

Academic Senate

Research Updates

February 7, 2018

*A few points to touch upon*

Updates on various items

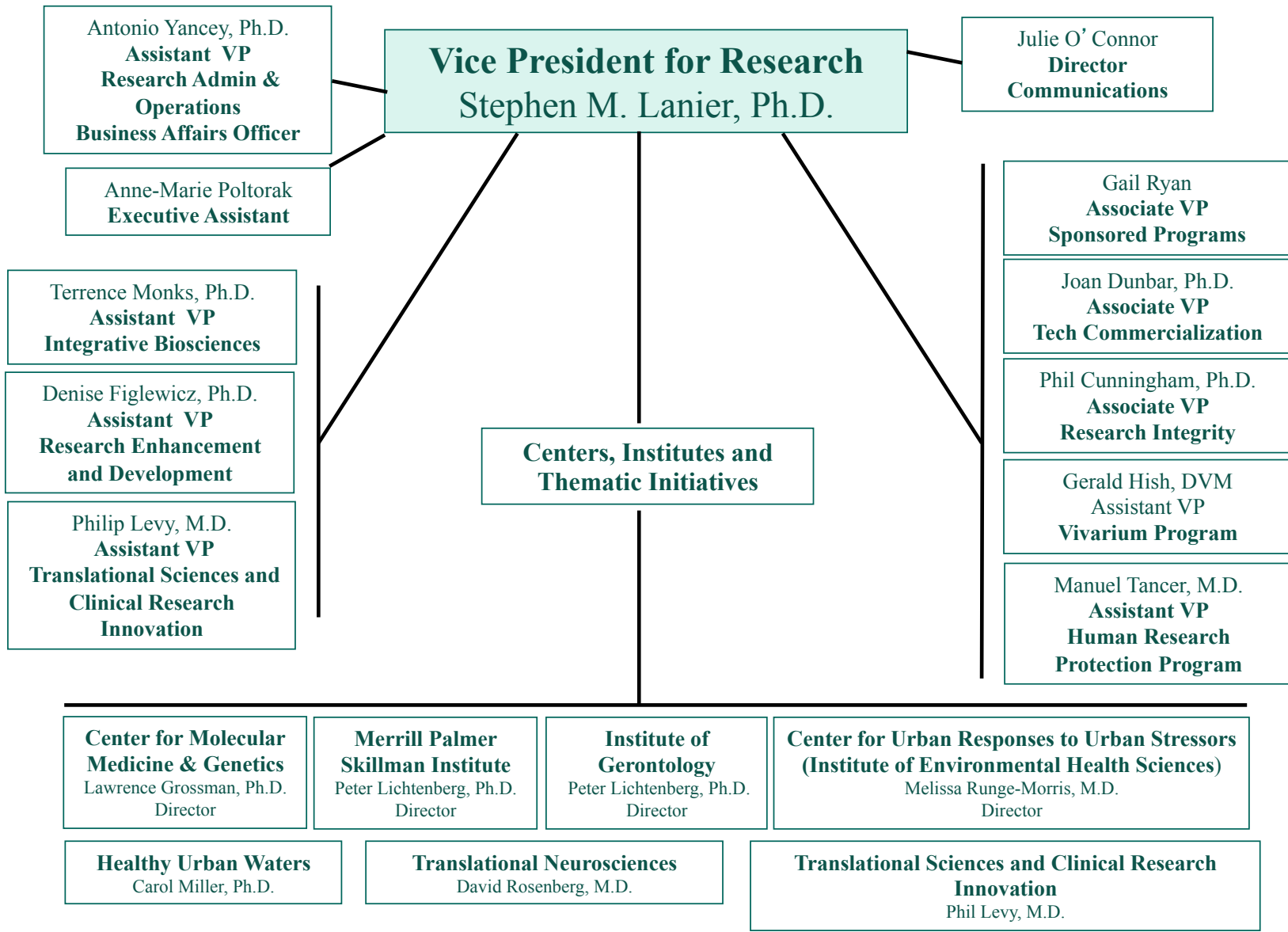
Research Funding and Rankings

Thematic programs and recruitment

Technology Development and Innovation Ecosystem

## *Key operational objectives for research growth going forward*

- Identify and support the development of thematic initiatives that leverage strengths across colleges
- Establish an “Office of Research Development” that will identify strategic programmatic funding opportunities
- Diversify funding portfolio
- Strengthen strategic affiliations
- Seamless support and workflow platforms
- Reinvest in physical and intellectual infrastructure (Recruit/Retain)
- Provide broader platforms for student research opportunities
- Expand and accelerate technology transfer platforms
- Workforce development
- Work with intercollege, faculty advisory groups to move forward with implementation



