

# 2017-2018 Research Report to UKRF Board of Directors

Lisa A Cassis, PhD  
Professor, Department of Pharmacology and Nutritional  
Sciences  
Vice President for Research



Research

Office of the Vice President for Research

## Format

- Presentation of research metrics supporting the UK Research Strategic Plan
- Presentation of FY18/19 budget (budget differences, examples of investment)
  - I. Transfers to General Fund (examples)
    - Fellowships for women/UDRM
    - Update on RB2
  - II. Expenditures (examples)
    - Office of Technology and Commercialization
    - Changes in funds flow: 2% return to departments (new program)
    - Research Strategic Investment Fund (SIF)
      - Strategic Investments Research Initiatives (new program)
      - Markey Cancer Center (example)



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## The Office of Research Team

- Martha Peterson, Senior Associate VPR
- Rodney Andrews, Associate VPR
- Allan Butterfield, Associate VPR
- Alan Daugherty, Associate VPR
- Nancy Schoenberg, Associate VPR
- Unit Directors and Staff:

Kim Carter, Helene Lake-Bullock, Kathy Grzech, Jack Supplee and Judy Duncan, Billy Clark, Ian McClure, Alicia Gregory, Eric King, Hal Stills, Bernard Doering, Jennifer Miles, Katherine Adams, Baron Wolf, Alex Dixon, Mary Lowell, Stacy Gaylor



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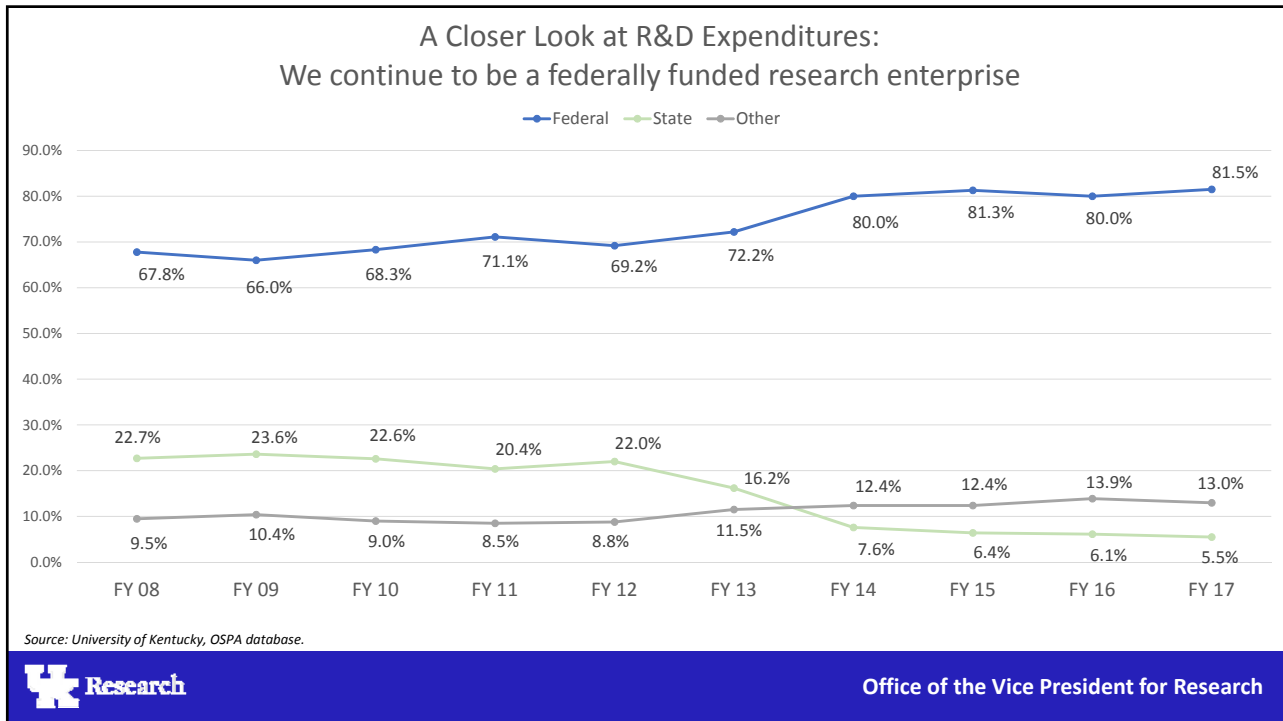
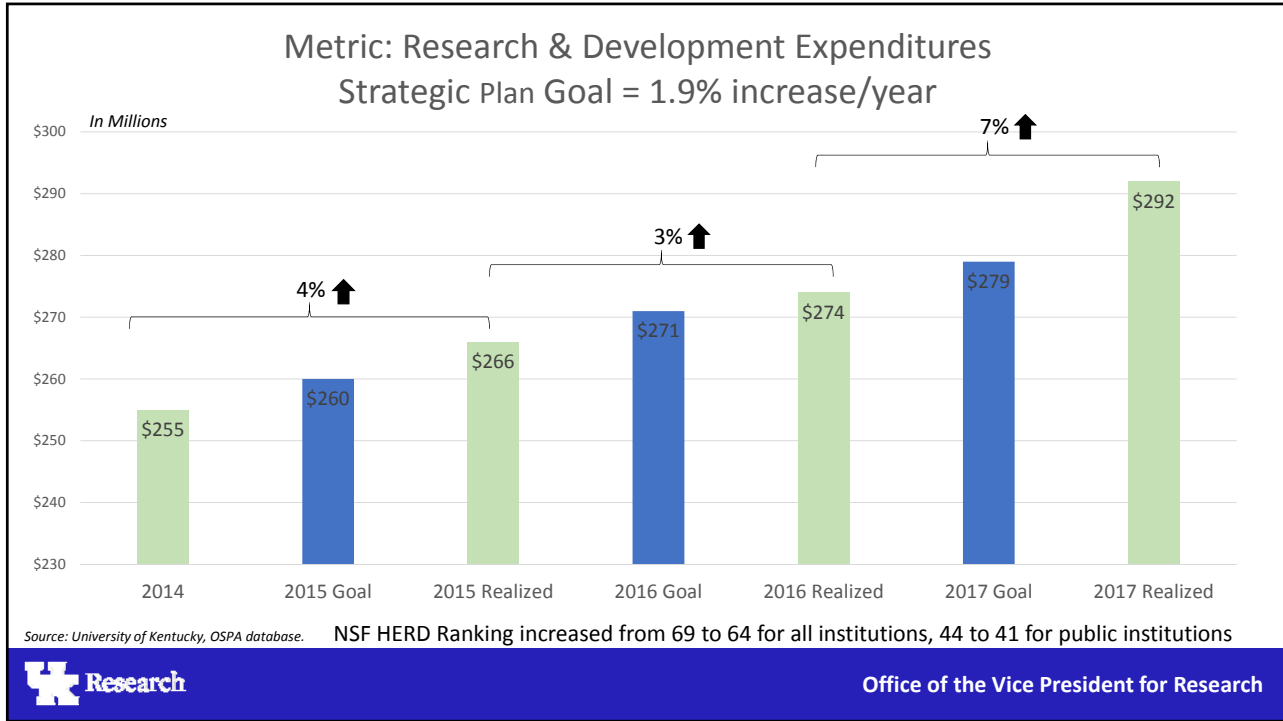
## Research Strategic Plan

