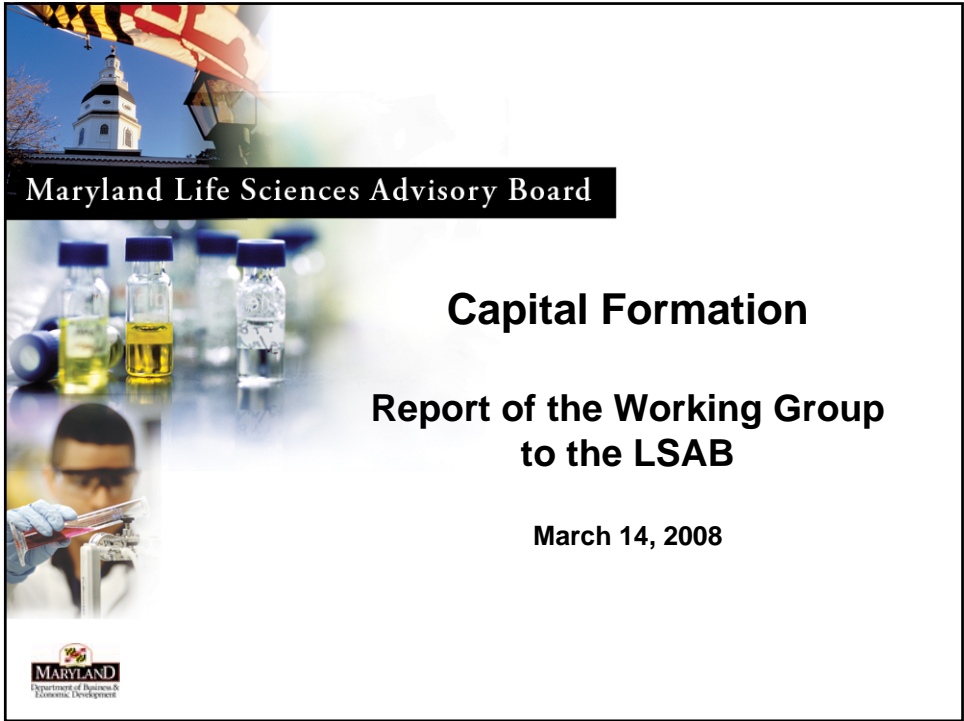
Start-up & Early Stage Pipeline Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Expansion of the concept of incubators as pipeline programs 	<ul style="list-style-type: none"> • Recommend an analysis of current practices and services in incubators currently housing bioscience companies in the State. Build on TEDCO’s data and 2007 Incubator Study. • Adopt uniform policy and services (where physically possible) and virtualize where not. • Encourage continued State role and support in the creation of bioscience-ready incubators.



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Maryland Life Sciences Advisory Board

Capital Formation

Report of the Working Group to the LSAB

March 14, 2008



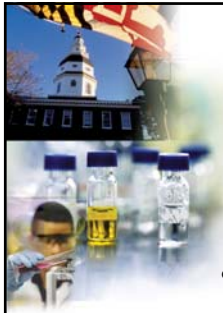

Capital Formation

Working Group Members

Ken Carter (Chair)	<i>Avalon Pharmaceuticals</i>
Francesca Cook	<i>Pharmathene</i>
Matt Zuga	<i>Red Abbey</i>
Jigar Raythatha	<i>Red Abbey</i>
Jim Poulos	<i>TEDCO</i>
Elizabeth Good	<i>UMB</i>
Casey Eitner	<i>Expression Pathology</i>
Bill Gust	<i>Anthem Capital</i>
Bruce Robertson	<i>HIG Ventures</i>
Steve Trevisan	<i>Accelovance</i>
Scott Allocco	<i>BioMarker Strategies</i>
Steve Bende	<i>Bacilligen</i>
Wei-Wu He	<i>Emerging Technology Partners</i>
Ed Rudnic	<i>MiddleBrook Pharmaceuticals</i>
David Edgerley	<i>MD DBED</i>



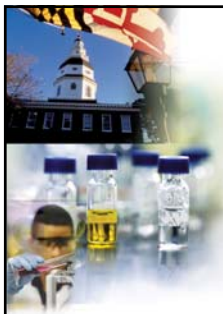
LSAB March 14, 2008



Capital Formation

Objectives

- Investigate the role that public and private funding plays in the different business models and lifecycles of Maryland bioscience companies.
- Identify key programs, existing or that can be created, that can significantly impact the capital formation continuum.
- Recommend rationale-based changes vs. “more is better” theory. Darwinism has merit.



Capital Formation

Questions: Public Role

How far into the business life cycle should public funding play a role?

Are public-private venture partnerships a new “permanent” solution for early stage capital?

Can differences in expectations of ROI between public and private investment be addressed?

Can programs can be flexible enough to react to fluctuations in sources and levels of funding?





Capital Formation

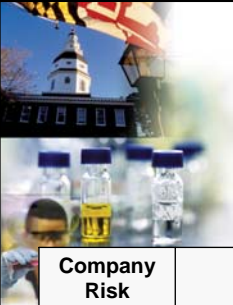
Challenges: Public Role

- Program leadership: continuity across administrations
- Stability of funding sources
- Filling all the “gaps”

- Risk position vs. public monies
- Due diligence capabilities; market awareness
- Investment strategy: diversity of the portfolio
- Program constraints (project size & scope)