*A few points to touch upon*

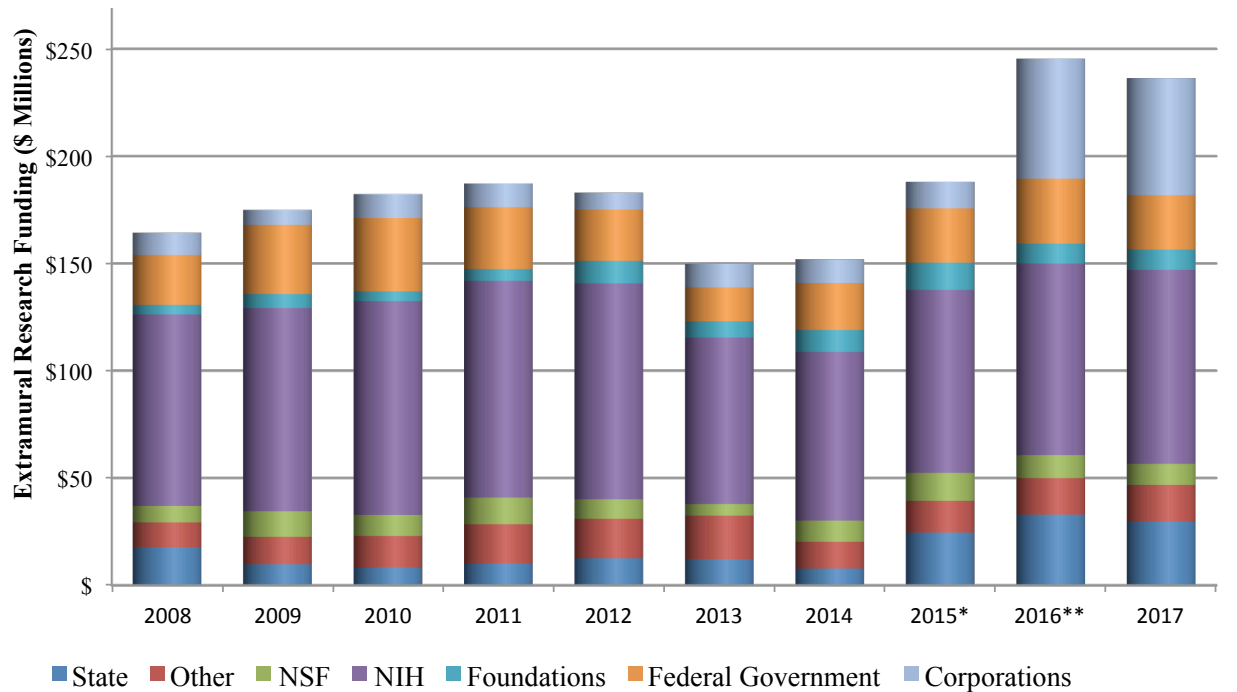
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# EXTRAMURAL RESEARCH FUNDING



\*Award Data for FY 2015 and beyond reflects a change in the methodology used to capture clinical trial awards/contracts.

