

# The Pennsylvania LIFE SCIENCES GREENHOUSE Initiative

A national model for the commercialization of innovative healthcare solutions.

## PROVEN MODEL FOR SMALL BUSINESS SUCCESS

This year's budget calls for a level funding of \$3M in the aggregate for the **Life Sciences Greenhouses** (LSGs), an initiative that has been a proven model for economic stimulus, medical innovation, jobs and wealth creation for Pennsylvania.

The LSGs guide researchers, entrepreneurs and emerging companies through the many challenges faced during the early stages of company development. We work with them to **build** sustainable business models, we invest critical seed-stage capital, and we help them **secure** follow-on funding. We make it possible for Pennsylvania companies to deliver medical innovation, jobs and economic growth more successfully and efficiently than they ever could alone.

The LSGs have efficiently transformed state dollars into a thriving generation of companies that are making a difference. Companies and products born here in Pennsylvania are being developed to treat the world's most debilitating diseases.

**1:33** LEVERAGE of state dollars;

**\$63.2M** invested in

**181** companies, which has LEVERAGED

**\$2.1B** in additional dollars

### HIGH DEMAND FOR LSG INVESTMENT

Number of Requests Received for Funding **1555**

Amount Requested **\$724.7M**

Percentage of Requests Funded **17%**

### LSGS CREATE HIGH-QUALITY PA JOBS

LSGs created more than **3200 jobs** in Pennsylvania.

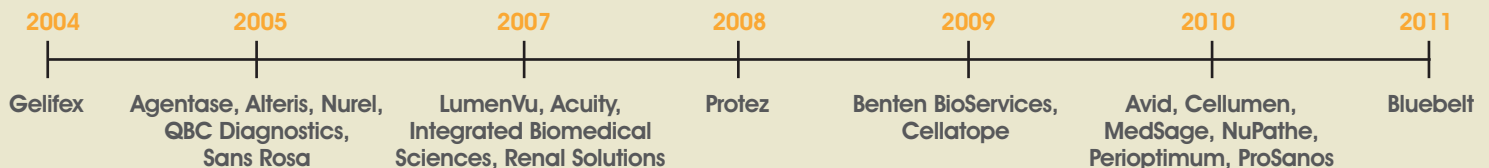
**Average LS salary \$90,267** – 2X average Pennsylvania private sector wage of about \$45,348.

For every one LS job created, **5.8 additional state jobs** are impacted.

### LSG FUNDED. FDA APPROVED.

AdaptDx™	Infrascanner
Amyvid™	LumenVu Catheter Guidance System
BoneVue™	SmartSponge System™
DialiSorb™	SleepWeaver®
EMMA™	QSP-7™
M29™ Midterm Catheter System	VERATHERM™
Matched Flicker	

### GROWING LIFE SCIENCES COMPANIES STIMULATE ECONOMIC ACTIVITY AND CREATE WEALTH. LSG INVESTMENTS HAVE RESULTED IN HIGH-IMPACT EXITS.



412-201-7370 | [www.plsg.com](http://www.plsg.com)



717-635-2100 | [www.lsgpa.com](http://www.lsgpa.com)




215-966-6214 | [www.bioadvance.com](http://www.bioadvance.com)



### BioAdvance Snapshot

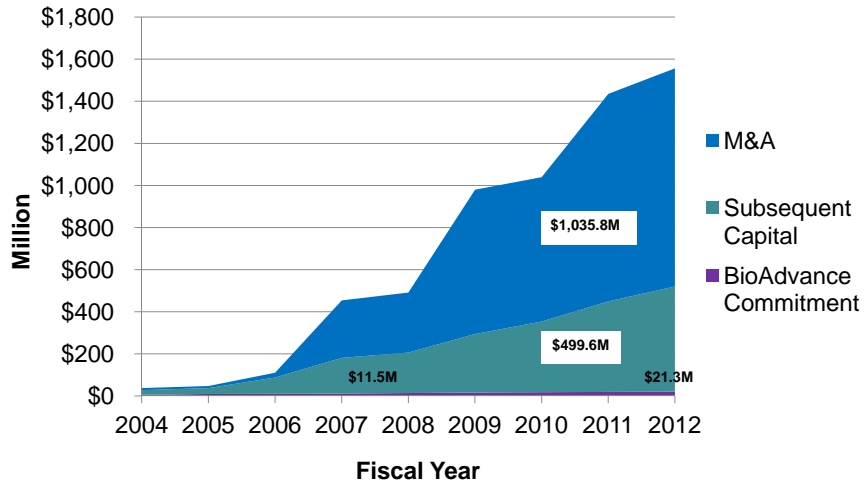
<b>\$21.3M</b>	<b>invested since 2003 in</b>
<b>54</b>	<b>companies, developing</b>
<b>60</b>	<b>products, leveraging</b>
<b>\$1.5B</b>	<b>in additional dollars, for a</b>
<b>1:72</b>	<b>leverage ratio of state dollars to other capital</b>