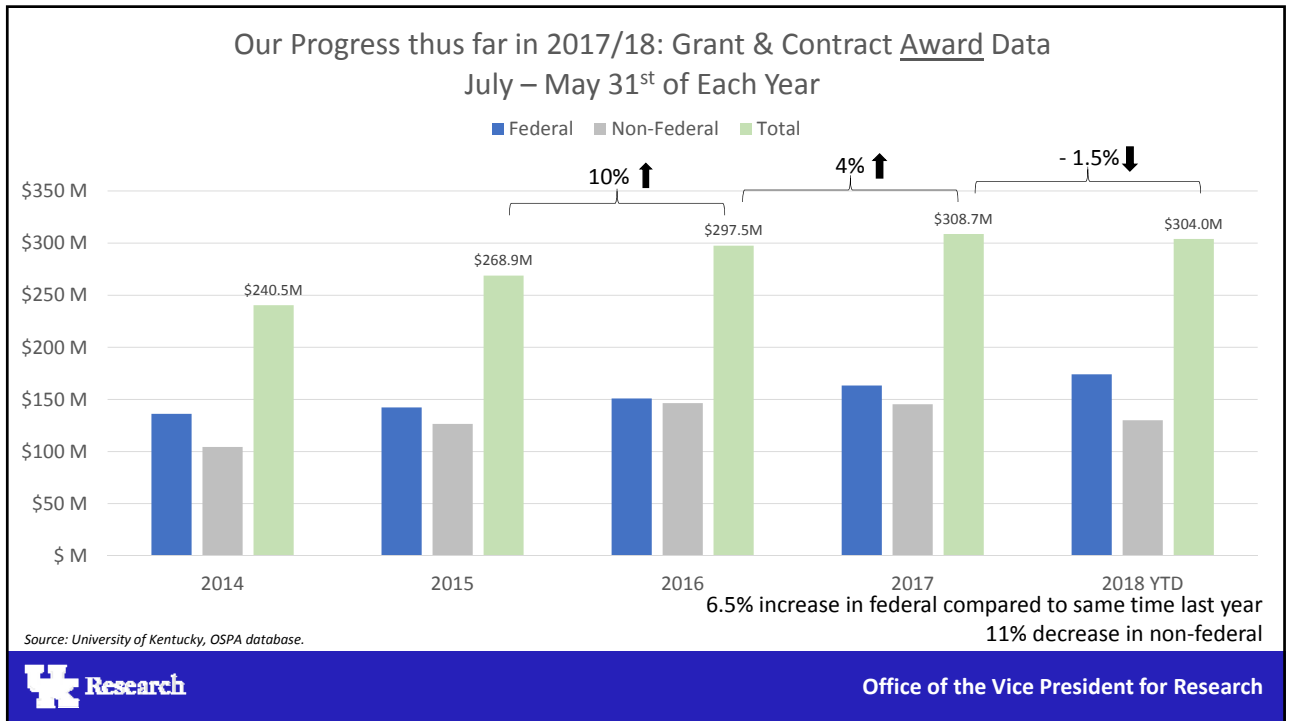
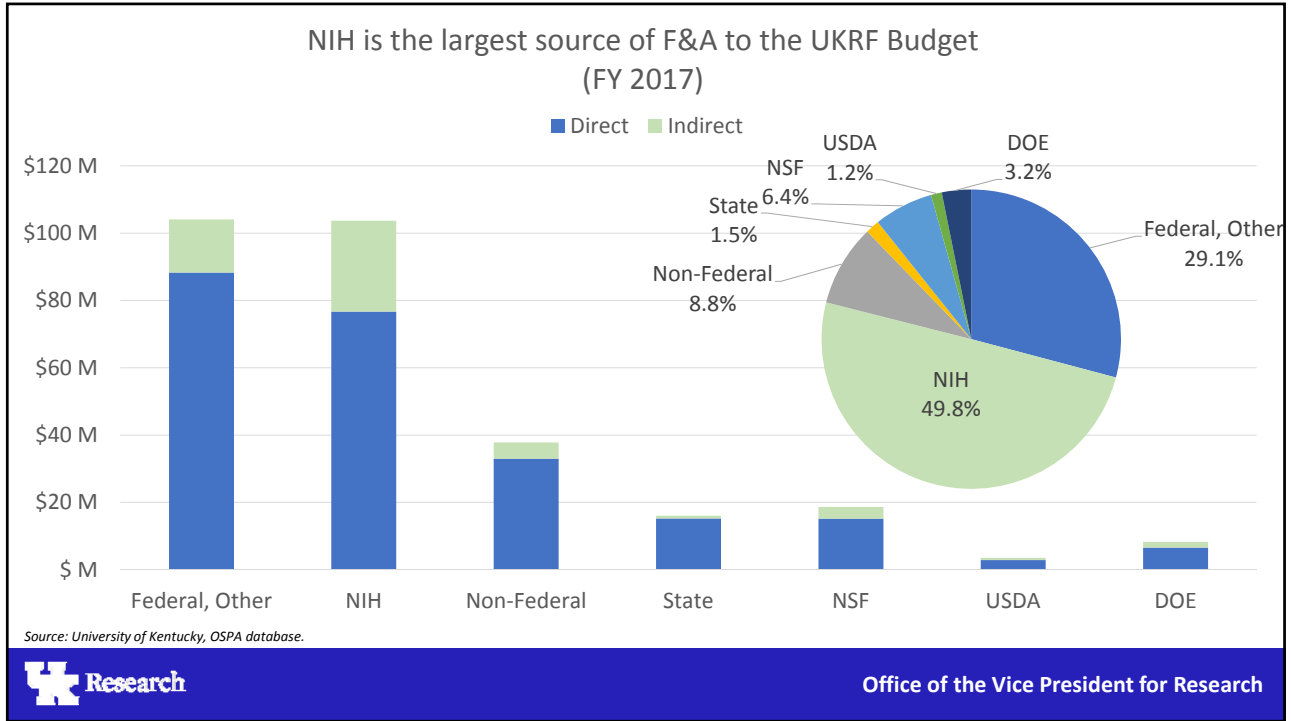
Expand our scholarship, creative endeavors, and research across the full range of disciplines to focus on the most important challenges of the Commonwealth, our nation, and the world.