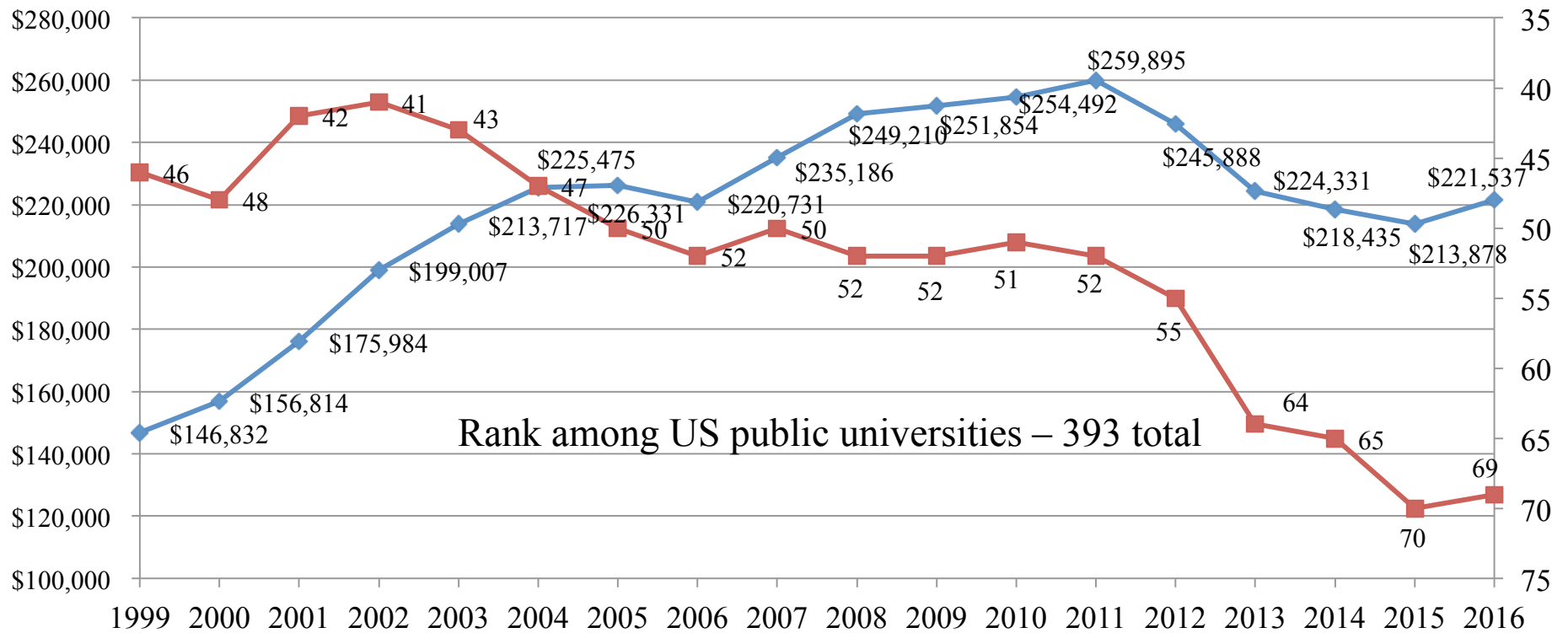
\*\*Award Data for FY 2016 and beyond includes clinical trial awards/contracts involving WSU Karmanos Cancer Institute and the School of Medicine that were not previously processed through the WSU Office of Sponsored Programs.

Obligated Sponsor Type (Using Prime if Applicable)	2013	2014	2015*	2016**	2017
Corporations	\$10,945,325	\$11,055,679	\$12,384,515	\$55,958,474	\$54,631,874
Federal Government	\$15,843,184	\$21,879,113	\$25,351,610	\$30,265,253	\$25,284,347
Foundations	\$7,529,182	\$10,263,209	\$12,646,443	\$9,296,446	\$9,475,080
NIH	\$77,684,181	\$78,603,871	\$85,336,002	\$89,322,782	\$90,439,506
NSF	\$5,404,977	\$9,827,735	\$12,992,732	\$10,673,480	\$9,935,056
Other	\$20,229,869	\$12,520,963	\$14,823,738	\$17,076,768	\$17,060,972
State	\$12,174,377	\$7,769,870	\$24,542,587	\$32,875,350	\$29,686,609
<b>Grand Total</b>	<b>\$149,811,095</b>	<b>\$151,920,440</b>	<b>\$188,077,626</b>	<b>\$245,468,553</b>	<b>\$236,513,445</b>