LSAB March 14, 2008



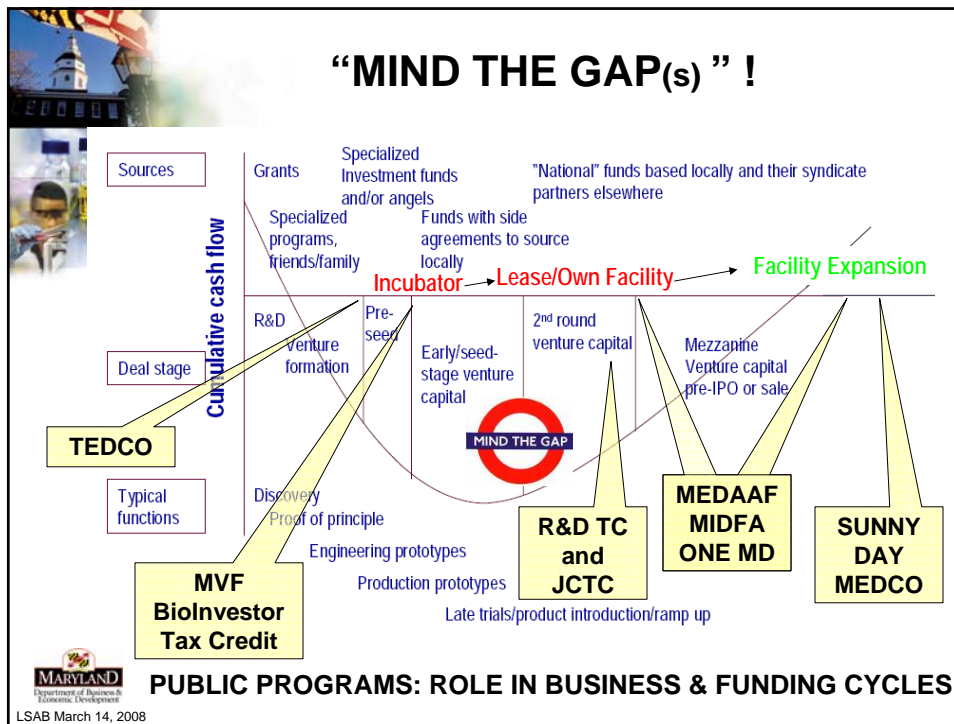
Capital Formation

Recommendation Targets

Company Risk Profile	Nature	Product	Capital Intensiveness	Example
High Risk – High Return	R&D intensive, traditional VC investment cycles	Long product development life cycle	High (>\$100M)	Therapeutic development
Moderate to Low Risk – Moderate to Low Return	Moderate R&D intensity, Strong angel and private capital roles	Shorter product development life cycle	Medium (<\$100M)	Research tools, diagnostics, and devices development
Lower Risk – Moderate to Low Return	Service intensive, private capital and debt financing roles	No “product” life cycle	Medium – Low (<\$100M)	ADMET, clinical trials management, etc.



LSAB March 14, 2008




Capital Formation

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Increase opportunities for MD bioscience companies to obtain <u>seed</u> and <u>early stage</u> funding. 	<ul style="list-style-type: none"> • Re-evaluate, re-define, and expand public <u>investment programs</u> for seed and early stage companies (e.g. the MVF). • Encourage program criteria that recruit and leverage investment by others (e.g. mandatory participation and matching).


MARYLAND Department of Business & Economic Development
 LSAB March 14, 2008




Capital Formation

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Increase opportunities for MD bioscience companies to obtain <u>early stage</u> funding. 	<ul style="list-style-type: none"> • Re-evaluate existing state and local jurisdiction <u>programs of financial assistance</u> and assess the creation of “downsized” versions of existing programs to “fill gaps”. • Evaluate the value of creating award or “add-on” funding programs (e.g. for SBIR grants).




LSAB March 14, 2008




Capital Formation

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Increase opportunities for MD bioscience companies to obtain <u>early</u> and <u>mid-stage</u> funding. 	<ul style="list-style-type: none"> • Encourage economic incentives to investors. • Expand programs that <u>stimulate</u> investment by others: <ul style="list-style-type: none"> - BioInvestor Tax Credit - NOL credit sales - Capital Gains Tax Cut • Encourage sophisticated Angel Investor networks




LSAB March 14, 2008




Capital Formation

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none">• Increase opportunities for MD bioscience companies to obtain <u>mid-</u> and <u>late-stage</u> funding.	<ul style="list-style-type: none">• Evaluate a role for modest (1-2% risk position) participation by the MD Pension Fund in investment in MD (preferential) bioscience companies.• Create a venture investment partnership for such.• Expand capabilities in traditional programs of assistance (e.g. MIDFA, MEDAAF).




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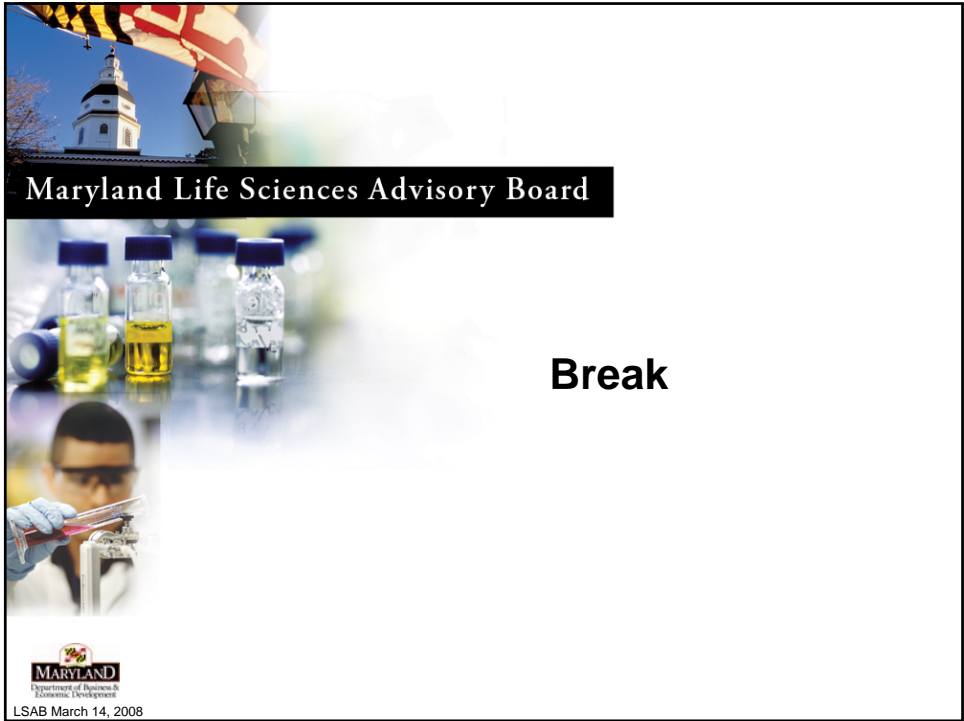
Capital Formation

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none">• Address unique company hurdles or milestones to success with non-diluting capital programs.	<ul style="list-style-type: none">• Evaluate a role for specialized loan or temporary bridge funding programs that address unique milestone gaps for bioscience companies (e.g. a clinical trials loan, beta-product development, etc.)