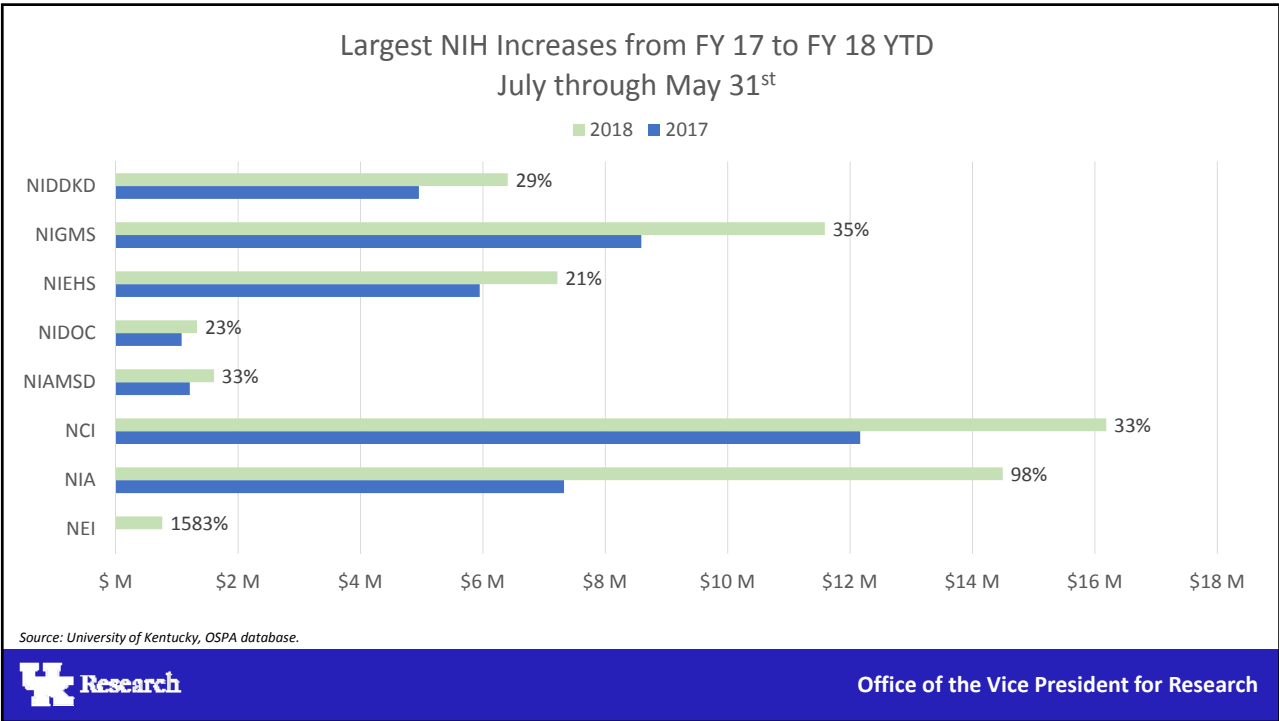
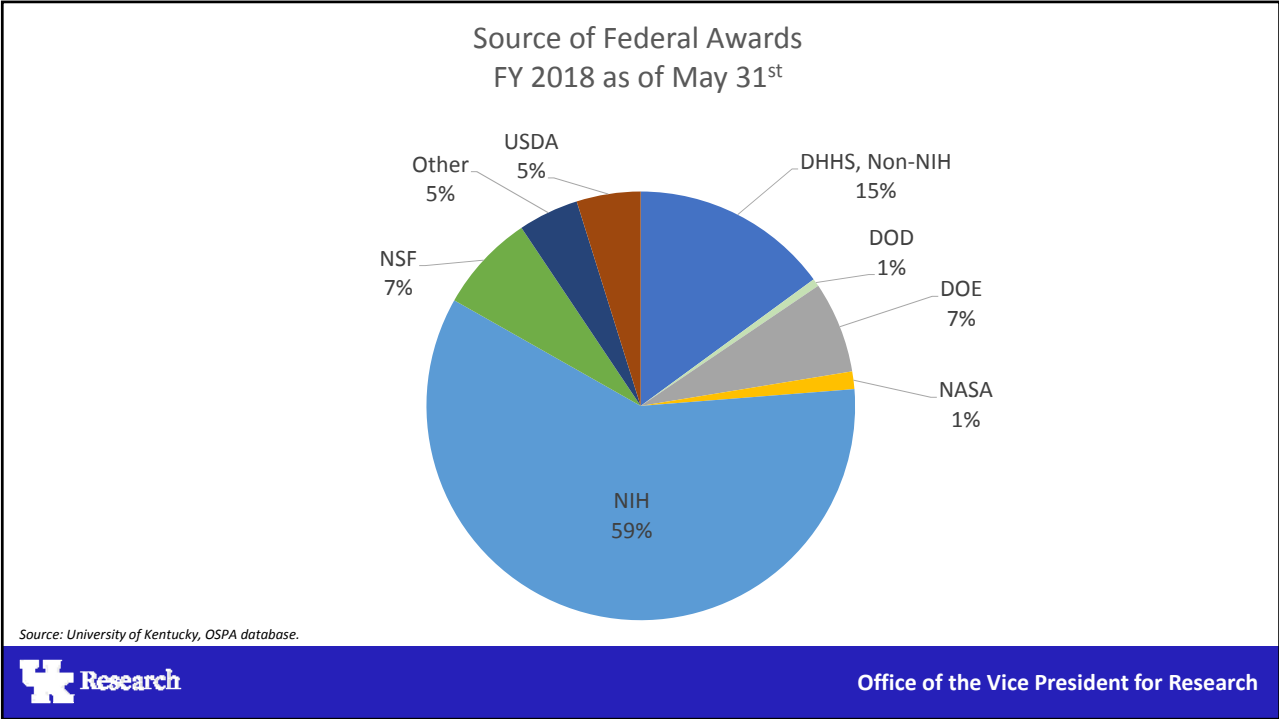
- I. Invest in UK's existing strengths and areas of growth in selected focus areas that benefit and enrich the lives of the citizens of the Commonwealth and beyond.
- II. Recruit and retain outstanding faculty, staff and students that support our research and scholarship across the range of disciplines at the University.
- III. Improve the quality of the research infrastructure across campus.
- IV. Strengthen engagement efforts and translation of research and creative work for the benefit of the Commonwealth of Kentucky, the nation and the world.