# EXTRAMURAL FUNDING (FEDERAL)

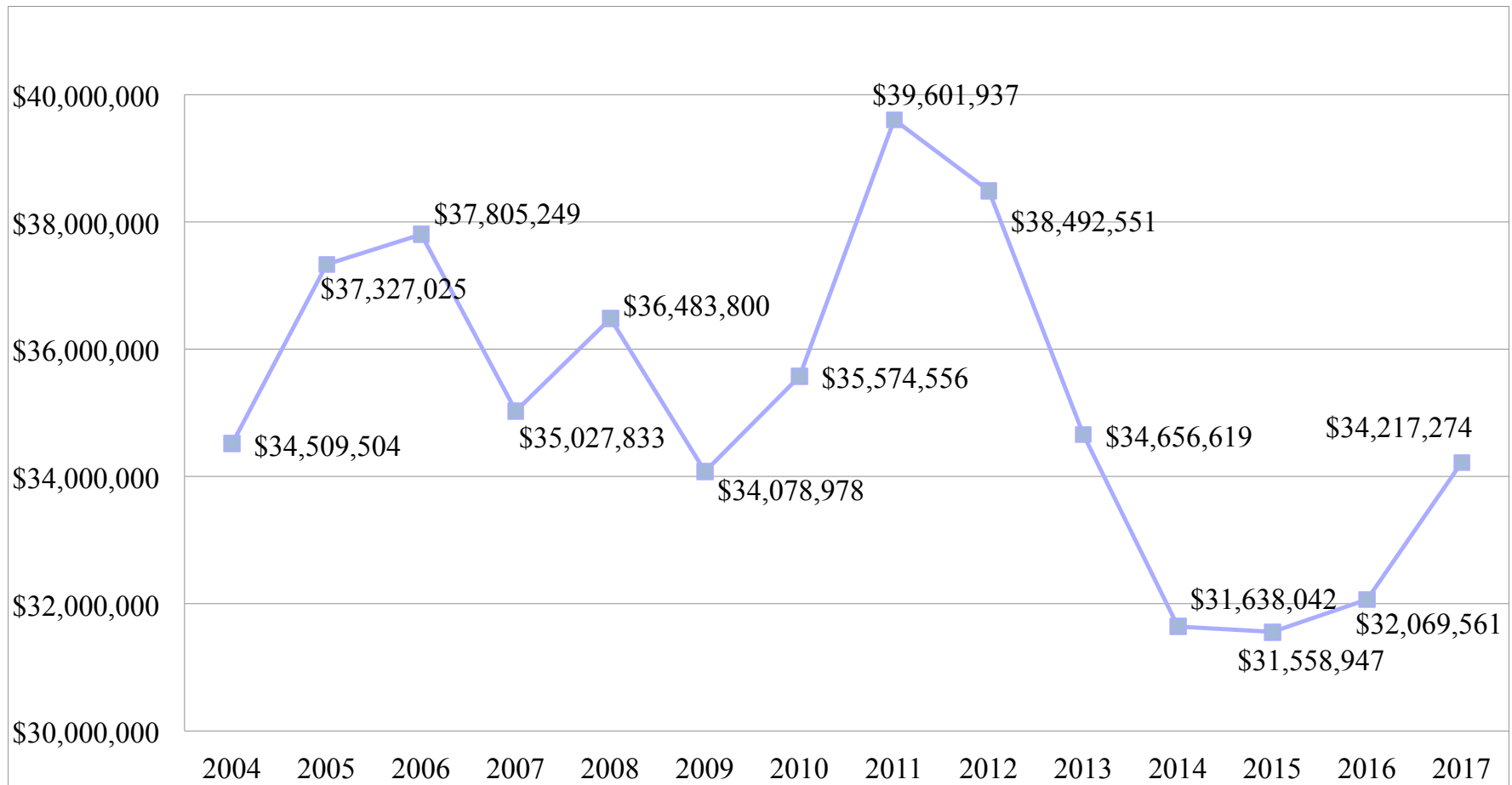
<b>funding source</b>	<b><u>2013</u></b>	<b><u>2014</u></b>	<b><u>2015</u></b>	<b><u>2016</u></b>	<b><u>2017</u></b>	<b><u>Increase above 2013</u></b>
NIH	77,684,181	78,603,871	85,336,002	89,322,782	90,439,506	
NSF	5,404,977	9,827,735	12,992,732	10,673,480	9,935,056	
Other federal	15,843,184	21,879,113	25,351,610	30,265,253	25,284,347	
Total FEDERAL	98,932,342	110,310,719	123,680,344	130,261,515	125,658,909	26,726,567 (27% increase)