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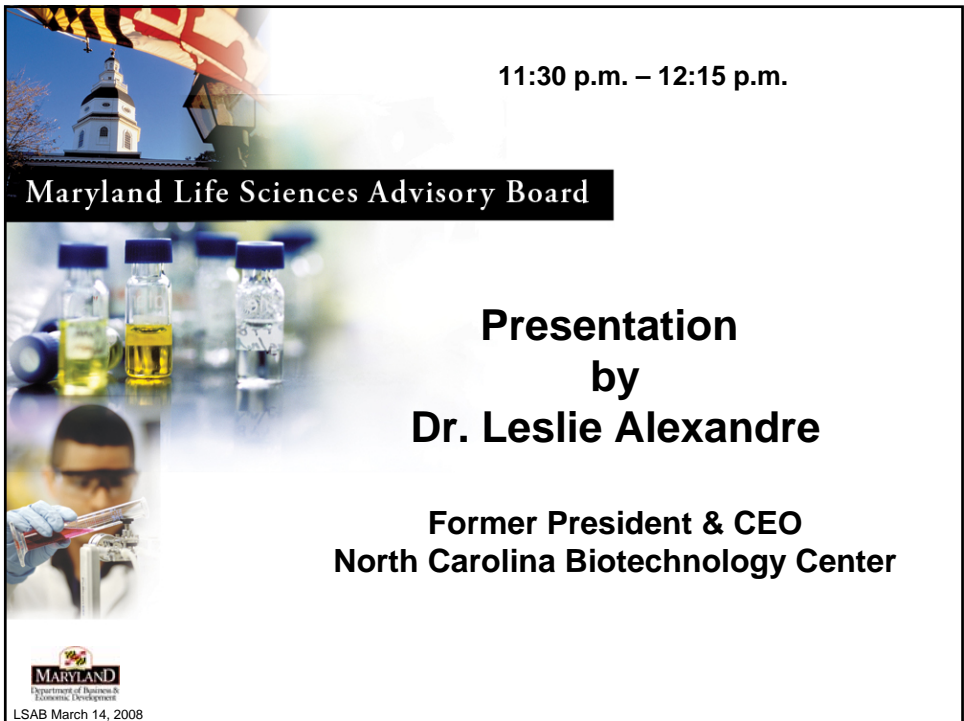


Maryland Life Sciences Advisory Board

Break


LSAB March 14, 2008


11:30 p.m. – 12:15 p.m.

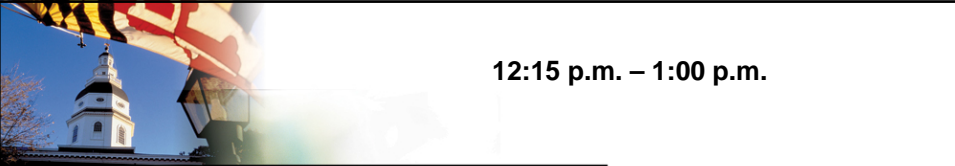


Maryland Life Sciences Advisory Board

**Presentation
by
Dr. Leslie Alexandre**

**Former President & CEO
North Carolina Biotechnology Center**


LSAB March 14, 2008



12:15 p.m. – 1:00 p.m.

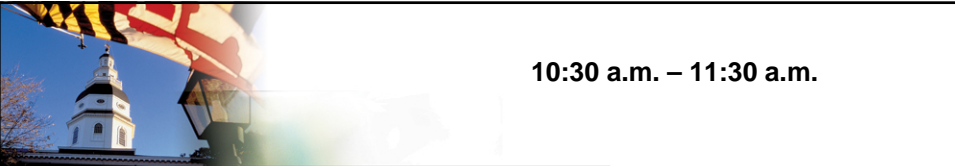
Maryland Life Sciences Advisory Board



**Board Lunch
&
Dr. Alexandre Q&A**



LSAB March 14, 2008



10:30 a.m. – 11:30 a.m.

Maryland Life Sciences Advisory Board



Working Group Reports II

**Leveraging Maryland's
Unique Federal Resources**

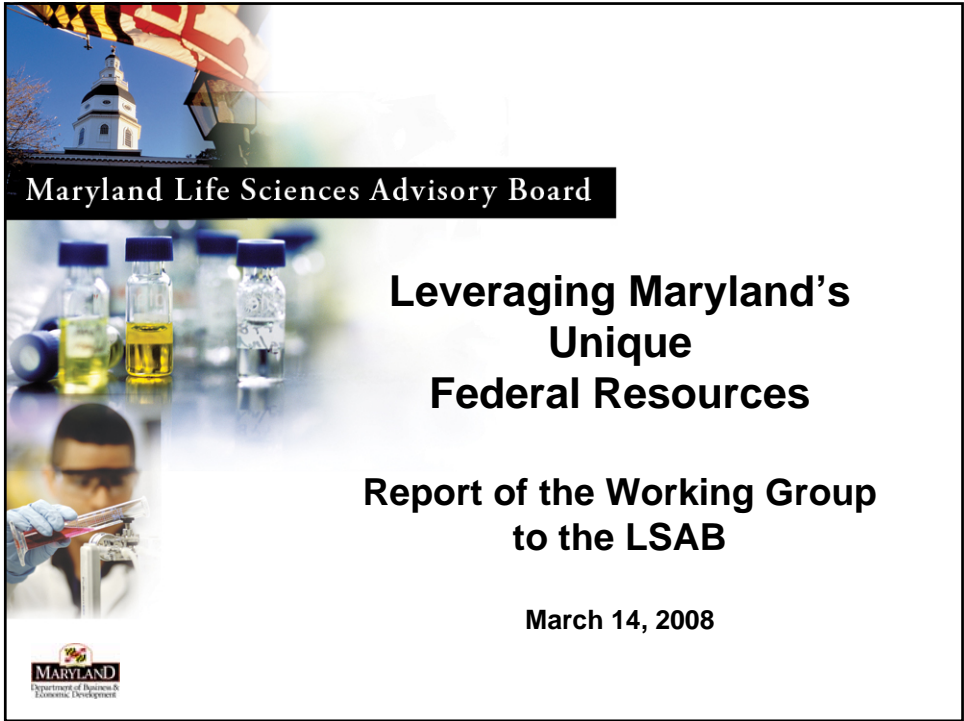
**Workforce Development &
Education Programs**

**Business & Regulatory
Environment**

**Marketing and Promotion of
Maryland Globally**



LSAB March 14, 2008




Maryland Life Sciences Advisory Board

**Leveraging Maryland's
Unique
Federal Resources**

**Report of the Working Group
to the LSAB**

March 14, 2008





**Leveraging Maryland's
Unique Federal Resources**

Working Group Members

George Korch (Co-Chair)	<i>USAMRIID</i>
Norka Ruiz Bravo (Co-Chair)	<i>NIH</i>
Darryl Sampey	<i>BioFactura</i>
Norma Allewell	<i>UMD</i>
Ted Roumel	<i>UMBI</i>
Renée Winsky	<i>TEDCO</i>
Jennie Hunter Cevera	<i>UMBI</i>
Alan Taggart	<i>MedImmune</i>
Joseph Spence	<i>USDA BARC</i>
Steve Desiderio	<i>JHU</i>
Janet Woodcock	<i>FDA</i>
Francesca Cook	<i>Pharmathene</i>
Larry Arthur	<i>SAIC</i>



LSAB March 14, 2008




Leveraging Maryland's Unique Federal Resources

Objectives

Maryland has one of the largest concentrations of federal institutes and agencies with core missions that involve life sciences R&D. The LSAB is tasked not only with leveraging these valuable resources in the state, but additionally considering what efforts of the state can be directed to assist in the mission of these facilities.