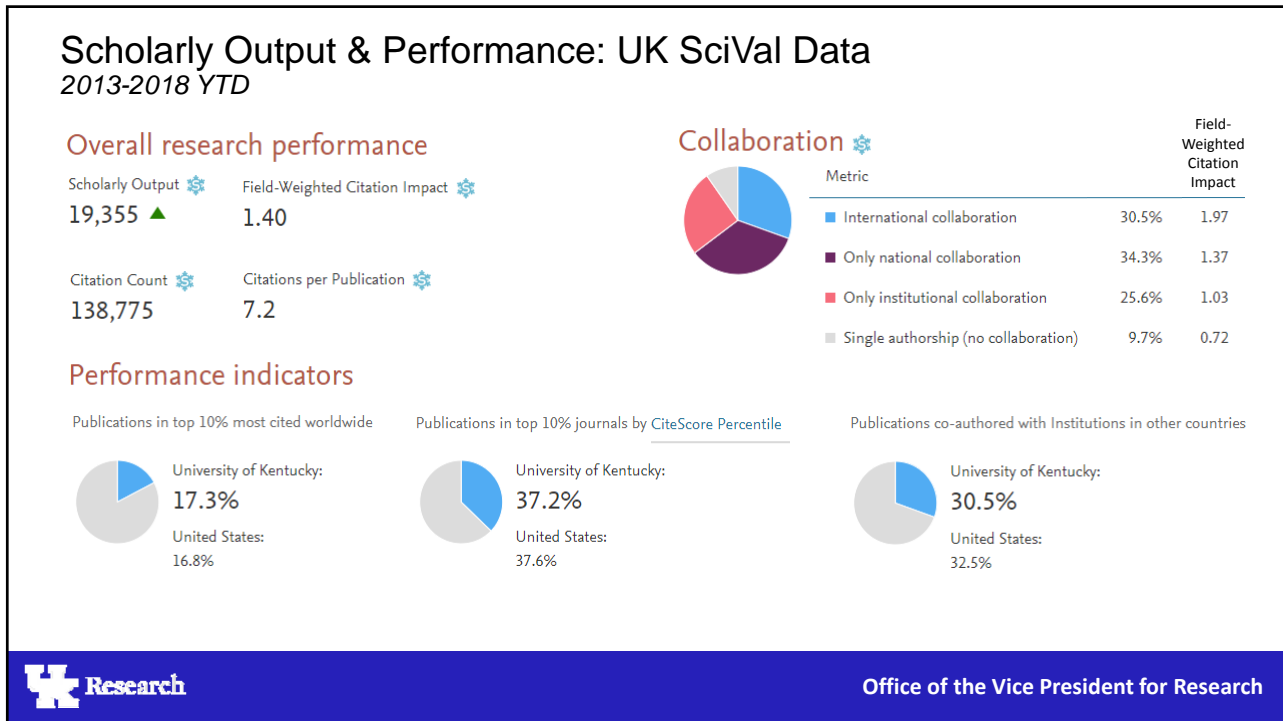
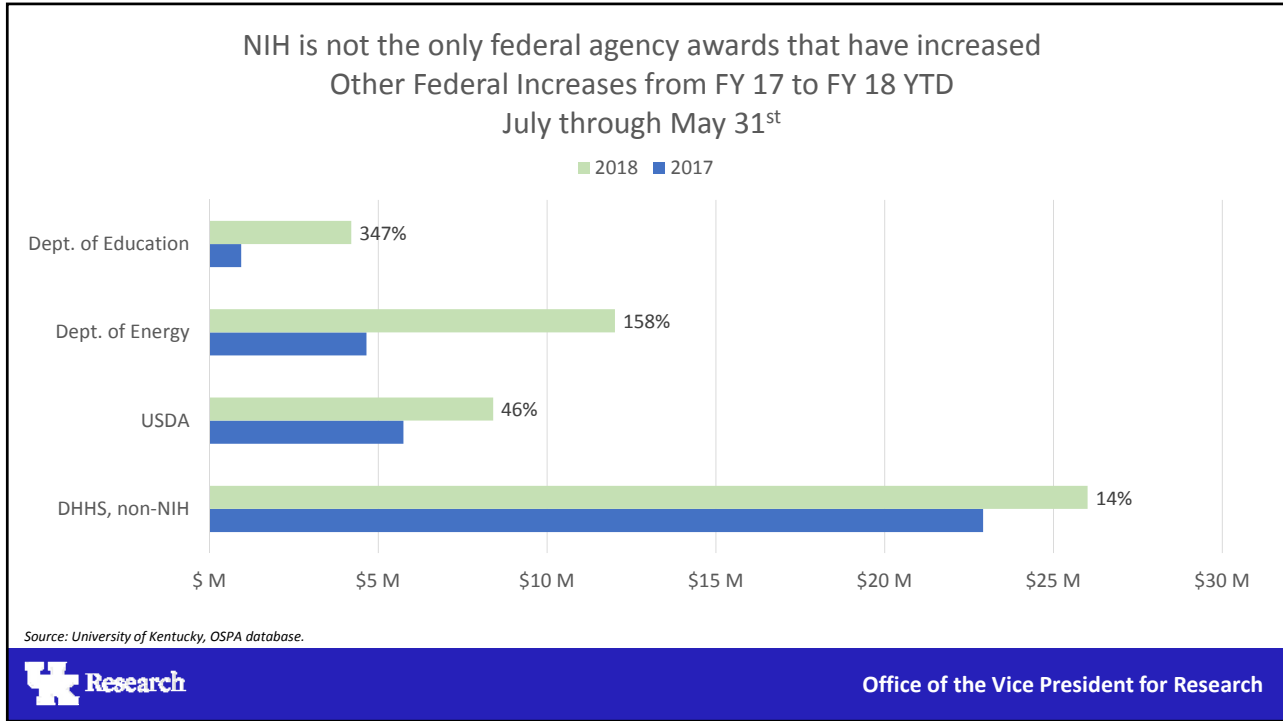