# NSF Reported Research Expenditures and Institutional Ranking

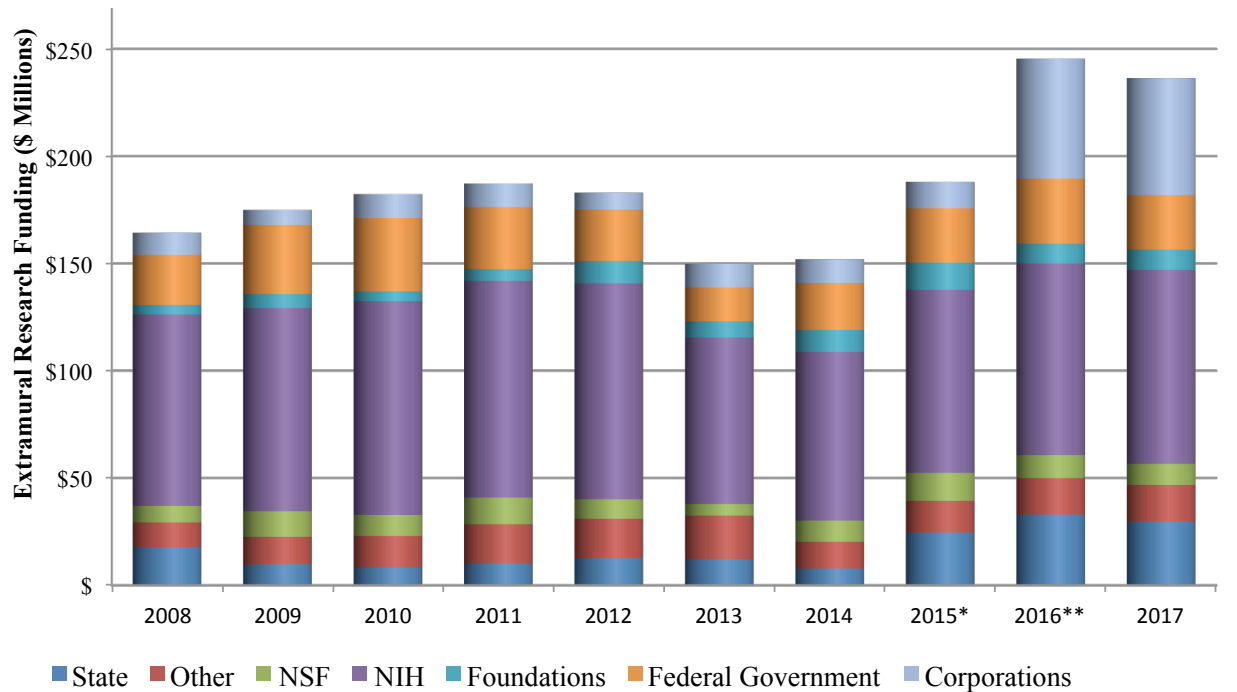




# Facilities & Administrative Costs Recovered - generated by expenditures of awarded grants/contracts



# EXTRAMURAL RESEARCH FUNDING



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### Overview of Total Research Funding for Past 4 Fiscal Years

	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>University Overall</b>	\$151,920,440	\$188,077,626	\$245,468,553	\$236,513,445
<b>Medicine</b>	\$94,471,462	\$116,923,561	\$176,563,164	\$152,096,963
<b>Liberal Arts &amp; Sciences</b>	\$16,103,749	\$21,124,216	\$17,007,135	\$18,223,960
<b>Engineering</b>	\$13,669,158	\$12,605,980	\$14,197,962	\$14,983,264
<b>VPR Centers &amp; Institutes</b>	\$4,106,837	\$4,179,404	\$7,768,487	\$14,216,377
<b>Nursing</b>	\$3,299,463	\$3,593,876	\$4,973,418	\$6,216,293
<b>Pharmacy &amp; Health Sciences</b>	\$4,003,946	\$4,871,394	\$4,247,657	\$5,209,199
<b>Social Work</b>	\$917,624	\$760,456	\$1,138,555	\$2,843,256