---

2

## Leverage of PA dollars 1:72



Note: As of June 5, 2012. Excludes NuPathe IPO (\$140 million valuation) and Avid commercial milestones (up to \$500 million)



3

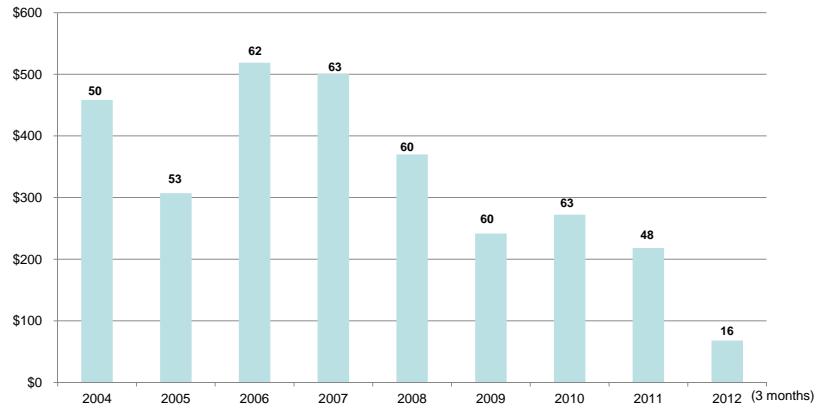
## Exits to Date

Company	Exit	Acquiror	Exit Value (upfront)
Gelifex	2004	Synthes	Confidential
Alteris	2005	Celldex	\$13 million
Sans Rosa	2005	Collagenex	Confidential
LumenVu	2007	SonoSite	Confidential
Acuity	2007	OPKO	\$234 million
Protez	2008	Novartis	\$400 million (\$100 million)
NuPathe	2010	IPO	\$140 million
Avid	2010	Lilly	\$850 million (\$300 million)
Formae	2011	N/A	Repayment of Promissory Note



## Life Sciences Venture Capital Trends in PA

Life Sciences Venture Capital in PA (all stages)



Percent of all U.S. \$	2004	2005	2006	2007	2008	2009	2010	2011	2012 (3 months)
	7.2%	4.9%	6.8%	5.3%	4.3%	3.7%	4.3%	2.8%	4.6%

Source: PricewaterhouseCoopers MoneyTree™ Report as of 3/31/2012



5

## Series A Life Sciences Financings: Will 2012 Be Better?

	2007	2008	2009	2010	2011	2012 (4 months)
<b>US</b>	<b>175</b>	<b>185</b>	<b>115</b>	<b>101</b>	<b>96</b>	<b>32</b>
<b>TOTAL</b>	<b>\$1.67B</b>	<b>\$1.57B</b>	<b>\$1.02B</b>	<b>\$941.57M</b>	<b>\$859.16M</b>	<b>\$251.83M</b>
PA	6	9	8	2	1	1
NJ	10	7	1	5	2	0
DE	0	0	0	0	0	0
MD	5	2	3	1	2	1
MA	26	30	12	26	21	10
CA	58	61	34	24	25	8
NC	3	3	3	1	2	0

Source: MedTRACK Venture Finance Database (4/30/2012)



6

## Proportion of Life Sciences VC to all Sectors (\$ in millions)

	2012 (3 months)		2011		2010		2009	
<b>US</b>								
<b>All VC</b>	\$5,751		\$29,119		\$23,363		\$19,668	
<b>Biotech VC</b>	\$780	(13.5%)	\$ 4,871	(16.7%)	\$ 3,841	(16.4%)	\$ 3,714	(18.9%)
<b>Med Device VC</b>	\$686	(11.9%)	\$ 2,840	(9.7%)	\$ 2,372	(10.2%)	\$ 2,595	(13.2%)
<b>PA</b>								
<b>All VC</b>	\$175		\$ 520		\$ 543		\$ 433	
<b>Biotech VC</b>	\$48	(27.4%)	\$ 116*	(22.3%)	\$ 180	(33.1%)	\$ 147	(33.9%)
<b>Med Device VC</b>	\$19	(10.9%)	\$ 101*	(19.4%)	\$ 83	(15.3%)	\$ 84	(19.3%)

Source: PricewaterhouseCoopers MoneyTree™ Report as of 3/31/2012

\* OnBioVC shows \$144M in 2011 life sciences venture capital in PA;  
MedTRAK shows \$227M; difficult to reconcile databases



## Fund Raising Flat vs 2011

### Decline in Fundraising by US Venture Funds (all sectors)

Year	Number of Funds	Venture Capital (\$M)
2005	243	29,042.7
2006	243	32,094.9
2007	233	36,206.4
2008	212	25,340.1
2009	160	16,400.7
2010	170	13,778.9
2011	181	18,767.6
2012 (3 months)	42	4,876.9

Source: Thomson Reuters and National Venture Association



## **BioAdvance Announces Investment Activity in PA Life Science Companies**

PHILADELPHIA, June 18, 2012—BioAdvance, the Biotechnology Greenhouse Corporation of Southeastern Pennsylvania, today announced commitments of \$2.4 million to seven new life science companies, two academic technologies and seven current portfolio companies during its fiscal year ending June 30, 2012.

