



Pennsylvania Competitiveness in the Biosciences

Presented to the Democratic and Republican Policy Committees of
the Pennsylvania House of Representatives

By Christopher Molineaux
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Defining the Biosciences

- The biosciences are a diverse group of industries and activities with a common link—they apply knowledge of the way in which plants, animals, and humans function. The sector spans different markets and includes manufacturing, research activities and services.
- The biosciences industry sector is defined as including the following four subsectors:
 - Agricultural Feedstock & Chemicals (including bio-agricultural and bio-energy)
 - Drugs & Pharmaceuticals
 - Medical Devices & Equipment
 - Research, Testing & Medical Laboratories

Source: Battelle/BIO, State
Bioscience Initiatives 2008



Biosciences in Pennsylvania

- Our competitive advantage:
 - Pennsylvania leverages outstanding local science and intellectual resources to create therapies, devices and diagnostics
- Our benefits:
 - The biosciences are transforming the economy: creating new companies, new jobs, and contributing to community growth

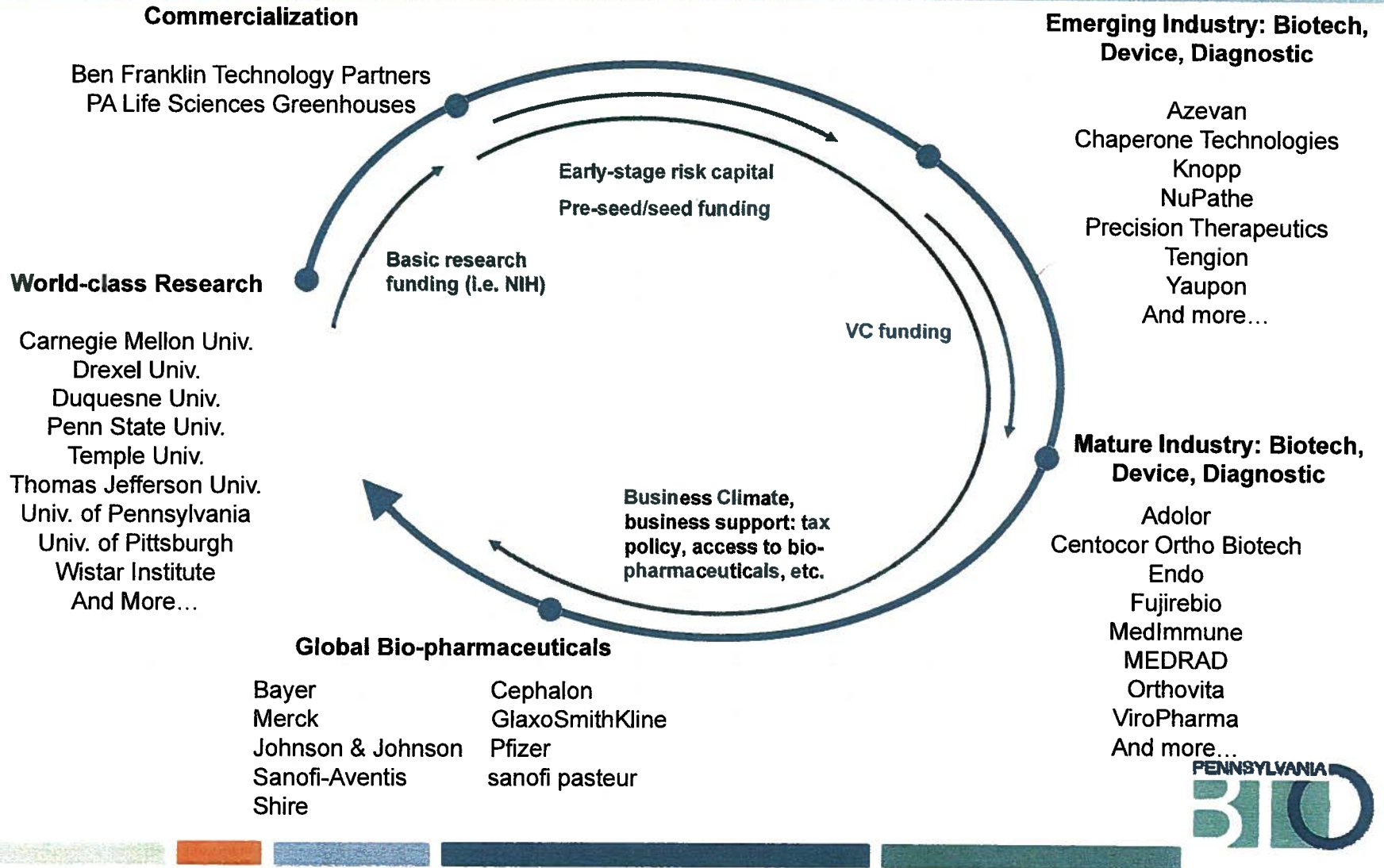


Pennsylvania's Strengths

- Located in heart of bio-pharma corridor = talented workforce pool and partners
- World-class academic/research institutions that garner substantial NIH funding
- Close proximity to NYC (financial markets) and Washington D.C. (U.S. regulatory base)
- Easiest springboard in the U.S. to the European markets
- High quality of life and a competitive cost of doing business
- Strong heritage of innovation
- Strong allied skills—ancillary industries and a robust service provider network
- Continuum of support from the Commonwealth