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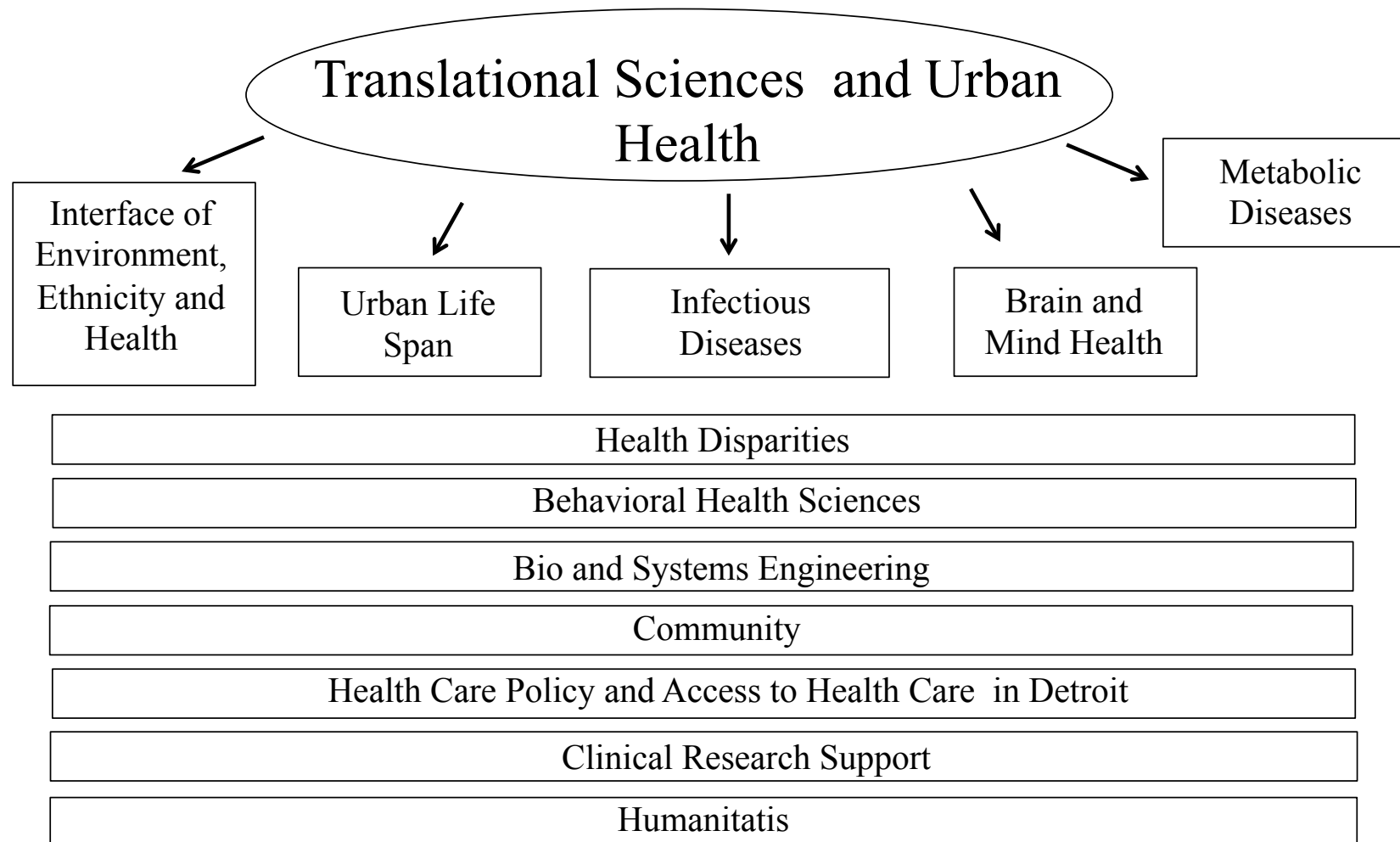
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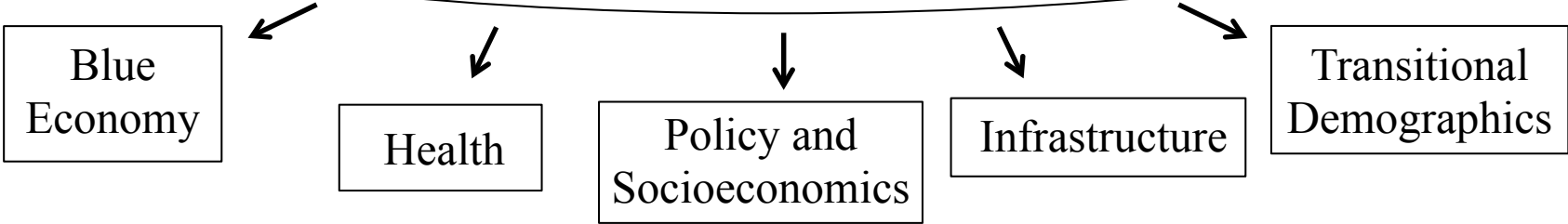
Technology Development and Innovation Ecosystem

# *Thematic Initiatives - Integrative Biosciences*





*The Healthy Urban Waters Initiative*



- Disparities and Equity
- Allostatic load and the Built Environment
- Bio and Systems Engineering
- Local, Regional and International Community
- Urban Laboratories and Education Platforms
- Data Analytics
- Urban Planning and Sustainability

## *Thematic Recruitments and IBio Initiative Update*

### Tracie Baker, Ph.D.

Tenure Track Assistant Professor  
Institute of Environmental Health Sciences, CURES ) and Department of Pharmacology  
Zebrafish model organism and developmental impact of environmental toxins  
NIH funding