Seven new start-up companies have received investments:

- RMH Sciences (Philadelphia), discovering novel antibacterial agents for the treatment of resistant gram negative and gram positive infections, based on the work of Harvey Rubin, M.D., Ph.D., of the University of Pennsylvania.
- Ossianix (Philadelphia), developing single domain antibodies based on the shark VNAR structure, with a platform of potential therapeutics in immunological, inflammatory, musculoskeletal, neurologic, and other disorders. [www.ossianix.com](http://www.ossianix.com)
- Merganser Biotech (Delaware), developing hepcidin peptides for the treatment of hemoglobinopathies, such as sickle cell anemia and beta thalassemia, and diseases of iron overload.
- Anakim Biologics (Chester), developing efficiencies and improvements in biologics manufacturing.
- Enzium (Philadelphia/Allegheny), developing highly sensitive biosensor methodologies for the testing of proteases and other enzymes. [www.enzium.com](http://www.enzium.com)
- Imiplex (Bucks), developing the TriPol platform, engineered from proteins, designed to provide a flexible system for constructing diverse nanostructures. [www.imiplex.com](http://www.imiplex.com)
- Cool~Bio (Delaware), developing platelet-inhibiting technology geared specifically to activation during the cooling process of cardiac bypass.

BioAdvance also supported two academic technologies for potential company formation in the region: one selective TNFRI inhibitor discovered at the University of Pennsylvania and one for hearing loss discovered at the University of Auckland.

“The demand for funding and the technical and commercial attractiveness of new technologies in 2012 has been strong, particularly when coupled with the experienced industry talent pool here” said Barbara S. Schilberg, Managing Director and CEO of BioAdvance. “Given the shortage of start-up capital, we’re pleased to continue filling a critical role in funding early-stage innovation. We know from success stories such as Avid Radiopharmaceuticals and Infracan that these companies have the potential to significantly impact human health and drive economic growth in the region.”

In addition to new start-up funding, seven companies in the BioAdvance portfolio are receiving follow-on investments, including:

- Solaris Therapeutics (Bucks), working on a unique approach to protein misfolding through ring domains of E3 ligases responsible for ubiquitination.
- Novira Therapeutics (Delaware), developing first-in-class antiviral therapeutics based on a novel mechanism of action that targets viral capsid assembly. [www.noviratherapeutics.com](http://www.noviratherapeutics.com)
- Niiki Pharma (Philadelphia), developing two clinical-stage first-in-class anti-cancer drug candidates: NKP-1339, which targets BiP/GRP78, and NKP-2235 which uses transferrin to disable the endoplasmic reticulum, causing tumor cell death. [www.niikipharma.com](http://www.niikipharma.com)
- Galleon Pharmaceuticals (Montgomery), developing innovative breathing control medicines for acute and chronic neurorespiratory conditions, including opiate-induced respiratory depression and sleep apnea. [www.galleonpharma.com](http://www.galleonpharma.com)
- Immunome (Montgomery), developing proprietary native human monoclonal antibody (N-huMAB) platform which enables the discovery of N-huMABs engineered by the human immune system that are not accessible by other antibody cloning methods. [www.immunome.com](http://www.immunome.com)
- Optofluidics (Philadelphia) developing microfluidic and biophotonic devices for single molecule manipulation for analysis and point-of-care medical diagnostics. [www.optofluidicscorp.com](http://www.optofluidicscorp.com)
- Ceptaris Therapeutics (Chester), developing mechlorethamine gel, a topically delivered cytotoxic agent to treat cutaneous T-cell lymphoma (CTCL). [www.ceptaris.com](http://www.ceptaris.com)

Since 2003, BioAdvance has invested \$21.3 million in 54 companies with over 60 products for the diagnosis and treatment of diseases such as Alzheimer's, obesity, diabetes, infectious diseases and cancer. For every \$1 that BioAdvance has invested in early stage companies, \$72 additional dollars were attracted into the Pennsylvania economy. Its portfolio companies have raised nearly \$500 million in subsequent funding and nine companies have attracted over \$1 billion in capital from acquisitions and other exits, including Acuity Pharmaceuticals, Protez Pharmaceuticals, Avid Radiopharmaceuticals and NuPathe Inc.

For more information or to apply for funding please visit [www.bioadvance.com](http://www.bioadvance.com).

#### Contact

BioAdvance  
Jennifer Smith  
610-230-0645  
[jsmith@bioadvance.com](mailto:jsmith@bioadvance.com)