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## UKRF FY18/19 Budget

- We budgeted \$47 million for FY17/18.
- As you can see from the Treasurer's report, we expect to over-realize this amount.
- 2018/19 Proposed Budget: \$50 million.

## Page 1: Revenues (major changes)

- II.B. Private Gifts: Increase of \$150,000
- IV. Appropriated fund balance, unrestricted
  - A. Royalty Income Unexpended Balance: \$1.6 million
  - B. Faculty Research Program: \$6 million (fund balance difference)
  - C. Miscellaneous: \$1.3 million
  - D. Contingency Reserve: Increase of \$300K (10% of UKRF \$50 million budget).
  - E. Research Building II: \$1.2 million less than previous year

## Page 2: Transfers to General Fund (major changes)

- 1.A.2. Service Assessment: +\$110,200
- 1.B. Research Admin/Personnel Support: +\$201,800
- 1.D.2,3. LTJ/Women's Postdoctoral Fellowships: +\$60,000
- 1.E. Debt service:
  - Biopharm 5<sup>th</sup> floor, +\$15,660
  - RB2 Internal Loan Debt Service, +\$1,035,040
- Examples/updates on use of these funds



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## Postdoctoral Fellowship Program (1D, +\$60K)

- To enhance diversity within the research domain, we offer Lyman T Johnson Postdoctoral Fellowships to support fellows in graduate and professional areas. These are peer-reviewed, with high selection criteria.
- University Research Postdoctoral Fellowships are offered to support female fellows pursuing advanced research training in under-represented areas (life sciences, engineering, physical sciences). These are also peer-reviewed, with high selection criteria.
- More funds are budgeted for this program due to an increase in the postdoctoral fellowship stipend, and to support additional worthy candidates.
- Meet the recipients...