- Maximize the local economic and knowledge impact of life sciences R&D conducted in Maryland's federal institutes and agencies.
- Address the needs of these institutes and agencies in carrying out their national missions to the best of the State's abilities.
- Address federal workforce development and training issues .
- Strengthen federal – academic partnerships in the State.



LSAB March 14, 2008




Leveraging Maryland's Unique Federal Resources

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Maryland's federal institutes and agencies need to have a more comprehensive database of R&D activities conducted in the State. Reciprocal interest by MD's bioscience industry and academic sectors also exists. 	<ul style="list-style-type: none"> • Establish a communications network to identify federal and state resources and programs. Possibilities include a standing Federal-State working group and a one-stop virtual information center for research, business development, and program management individuals. • Create a "play book" of life sciences assets and resources in the State.




LSAB March 14, 2008




Leveraging Maryland's Unique Federal Resources

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Maryland's federal institutes and agencies must rely on outside partners to drive life sciences commercialization opportunities derived from valuable research activities conducted in MD. 	<ul style="list-style-type: none"> • Consolidate information on all relevant federal solicitations and procurement opportunities for MD's bioscience industry. • Enhance industry sector training efforts (e.g. workshops) on successful outcomes in solicitations and procurement requests.



 LSAB March 14, 2008




Leveraging Maryland's Unique Federal Resources

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Maryland's federal institutes and agencies must rely on outside partners to drive life sciences commercialization opportunities derived from valuable research activities conducted in MD. <p style="text-align: center;">(continued)</p>	<ul style="list-style-type: none"> • Increase program activities that promote federal-academic collaboration and strategic partnerships. • Establish a permanent group or committee to act as an interlocutor or information clearing house linking federal R&D needs with available or enhanced capability in the non-federal sector in-state • Leverage proximity to understand strategic needs and create proximal infrastructure to capitalize on such opportunities (e.g. research parks, TR fund, or TRC concept).


 LSAB March 14, 2008



Leveraging Maryland's Unique Federal Resources


Recommendations Under Consideration

Identified Need

- Maryland's federal institutes and agencies provide a rich source of skilled workforce supply and demand. Retention of workforce talent is a mutual need.

Possible Solutions

- Enhance workforce training programs with specific attention to the needs of federal facilities. Coordinate with the Workforce Development working group.
- Establish programs to enable workforce transition in and out of federal facilities.
- Capture federal entrepreneurial opportunities locally. Coordinate with the Early Stage and Pipeline Programs working group.



LSAB March 14, 2008



Leveraging Maryland's Unique Federal Resources

Recommendations Under Consideration

Identified Need

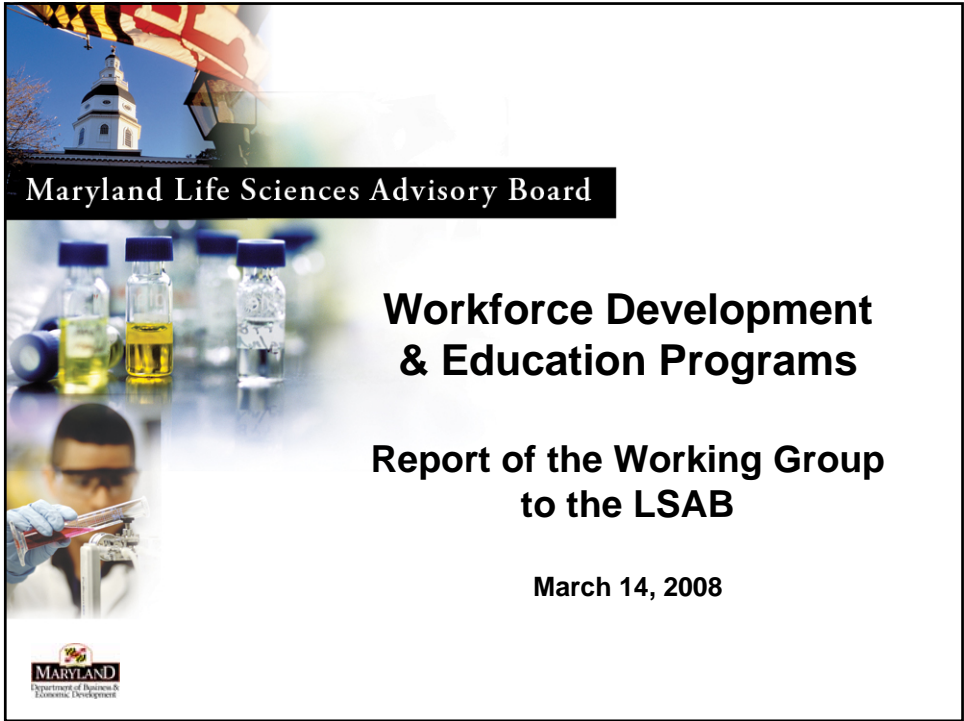
- National directives create the need, and thus unique opportunities, to establish mission critical infrastructure (e.g. NIBC, NBAF, pilot vaccine production facilities, etc.)

Possible Solutions

- Establish a coordinated "Federal Projects Response Team" or equivalent.
- Empower to mobilize the Governor's Office, General Assembly, U.S. Senate and Congressional delegations, and relevant in-state response groups for awareness and supportive representation.
- Proactively investigate and promote "national model" opportunities.