The Bioscience Continuum in Pennsylvania



The Biosciences in Pennsylvania

- The biosciences are a cornerstone of Pennsylvania's new economy
 - **80,929 direct bioscience jobs at 1,895 establishments**
 - drugs and pharmaceuticals; medical devices; agricultural feedstock and chemical; research and testing
 - **Nearly 355,000 total employment impact (4.38 multiplier)**
 - **Average employee salary of \$82,262**
 - Average total private sector wage in PA is \$44,000; national average is \$45,000
 - **\$6.7 billion in total wages**

Source: Battelle/BIO, State
Bioscience Initiatives 2010



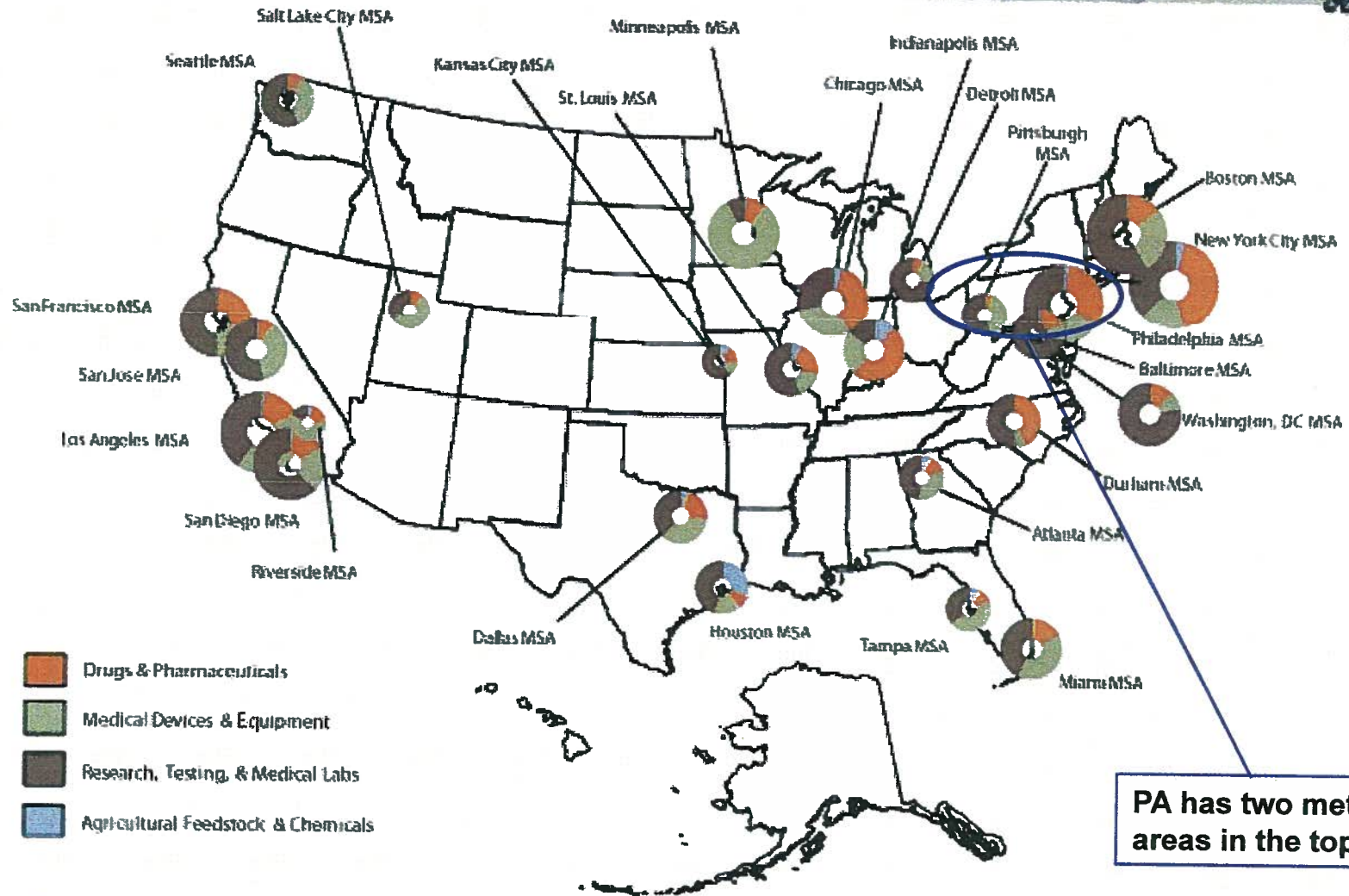
The Biosciences in Pennsylvania

- **Pennsylvania ranked among the top 5 states across additional key bioscience metrics:**
 - Academic R&D Expenditures
 - Bioscience R&D: \$1.6 billion (#4 nationally behind CA, NY and TX)
 - NIH Funding: \$1.7 billion (#4 nationally behind CA, MA and NY)
 - Bioscience Venture Capital Investments, 2004-2009: \$2.9 billion (#4 nationally behind CA, MA and NJ)
 - Bioscience-related Patents, 2004-2009: 5,041 (#4 nationally behind CA, MA and NJ)
 - Higher Education Degrees in Bioscience Fields, AY 2008: 8,390 (#5 nationally behind CA, TX, IL and NY)
 - Employment in Bioscience-related Occupations, 2008: 40,070 (#3 nationally behind CA and TX)
 - Clinical Trial Activity, 2009: 843 (#5 behind CA, TX, NY, and FL)

Source: Battelle/BIO, State
Bioscience Initiatives 2010



The largest 25 metro areas in the biosciences



Pennsylvania Research Strengths

- \$1.7 billion in NIH funding (2009, including ARRA funds)
- Two of the top 10 U.S. universities in NIH funding
 - University of Pennsylvania
 - University of Pittsburgh
- Five NCI-designated cancer centers
- Major R&D investment by industry



How do we compare?

- July 2008 *Business Facilities* Magazine: Pennsylvania #1 nationally in overall biotechnology strength:
 - Commitment to research funding (CURE)
 - Three regionally based Greenhouses that are “comprehensive centers for the commercialization of bioscience research”
 - “Depth and diversity”

How do we compare?

- But in July 2009, PA's ranking in *Business Facilities* dropped to #3 behind California and Massachusetts
- Reasons?
 - Other states outpaced PA in their investment in the industry



To Maintain PA's Leadership...

- Create an environment where innovation is understood and valued, and policies match the rhetoric
- Support the industry along the Continuum
 - From translation of research in the labs to start-up activity, commercialization and manufacturing
 - All steps along the continuum are critical to job creation and growth



Christopher P. Molineaux
President, Pennsylvania Bio