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## Women's Postdoctoral Fellowship & Lyman T. Johnson Postdoctoral Fellowship

### Former Post-Docs Who Accepted Faculty Positions or Received Funding



**Honore Djieutedjeu, Ph.D.**, worked with UK Chemistry

*Complex layered heterostructures: Efficient and low-cost energy materials for the next generation of multifunctional devices*



**Rebecca Reed, Ph.D.**, worked with UK Psychology & Pathology

*Exploring how variable degrees of local place attachment correlate with linguistic behavior in Appalachia.*



**Carlos Mahaffey, Ph.D.**, worked with UK School/Counseling Psychology

*A Mixed Methods Study to Examine the Associations between Selected Sociocultural Factors, Health Utilization, and Medication Adherence among African American Men at risk for HIV/AIDS*



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## Women's Postdoctoral Fellowship & Lyman T. Johnson Postdoctoral Fellowship

### Current Post-Docs



**Silver Nyambo, Ph.D.**, works with UK Chemistry

*Spectroscopic Characterization of Metal-Mediated Alkane Activation*



**Margaret Sanders, Ph.D.**, works with UK Earth & Environmental Sciences

*The production from unconventional oil and gas systems is significantly influenced by organic compositional variability, specifically aliphatic maceral content, total organic carbon, and maturity.*

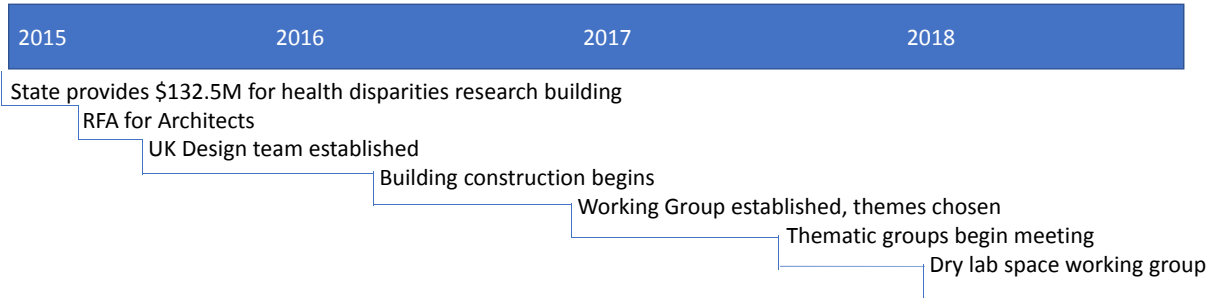
Four new post-doctoral fellows will begin in the fall of 2018 in the areas of  
Physics, Biology, Engineering, and Mathematics



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# Research Building 2 Update (1E, +\$1M)



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## RB2: Tackling Kentucky's Health Disparities



The Burden of Complex Health Conditions  
**Kentucky ranks**

- 1st in cancer deaths
- 2nd in heart attacks
- 2nd in drug deaths
- 5th in strokes
- 5th in diabetes
- 7th in cardiovascular deaths
- 7th in obesity



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## RB2 Update

- The State provided \$132.5M for the building (50% of a \$265M building)
- Building costs for Phase 1 = \$165M, leaving a gap of \$32.5M
- The purpose of the building is to reduce the burden of health gaps facing Kentuckians.



**First floor  
and common  
spaces**





### Neighborhood wet labs

- 6 benches within a “neighborhood”
- 2-3 neighborhoods/floor
- 96 Principal Investigators
- Over 500 personnel at full capacity



## RB2 Dry Lab Specifics



- 24 PI offices
- Shaded glass to separate from corridor
- Offices along windows
- Personnel in carrel areas outside of each office
- Behavioral suite on 2<sup>nd</sup> floor
- Computational suite on 2<sup>nd</sup> floor
- Shared use of eating/collaboration spaces with wet labs to promote synergy

## Where are we now?

- Phase 1 of RB2: August/September, 2018
- Floors 2 and 3 in wet and dry lab areas (plus vivarium)
- 2<sup>nd</sup> floor: diabetes
- 3<sup>rd</sup> floor: cancer
- Dry lab space under discussion
- Additional floors with state support
- Formulation of an RB2 Space Oversight Committee

## Back to the UKRF Budget Page 3: Expenditures (major changes)

- |  |                              |
|--|------------------------------|
| • II.A.10. VPR office operating budget | +\$162,700 (SciVal)          |
| • II.A.15. Controller office           | +\$32,300 (F&A rate)         |
| • II.B.1. Contingency                  | +\$300,000 (10%)             |
| • II.B.2. Private Gifts                | +\$33,900                    |
| • II.B.4. Royalty Income Sharing       | +\$1,626,800 (more activity) |
- Example of investment in Office of Technology and Commercialization and update on activity within this domain



# Office of Technology Commercialization

Return on Investment Report  
May 2018

## UK Research Investment in UK Technology Commercialization

- October 1, 2016 – Completed search and Director hire
- Since:
  - Restructured the office
  - Hired 4 FTEs (one was a replacement)
  - Hired 9 OTC Fellows (5 have graduated; helped 3 find jobs) and 3 interns
  - Partnership with Von Allmen Center for Entrepreneurship to share 50% of one staff member

Increasing: Y-o-Y Commercialization Metrics

## Growing the Opportunity Pipeline

Capturing More Innovation; Transferring More Technology

	FY 2015	FY 2016	FY 2017*	Office of Technology Commercialization	FY 2018** (On Pace)
INVENTIONS DISCLOSED	55	53	54	→	100+
PATENTS FILED	25	27	39	→	55+
LICENSES EXECUTED	4	7	13	→	26+
STARTUPS CREATED	6	3	8	→	12+

\*3/4 fiscal year with Director but not C&L team  
 \*\*First full FY with full Team



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Enforcing: Agreement Compliance