LSAB March 14, 2008




Maryland Life Sciences Advisory Board

**Workforce Development
& Education Programs**

**Report of the Working Group
to the LSAB**

March 14, 2008



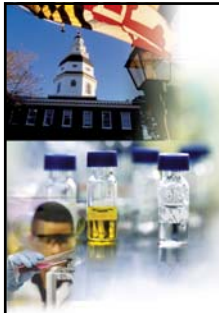

**Workforce Development
& Education Programs**

Working Group Members

Philippe Jacon (Chair)	<i>BD Diagnostics</i>
Dyan Brasington	<i>Towson University</i>
Susan Gorman	<i>Villa Julie College</i>
Aaron H. Heifetz	<i>Cognate BioServices</i>
Steve Kaiser	<i>Kaiser Associates</i>
Liz Pettengill	<i>Greater Baltimore Committee</i>
Hercules Pinkney	<i>Montgomery College</i>
Diane Polk	<i>BD Diagnostics</i>
Chuck Montague	<i>MD DBED</i>



LSAB March 14, 2008



Workforce Development & Education Programs

Objectives

- Review the preliminary GWIB assessment of Maryland's bioscience industry workforce needs and recommendations.
- Continue to coordinate and assess with GWIB as LSAB recommendations from this working group are developed.
- Incorporate needs of federal life sciences institutes/agencies for workforce development and education programs to fully maximize state assets.



Workforce Development & Education Programs

Recommendations Under Consideration


Identified Need

- A single "entity" or a statewide infrastructure that identifies and coordinates industry and federal life sciences training and education needs.

Possible Solutions

- Create program infrastructure tasked with coordinating and maintaining this MD training "portal" for industry and others. This could be "lean" in staff and budget, with virtual content.
- Possible continuation of a "mini-GWIB" Board for across-provider coordination?






Workforce Development & Education Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Complete understanding of training facilities and programs – existing or planned. • Partnerships: public and private led by vested individuals desiring to participate in training programs. 	<ul style="list-style-type: none"> • Identify existing training providers and centers (public and private); identify training content, marketing efforts and materials; consolidate these and fill gaps. Highlight best practices in place in MD. • Match training and education programs & locations to demand for skilled workforce. • Responsibility lies with statewide coordinating entity.



LSAB March 14, 2008




Workforce Development & Education Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Coordination and expansion of internship programs in the workforce development pipeline. • Re-training: the availability of certificate programs that enable career transition or decision (e.g. a scientist-directed business certificate program) 	<ul style="list-style-type: none"> • Supplement in-house training (proprietary and specialized job skills) with external “common needs”, e.g. academic and technical skills training • Develop an assessment tool to quickly identify and align with industry needs • Support Community Colleges role in providing critical workforce solutions and private sector partnering potential.




LSAB March 14, 2008




Workforce Development & Education Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • A complete K-12 to post-graduate program including industry awareness (marketing), support (salaries) and infrastructure (equipped classrooms, etc.) • Access to state and federal funding to assist this effort. 	<ul style="list-style-type: none"> • Continue to develop P20 and STEM initiatives. • Fund students science awareness programs for <u>all</u> age levels. • Support and develop <u>model programs</u> like “Project Lead the Way”, science lab bus, etc. • Fund new Grade 9-12 training and internship programs • Fund industry training for teachers. • Introduce Differential Pay for math and science teachers.



 LSAB March 14, 2008




Workforce Development & Education Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Ensure that Maryland can supply an experienced workforce including specialty skills that align with a highly regulated and technically challenging work environment. 	<ul style="list-style-type: none"> • Enhance recruitment (marketing) efforts directed at all skill sets that are required in a bioscience organization. Emphasize skill sets (e.g. regulatory, business management) that give MD an edge.



 LSAB March 14, 2008




Workforce Development & Education Programs

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Marketing Maryland's Quality of Life (QOL) and Cost of Living (COL) needs a specific effort that will result in helping employees in making location decisions. This topic can be coordinated with the Marketing group to ensure specific targeting to workforce. 	<ul style="list-style-type: none"> • Create a unified marketing plan for the state and for the bioscience industry in Maryland. • Provide prospective employees data that will attract them to Maryland's bioscience community. • Create incentives to make sure Life Science development programs include mix-use (e.g. expansion of "Live Near Your Work" programs) • Support transportation projects that link up Life Science hubs.




LSAB March 14, 2008



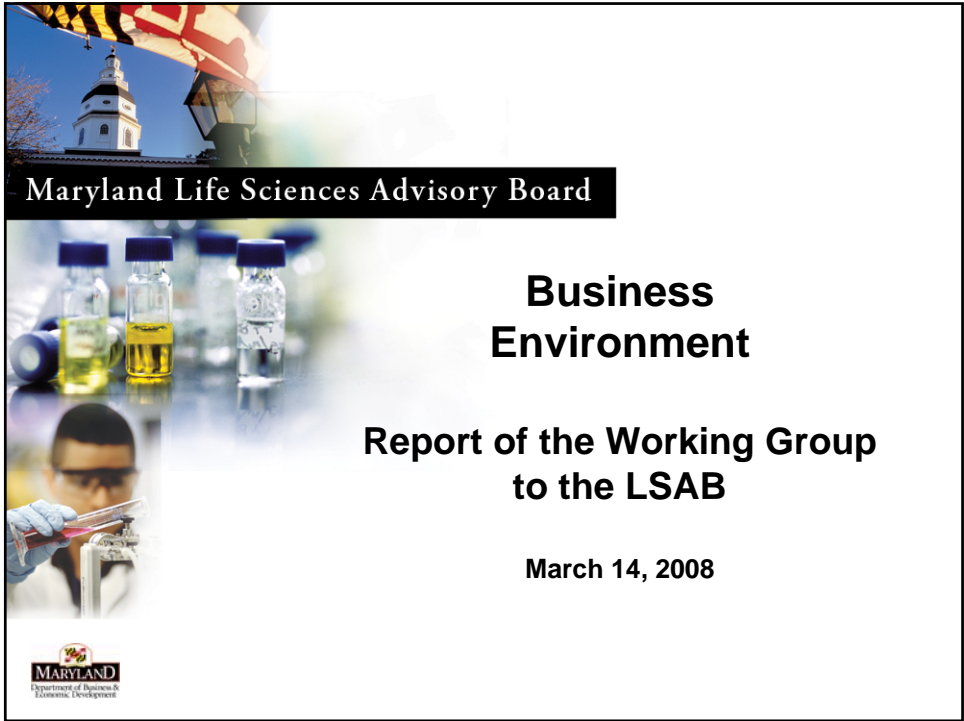
Workforce Development & Education Programs

Additional GWIB Suggestions Supported by the Working Group

- Address immigration issues such as difficulty in obtaining visas for foreign scientists and the development of domestic talent: Consider recognizing and potentially funding the cost of visas for academic institutions.
- Utilize the Maryland's military talent pool. Military research facilities in Maryland provide the state with a unique workforce pool that has not been effectively tapped: Consider revision of the tax treatment of military pensions in MD that pushes retirees to leave the state.