### Samuele Ziliolo, Ph.D.

Tenure Track Assistant Professor – Started Nov 1, 50% Psychology (CLAS) and 50% Division of Behavioral Health in the  
Dept of Family Medicine and Public Health Sciences (SoM)  
Health equity - Socioeconomic stressors and behavioral outcomes  
Department of Justice funding, NIH pending

### Ulrike Klueh, Ph.D.

Associate Professor – tenure track – Biomedical Engineering  
Glucose sensors, diabetes and implantable devices  
Helmsley Foundation and NIH funding

### Marianna Sadagurski, Ph.D.

Tenure Track Assistant Professor – Dpt of Biology - Metabolic diseases group at IBio  
Mouse models to track neuronal adaptation mechanisms involved with obesity and diabetes  
Juvenile Diabetes Research Foundation funding and NIH pending

## *Thematic Recruitments and IBio Initiative*

Wanqing Liu, Ph.D. (Metabolic diseases and pharmacogenomics)

July 2017 - Tenured Associate Professor - 50% in Pharmaceutical Sciences in the College of Pharmacy and Health Sciences and 50% appointment in Department of Pharmacology in Medicine

NIH funding

Carolyn Harris, Ph.D. Translational Neurosciences – Neuroprosthetics

Assistant Professor – March 2017 Chemical Engineering tenure track

NIH and industry funding

Eduard Chekmenev, Ph.D. Biomedical imaging (Cancer, Chemistry, Bioengineering, Translational Neurosciences)

Starts spring of 2018 50% Chemistry (tenure home) and 50% Oncology – Associate Professor

NIH, DoD, NSF funding

Jun Li, M.D. - Translational Neurosciences Initiative

Chair - Department of Neurology

Neurological and Neuromuscular Diseases

NIH funding-

TWO ADDITIONAL RECRUITS (CONFIDENTIAL – NOT YET ANNOUNCED)

Translational Neurosciences and Neurotrauma

Brain Health and neuroimaging



## *PROGRAMMATIC GRANT SUCCESS AND INITIATIVES*

- “Prenatal Exposures and Child Health Outcomes: A Statewide Study” ~\$28M  
UG3 OD023285-01
- P30 NIEHS Center for Urban Responses to Environmental Stressors ~\$7M
- Cancer Center Support Grant – National Cancer Institute Designation as a comprehensive cancer center (1 of 45 in the country) ~\$15M
- “Scale it up: Effectiveness-implementation research to enhance HIV-related self management among youth” ~\$15M 1U19HD089875-01
- ”Enhanced Disease Surveillance and Environmental Monitoring” ~\$3M
- Michigan Alzheimer's Disease Core Center
- Scientific Software Innovation Institutes (S<sup>2</sup>I<sup>2</sup>) (Physics and Computer Science)
- Urban Watersheds, Brain and Mind Health, Translational Neurosciences
- “Translating an efficacious illness management intervention for African American Youth with poorly controlled asthma to real world settings - ~\$3.2M HL138633
- “Detroit Research on Cancer Survivors” ~\$9M CA199240

## KEY ITEMS OF FOCUS GOING FORWARD

- Recruitment -
  - Three targeted recruitments in progress (Neurosciences, Environmental Sciences, Metabolic Diseases)
  - Thematic recruitment cycle continuing with general ad and targeted ad postings
- Strategic partnership development
- Continued growth in Technology Commercialization and Industry engagement

## Technology Commercialization - Expand and accelerate technology transfer platforms

	<u>2012-2014</u>	<u>2015-2017</u>
Disclosures	187	204
Patent applications (U.S.)	197	189
Patent applications (foreign)	82	15
Patents issued (U.S.)	46	68
Patents issued (foreign)	11	13
Licenses including options	16	27
Start-up companies	1	9
Revenues	\$1,872,396	\$2,425,940

## Technology Commercialization - Expand and accelerate technology transfer platforms

- STTR/SBIR grants - WSU faculty start ups - 12 awarded 2014-2017, 4 in 2017
- Acquisition of WSU Spin off *RetroSense Therapeutics* by Allergan Pharmaceutical Company
- Optimizing organizational structure around best practices for innovation ecosystem
- External funding - (examples)
  - MEDC - \$1,073,875 -Michigan Translational Research Acceleration Program
  - \$200,000 - Technology Transfer Talent Network
  - New Economy Initiative \$500,000
- New sponsored research agreement options for industry engagement
  - SPECIALIZED SERVICES AGREEMENT FOR RESEARCH AND TECHNOLOGY DEVELOPMENT WITH INDUSTRY
  - SPONSORED AGREEMENT FOR RESEARCH AND TECHNOLOGY DEVELOPMENT WITH INDUSTRY
  - CLASS PROJECT AGREEMENT FOR INDUSTRY ENGAGEMENT