- 1. Audit:**
  - Audited 177 total "active" agreements (133 licenses, 19 IIAs, 16 amendments, 5 options, 4 other)
  - Results: 57 licenses were compliant (43%)
  - Payments owed: 9 agreements with past-due \$
- Outreach:**
  - Communicated or have attempted to communicate with all non-compliant agreements
- Results:**
  - ~95 active and compliant licenses
  - ~49 agreements: Terminated or in process of terminating
  - 4 parties have paid or have agreed to pay ~\$175,000 in past-due royalties/fees



April 2017 - Hired Ali Bocook, Senior Contracts Manager



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Leading: Executives-on-Roster (XOR) Platforms

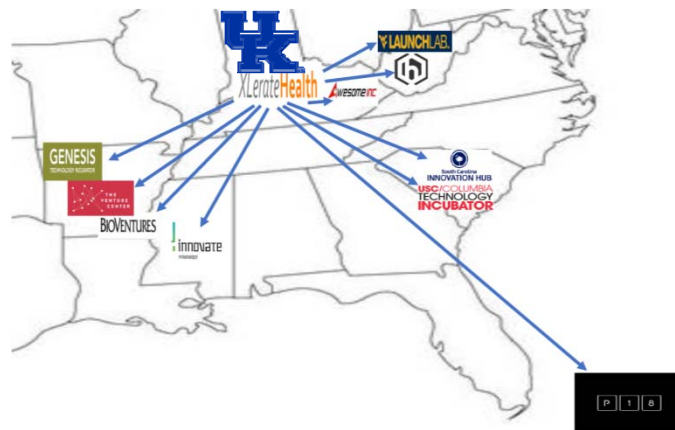
**FEATURES:**

- Central Online Platform
- Standardized Presentation of Startup Value Proposition
- Selective Access for Qualified Entrepreneurs
- Review Broad Pipeline of Startup Opportunities
- Indicate Interest in Working with Startup
- Proactively Engage an Entrepreneur
- Communications and "Matches" outside the Platform
- Matched Entrepreneurs can become Startup Executives

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Becoming: A Regional Commercialization Leader

UK is the lead academic institution on an NIH/NIGMS grant proposal - with 24 total research institutions - to create a biomedical tech accelerator hub for the Southeast IDEa region.  
 Network of Southeast Accelerators and Incubators





Expanding: Corporate Partnership Capabilities

# US WorldMeds™



Marketplace for Industry-Sponsored Collaborative Research Opportunities

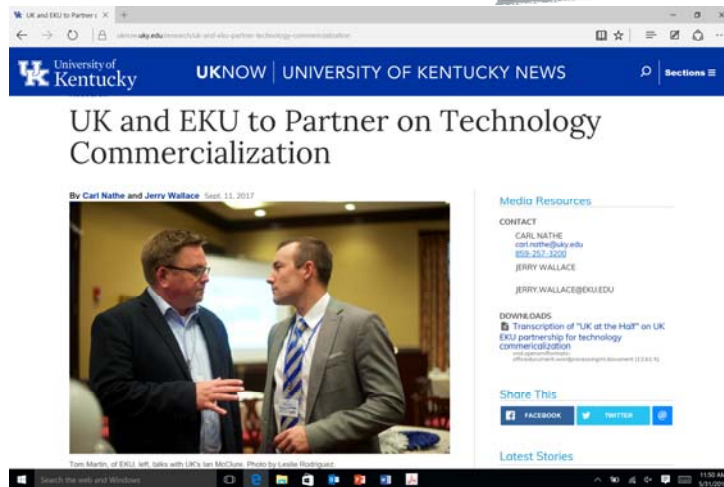


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Establishing: A KY Commercialization Ecosystem Through Partnership

 Office of Technology Commercialization  



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**Streamlining:** Industry Sponsored Research with "Expedited IP Track"

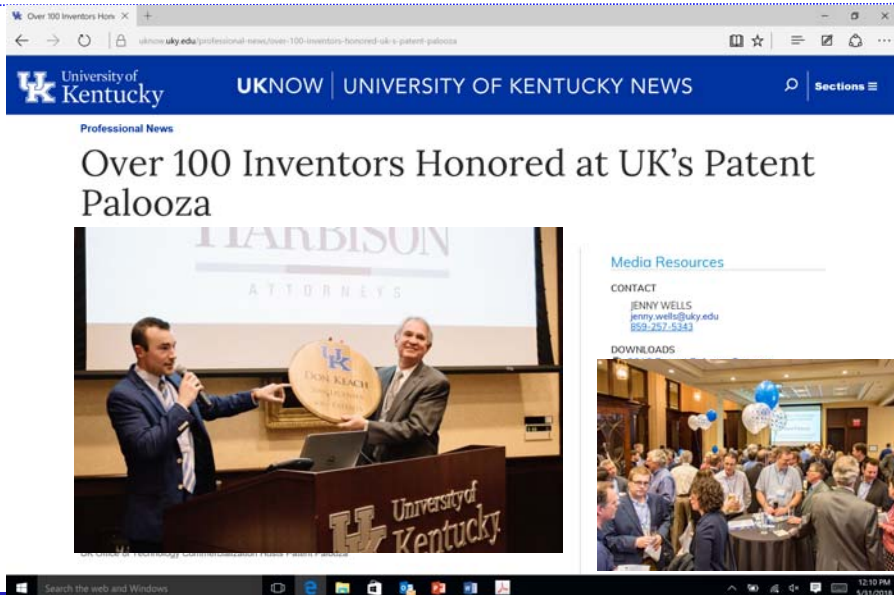
UK OTC and OSPA worked together to develop a set of standard IP options for industry sponsors to Streamline Sponsored Research Agreements (CoE as pilot)