LSAB March 14, 2008



Maryland Life Sciences Advisory Board

Business Environment

Report of the Working Group to the LSAB

March 14, 2008

MARYLAND
Department of Business & Economic Development



Business Environment

Working Group Members

Chuck Fleischman (Chair)	<i>Digene (former)</i>
Janet Lambert	<i>Invitrogen</i>
Scott Allocco	<i>BioMarker Strategies</i>
Kären Olsen	<i>BioMarker Strategies</i>
Shira Kramer	<i>Sterilex</i>
Tim Pearson	<i>MedImmune</i>
Brian Levine	<i>TCM</i>
Steve Bende	<i>Bacilligen</i>
Michael Gollin	<i>Venable</i>
Asher Rubin	<i>Hogan Hartson</i>
Ann Gosier	<i>BD Diagnostics</i>
David Edgerley	<i>MD DBED</i>

This group is soliciting a few more industry members

MARYLAND
Department of Business & Economic Development

LSAB March 14, 2008



Business Environment

Objectives

- To make Maryland competitive with neighboring states and other life sciences clusters.
- To make Maryland attractive as a business location (including start-ups, expansions, and out-of-state relocations or subsidiaries).
- To consider recommendations with focus directed as much as possible on the bioscience industry.
- To keep recommendations specific, actionable, impactful, and to a minimum.



LSAB March 14, 2008



Business Environment

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Maryland's business environment must remain competitive in face of stiff global competition for bioscience investment, talent, and world-class R&D. 	<ul style="list-style-type: none"> • Reconsider permanency of recent increase in corporate tax rate as State fiscal situation improves. Current rate increase removed MD's advantage relative to competing east coast life sciences cluster. • Create benchmark analyses for this and other tax related programs.



LSAB March 14, 2008



Business Environment

Recommendations Under Consideration

Identified Need

- Maryland's business environment must remain competitive in face of stiff global competition for bioscience investment, talent, and world-class R&D.


(continued)

Possible Solutions

- Eliminate the R&D tax credit sunset. Confirm the State's commitment to advancing technology- and knowledge-based economic transition.
- If supported by data analysis, consider R&D Tax Credit statute modifications that encourage bioscience company participation, enable meaningful distribution of credits to both small/early stage as well as mature stage companies, and provide adequate funding relative to demand.



LSAB March 14, 2008



Business Environment


Recommendations Under Consideration

Identified Need


- Maryland offers other tax credit programs with certain benefit to bioscience companies (e.g. Job Creation Tax Credits, Single Manufacturing Apportionment Factor, One MD, Enterprise Zone Credits, no Business Personal Property Tax).
- To what extent are they utilized and why/why not?

Possible Solutions

- Eliminate the R&D tax credit sunset. Confirm the State's commitment to advancing technology- and knowledge-based economic transition.
- After detailed data analysis, consider R&D Tax Credit statute modifications that encourage bioscience company participation, enable meaningful distribution of credits to both small/early stage as well as mature stage companies, and provide adequate funding relative to demand.




LSAB March 14, 2008



Business Environment

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Capital formation is a high priority for MD bioscience companies. Certain tax credit programs either directly, or through modification, stimulate capital formation. 	<ul style="list-style-type: none"> • With the lead of the Capital Formation working group, evaluate: <ol style="list-style-type: none"> (1) the MD BioInvestor Tax Credit program, (2) Sales of Credits (NOL transfer) programs, and (3) the Capital Gains Tax • Consider adoption of tax credit policy that provides a strong stimulus for capital formation.




LSAB March 14, 2008



Business Environment

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Increased diversification of MD bioscience companies into industry sectors beyond therapeutic discovery and diagnostics / device development will increase regulatory oversight. 	<ul style="list-style-type: none"> • Maintain MD's generally favorable regulatory policies in line with federal standards. • Ensure efficient and expedient review of applications and regulatory issues - particularly for small/medium size, R&D intensive, companies where delays place disproportionate burden on cash burn and product development timelines.



LSAB March 14, 2008




Business Environment

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Increased diversification of MD bioscience companies into industry sectors beyond therapeutic discovery and diagnostics / device development will increase regulatory oversight. (continued) 	<ul style="list-style-type: none"> • Create a “one-stop-shop” within the state government to acquire information on regulatory, permitting, liability, and state programs applicable to the industry, etc., and to help guide companies through the maze of process, constraints and opportunities.



 LSAB March 14, 2008

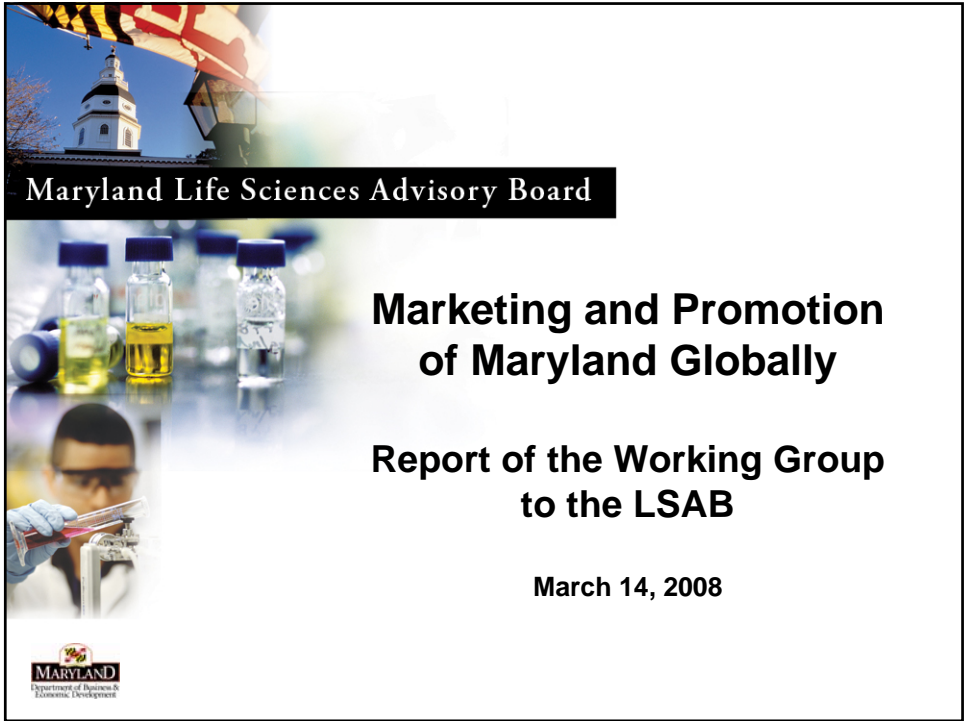


Business Environment

Recommendations Under Consideration

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Increased maturation of MD bioscience companies creates demand on employee recruitment, especially senior management, and thus impacts business climate overall. 	<ul style="list-style-type: none"> • Work with the Workforce Development and Education Programs working group and the Marketing Maryland working group to ensure appropriate employee recruitment initiatives and marketing of QOL and COL opportunities across the State.