As president of Pennsylvania Bio, the only statewide association dedicated to advancing the biosciences industry in the Commonwealth of Pennsylvania, Christopher Molineaux serves as the chief advocate and spokesman for the biotechnology, device, diagnostic, pharmaceutical, research organizations and support network that call Pennsylvania home. Molineaux oversees the strategic direction for the association, assuring that Pennsylvania Bio continues to be the catalyst that makes Pennsylvania the top location for bioscience companies.

Molineaux brings to Pennsylvania Bio 20 years of experience in the biopharmaceutical and health care industries, with front-line experience in developing and executing strategies to navigate a shifting economic and political environment. He joined Pennsylvania Bio in 2009 as senior vice president for membership services, responsible for managing and enhancing the relationship between the association and member companies, and for developing and executing the strategic membership plan for the association's continued growth.

Prior to joining Pennsylvania Bio in September 2009, Molineaux served as worldwide vice president of pharmaceutical communication and public affairs for Johnson & Johnson. He began his Johnson & Johnson career as vice president of corporate communications at Centocor in Malvern and was later promoted into the role of vice president for communications of the company's global Biotechnology, Immunology & Oncology (B.I.O.) business unit. During his time with Johnson & Johnson, Molineaux served on the leadership teams and management boards for each division for which he worked. He helped to promote the company's advocacy agenda in the US and abroad, guided the communication of the company's value to government agencies globally, and worked to build public and investor awareness and understanding around the company's product and pipeline portfolio.

Molineaux previously served as vice president of public affairs at the Pharmaceutical Research and Manufacturers Association (PhRMA), where he worked on many critical industry issues, including the passage of a meaningful prescription drug benefit for Medicare beneficiaries (Medicare part D). Prior to this, he worked at the Blue Cross and Blue Shield Association developing public awareness and education strategies related to commercial and government payer systems and helping to reposition the Blue Cross and Blue Shield system of health care plans at a time when business organizations sought solutions to lowering health care costs. Molineaux also worked as a public affairs executive for both the federal Departments of Health and Human Services (HHS) and Agriculture, and on the White House staff of President George H. W. Bush.

Molineaux is co-chair of We Work for Health Pennsylvania and is on the board of directors of the Chester County Economic Development Council. He also serves on the Hershey Center for Applied Research Scientific Advisory Committee, the University City Science Center Community Development Committee, and the Health & Science Advisory Committee at WHY in Philadelphia.

Molineaux lives in Wynnewood, PA with his wife and their three sons.