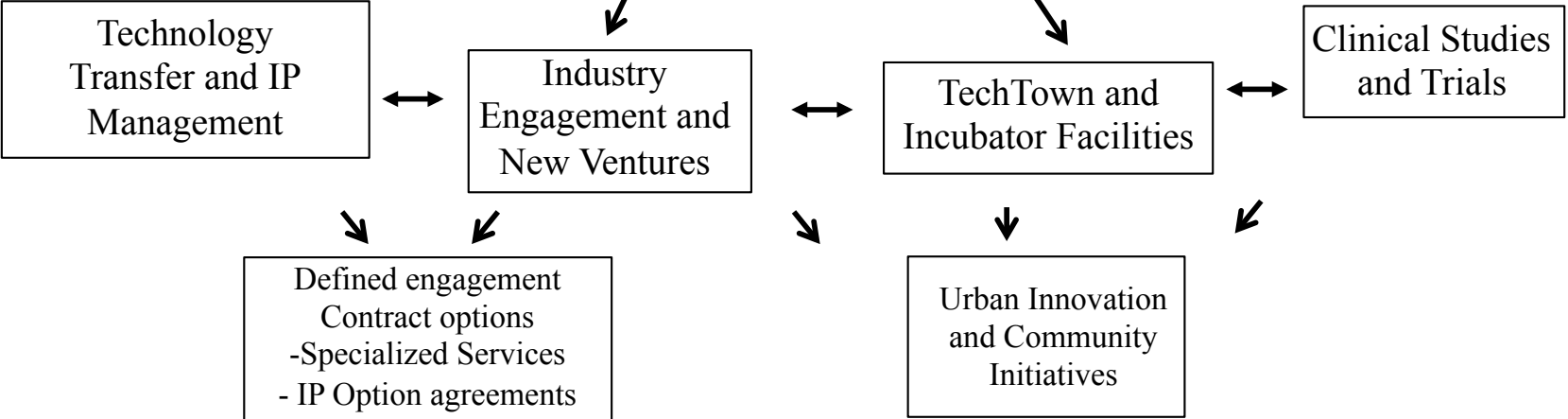
## Technology Commercialization - Expand and accelerate technology transfer platforms (Updates)

- *Applied Materials* (AMAT) : WSU - Q1, 2018 - Chuck Winters - CLAS  
Colocation of AMAT R&D at WSU(Chemistry)  
Collaborative Translational Research : From bench to industrial process  
Access of WSU researcher and students to specialized equipment  
Research funding and equipment donation  
Recognition of WSU research excellence in field of atomic layer deposition (microelectronics)
- *Seraph*: WSU start-up, launched 2014 - Greg Auner - CoE  
In-licensed technology from WSU  
Use of Raman for the real-time identification of bacterial, viral, fungal and parasitic infections for veterinary and human applications  
Experienced management team  
2017 secured \$5M SeriesA investment following earlier round of Angel funding  
Approximately \$1M Sponsored Research to WSU to date

## Technology Commercialization - Expand and accelerate technology transfer platforms (Updates)

- *Nanofibres and Nanowires* ( Guangzhao Mao, CoE ) 2013-  
Technology Development funding ( \$25,000) and Mentor in Residence (MiR) support  
Two follow-on NSF grants > \$500,000  
First WSU NSF iCorps grant (\$50,000 )  
Strategic partnership with Applied Nanotech, Inc (Austin, TX) and STTR funding (\$75,000)  
MTRAC funding (\$75,000)
- *NeuroLuX* (Huttemann, Reynolds, Sanderson - SoM) 2013-  
Technology Development funding (\$50,000); Innovation fellow/funding (\$25,000); MiR  
Follow-on DoD funding (\$2.1M)  
MTRAC (\$100,000)  
Start-up, Mitovation, launched ( Q1, 2018). Recruited experienced CEO  
STTR Fast Track approved for funding

*RESEARCH AND  
TECHNOLOGY DEVELOPMENT  
ECOSYSTEM AND INDUSTRY  
ENGAGEMENT*



- 
- Contract Management
  - Legal and business development
  - Clinical Research Support
  - Innovation and Tech Business Development Programs
  - Student Engagement Opportunities
  - Philanthropy

Academic Senate

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