 LSAB March 14, 2008




Maryland Life Sciences Advisory Board

**Marketing and Promotion
of Maryland Globally**

**Report of the Working Group
to the LSAB**

March 14, 2008





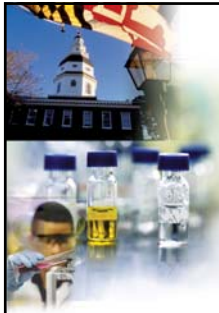
**Marketing and Promotion
of Maryland Globally**

Working Group Members

Larry Diamond (Chair)	<i>Alexandria Real Estate Equities</i>
Henry Bernstein	<i>Scheer Partners, Inc.</i>
Dave Iannucci	<i>Baltimore Co. DED</i>
Jonathan Hess	<i>Whiting Turner, Inc.</i>
Liz Pettengill	<i>GBC</i>
Christian Johansson	<i>EAGB</i>
Brad McDearman	<i>EAGB</i>
Bradley Broadwell	<i>Dorchester Co. DED</i>
Sherri Diehl	<i>DBED-Marketing</i>
Robert Walker	<i>DBED-OITI</i>



LSAB March 14, 2008



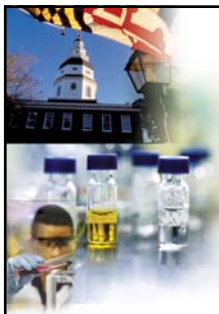
Marketing and Promotion of Maryland Globally

Objectives

- Maryland must continue to be one of the top three life science regions in the country relative to the various metrics used for comparing regions; number of companies, number of jobs, type of companies, etc.
- Maryland must maintain our dominance as a top tier life science region and grow our position when there are available opportunities.
- Maryland's dominance continues to be chipped away by national and international competitors. There have been bold economic initiatives in many other regions of the country and Maryland must become aggressive in a variety of venues to attract quality life science companies to our region.
- Maryland must prioritize each of the below tasks in light of short and mid-term budgetary constraints



LSAB March 14, 2008



Global Competition ... or Global Opportunity ?

JOHNS HOPKINS

North America

- Austin, TX
- **Baltimore/Washington, DC**
- Boston, MA
- Los Angeles, CA
- Minneapolis / St. Paul, MN
- New York/New Jersey
- Philadelphia, PA
- Research Triangle, NC
- Rochester, NY
- San Diego, CA
- San Francisco, CA
- Seattle, WA

Canada

- Montreal, Canada
- Toronto, Canada
- Saskatoon, Canada

United Kingdom / Ireland

- Cambridge - SE England
- Dublin, Republic of Ireland
- Glasgow / Edinburgh, Scotland
- London, England
- Manchester / Liverpool, England

Continental Europe

- BioAlps, France / Switzerland
- Biovalley, France / Germany / Switzerland
- Brussels, Belgium
- Helsinki, Finland
- Medicon Valley, Denmark / Sweden
- Paris, France
- Sophia-Antipolis, France
- Stockholm / Uppsala, Sweden

Asia

- Bangalore, India
- Beijing, China
- Chungbuk, Korea
- Dengkil, Malaysia
- Hokkaido, Japan
- Hong Kong, China
- Hsinchu, Taiwan
- Hyderabad, India
- Kansai, Japan
- New Delhi, India
- Shanghai, China
- Shenzhen, China
- Singapore
- Seoul, Korea
- Taipei, Taiwan
- Tokyo-Kanto, Japan

Australia / New Zealand

- Brisbane, Australia
- Dunedin, New Zealand
- Melbourne, Australia
- Sydney, Australia



LSAB March 14, 2008

Significant life sciences industry clusters worldwide



Marketing and Promotion of Maryland Globally

Recommendations Under Consideration FOREIGN DIRECT INVESTMENT

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • A comprehensive, long term program to attract and retain Foreign Direct Investment (FDI) for Maryland's life sciences industry. 	<ul style="list-style-type: none"> • Direct DBED to develop a long-term strategic sales and marketing plan for the MD's life sciences industry. Engage a consultant if necessary. • Re-evaluate the best placement of foreign office locations specifically for FDI relating to life sciences development.


 LSAB March 14, 2008



Marketing and Promotion of Maryland Globally

Recommendations Under Consideration FOREIGN DIRECT INVESTMENT

Possible Solutions (continued)

- Reevaluate the budget for personnel in foreign offices that specialize in life science.
- Increase the ability to obtain meaningful business intelligence, reassess strategy given evolving trends in the industry worldwide, and execute internationally.
- Better leverage international contacts from all relevant State agencies to help identify opportunities (e.g. agriculture, biofuels).


 LSAB March 14, 2008



Marketing and Promotion of Maryland Globally

Recommendations Under Consideration

MARKETING

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Retain and expand Maryland's global marketing efforts by developing an increased presence via a variety of avenues. 	<ul style="list-style-type: none"> • Maintain or increase MD's international branding in domestic and international life sciences clusters, events, and promotional materials. • Identify the best venues to showcase Maryland to the international community.



LSAB March 14, 2008



Marketing and Promotion of Maryland Globally

Recommendations Under Consideration

MARKETING

Possible Solutions (continued)

- Increase MD's global marketing and promotion initiatives perhaps by engaging public, private and academic partners across the state.
- Benchmark MD's marketing budget (DBED) against competitor states and make recommendations accordingly.



LSAB March 14, 2008



Marketing and Promotion of Maryland Globally

Recommendations Under Consideration

INCENTIVES

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Maryland must be competitive with significant incentive programs offered by other regions to compete globally. While incentives alone cannot assure growth, they are an important component to retaining Maryland's competitive stature. Other regions have aggressive and meaningful financial assistance programs that far outpace what Maryland can offer. 	<ul style="list-style-type: none"> • Evaluate DBED and local jurisdictions' programs of assistance (attraction) and benchmark against competitor states. • Define what MD needs to be in the top percentile of regions to effectively compete for deals. Use consultant if necessary. • Implement effective programs in DBED after recommendations are further developed.

LSAB March 14, 2008 



Marketing and Promotion of Maryland Globally

Recommendations Under Consideration

PUBLIC / PRIVATE/ ACADEMIC PARTNERSHIPS

<u>Identified Need</u>	<u>Possible Solutions</u>
<ul style="list-style-type: none"> • Leverage the leadership in Maryland's life sciences companies, academic, research, and institutional communities to build long term partnerships committed to growing life sciences in the State. 	<ul style="list-style-type: none"> • Identify public, private, and academic partners with mutual goals and determine how to best coordinate efforts to build long term relationships with key companies, parent companies of Maryland firms, venture and other capital sources, and prospects. • Develop formal partnerships to "sell" Maryland. Expand private sector participation in public marketing and business development efforts.

LSAB March 14, 2008 



Marketing and Promotion of Maryland Globally

Recommendations Under Consideration


PUBLIC / PRIVATE/ ACADEMIC PARTNERSHIPS

Possible Solutions (continued)

- Leverage relationships with foreign parent companies of Maryland subsidiaries to develop international attraction targets.
- Create a “welcome network” of Maryland individuals, institutions and companies that engage prospective domestic and international life science prospects when they visit Maryland.
- Ensure adequate funding to have personnel available to assemble the resources to implement these programs.



LSAB March 14, 2008




2:20 p.m. – 3:00 p.m.

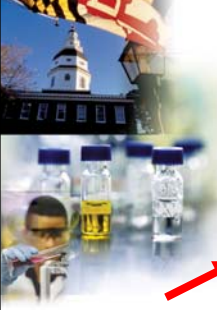
Maryland Life Sciences Advisory Board

Advancing Leadership – Creating Vision

Board Discussion





LSAB March 14, 2008



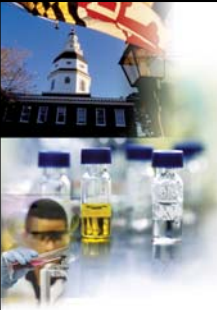
LSAB PROPOSED TIMELINE

March 14, 2008	Third meeting of the LSAB	Reports from Working Committees on key recommendations to include in the Strategic Plan and next steps
Mid-March through early May 2008	Third round meetings of the Working Committees	Working Committees finalize key recommendations, including supporting rationale and next steps
Mid-May 2008	Fourth meeting of the LSAB	Presentations of final Working Committee recommendations and approval of Strategic Plan outline
Mid- May to mid-June 2008	LSAB and Working Committees	Preparation of initial draft of Strategic Plan; review of individual sections by relevant Working Committees; identification of key fiscal and legislative impact elements
Mid-June 2008	LSAB and Working Committees (no LSAB meeting)	Polished draft of Strategic Plan circulated to full LSAB for comment; final fiscal and legislative impact elements developed for full review
July 1, 2008	Final comment deadline for draft of Strategic Plan	Submission of strategic plan fiscal and legislative impact elements to DBED Office of Economic Policy & Legislation

Concentrated effort on development of complete "final" recommendations

LSAB March 14, 2008

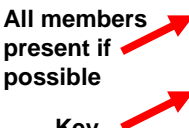



LSAB PROPOSED TIMELINE

July 7-14, 2008	Compilation and editing of the draft Strategic Plan	
July 15, 2008	Final draft of Strategic Plan circulated for final comment	
July 21, 2008	Deadline for comments to final draft of Strategic Plan	
July 22-29, 2008	Production of proof version of Strategic Plan for presentation to Governor's Office	
July 30, 2008	Fifth meeting of the LSAB	Review of proof version of Strategic Plan and discussion of steps necessary to achieve implementation
August 4, 2008	Submission of Strategic Plan Proof to Governor's office for review and comment	
Mid-August to December	Schedule to be determined	
December 15, 2008	Submission of the 2008 Annual Report of the LSAB	Proposed submission of the final issue of the Strategic Plan

All members present if possible

Key deadline

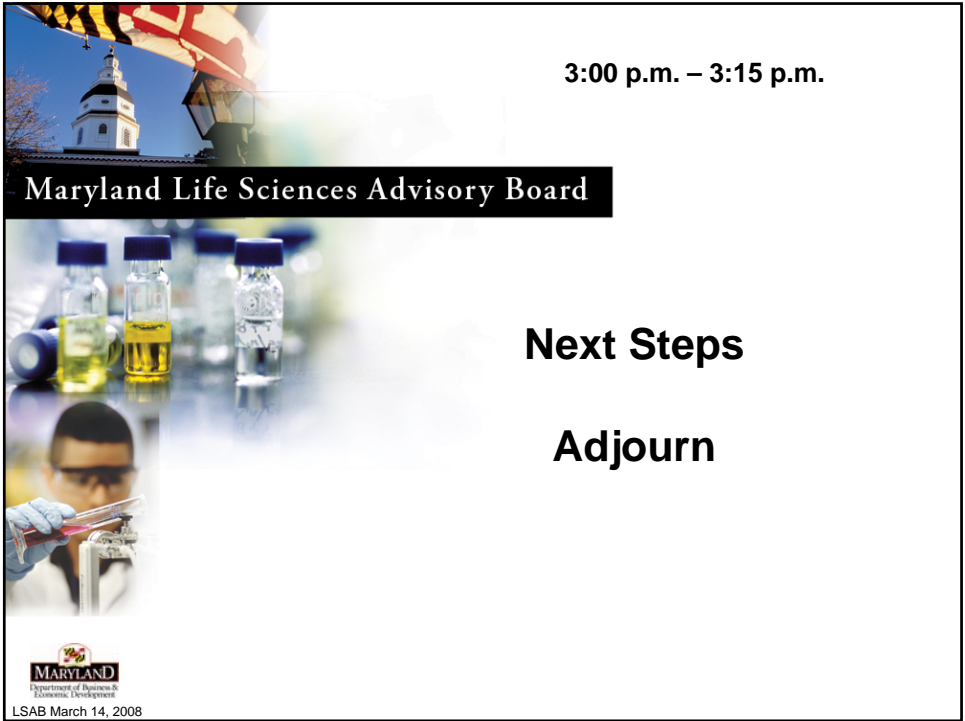
LSAB March 14, 2008

3:00 p.m. – 3:15 p.m.

Maryland Life Sciences Advisory Board

Next Steps

Adjourn




MARYLAND
Department of Business &
Economic Development
LSAB March 14, 2008