	Non-Exclusive License with Option for More	Pre-Negotiated Exclusive License to Sponsor	Sponsor Pays for Patent Costs	Bonanza Clause	University Reserves Right to Use IP	Faculty Can Opt in Opt Out
<b>Lets Work It Out</b>	Research Rights to Commercial Rights		? (option)		✓	
<b>CNERF</b>	Commercial Rights in Field of Use (Option for Exclusive)		✓		✓	✓
<b>Exclusive</b>		Field of Use and Time limited (Option to extend)	✓	✓	✓	✓
<b>All-Inclusive</b>		All Fields and Perpetuity	✓	✓	✓	✓



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**Creating:** Community Through Recognition (Patent Palooza! Style)



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Raising: Awareness with UK Women Innovator's Network



**UKWIN CONFERENCE SAVE-THE-DATE!**

Tuesday, October 2, 2018

3:30 p.m. - 6:00 p.m.

Ballroom 212A, Student Center



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Launching: New Startups with UK co.create

## co.create

**Verb:** to bring different parties together in order to jointly produce a mutually valued outcome

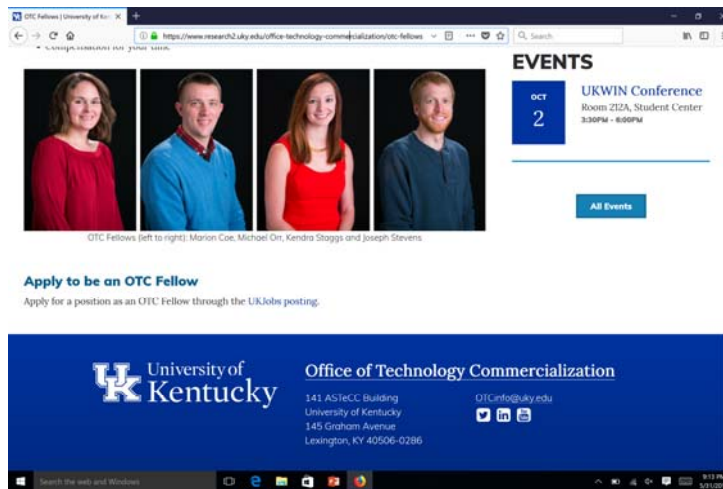
**Launching July 1, 2018**

- Hired New Ventures Manager (50% of VACE staff member)
- Program will offer a wide array of services to assist entrepreneurial faculty members in the company formation and development process
- Includes entrepreneur talent recruiting and team building
- First 7 UK-affiliated startups in XOR platform



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## Educating: UK Students through OTC Fellows and Academic Course



Since 2016

- 9 OTC Fellows
- 4 program graduates
- Have helped 3 secure jobs

LAW 942  
ENG 599

- 16 students
  - 7 law
  - 6 MBA
  - 3 ENG

PHS 711

## Back to the UKRF Budget Page 3: Expenditures (major changes)

- IIC.1a Residual start-up (\$306,300): Remaining commitments
- IIC.1b Faculty start-up (\$600,000): 20% of this year's budget
- IIC.2a. Enrichment (\$176,800): Increased based on increased funding
- IIC.2b. 2% to Academic Home (\$1,014,200): new program
- IIC.4a. Grant related support (-\$388,800): Some matching support moved to 7c.
- IIC.6a. University-wide Initiatives (-\$530,300): Reduced funding of leases
- New program: Recognizing the contribution of academic departments for support of research

## Enrichment: Return of an additional 2% to academic departments

- The enrichment program provides incentives on grants and contracts by returning up to 16% of earned F&A (2 years prior) to units where funds were generated.
- We will increase the return of F&A through this program by 2%, which will be returned to the academic department of the Principal Investigator.
- This new program recognizes the contributions of academic units to the research performed by their faculty.



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## Back to the UKRF Budget Page 3: Expenditures (major changes)

- II.C.7a. Strategic Investment Fund (-\$3,500,000): moved to support Research Initiatives (7b)
- II.C.7b. Strategic Investments Research Initiatives (\$3,500,000): new program
- II.C.7c. Markey Cancer Center Support (\$1,000,000): CCSG renewal commitment
- IIC.8. Fund balance (\$6 million): Residual funds in enrichment, faculty start-up
- II.C.9. RB2 funding (-\$1.2 million)
- Introduction to Strategic Investments Research Initiatives



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## Strategic Investments Research Initiatives: UK Strategic Plan and CR1

- CR1 (2014 BOT Retreat):
  - Recommendation: Recognizing the essential nature and value of all scholarly and creative activity undertaken at a comprehensive, land-grant institution, the University's mission and the current financial environment compel a focus on research where:
    - The needs of Kentuckians and the Commonwealth are most pressing; and
    - The University can continue to compete successfully for external research support.
- Strategic Plan Initiative 1: Invest in UK's existing strengths and areas of growth in selected focus areas that benefit and enrich the lives of the citizens of the Commonwealth and beyond.
  - Action step 1: Systematically identify UK's existing and emerging areas of strength in research and creative endeavors that are nationally and internationally competitive, and strategically allocate central resources to support them.



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## Advantages of Strategic Research Investment

- Improve competitiveness for individual and programmatic funding
- Enhance interdisciplinary research
- Enhance faculty recruitment and retention
- Improve communications within a domain
- Align/shape the research infrastructure (e.g., RB2, health disparities)
- Perform impactful research
- Enhance national recognition, branding



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## Strategic Investment Research Initiative: Criteria that Align with UK Research Strategic Plan and CR1

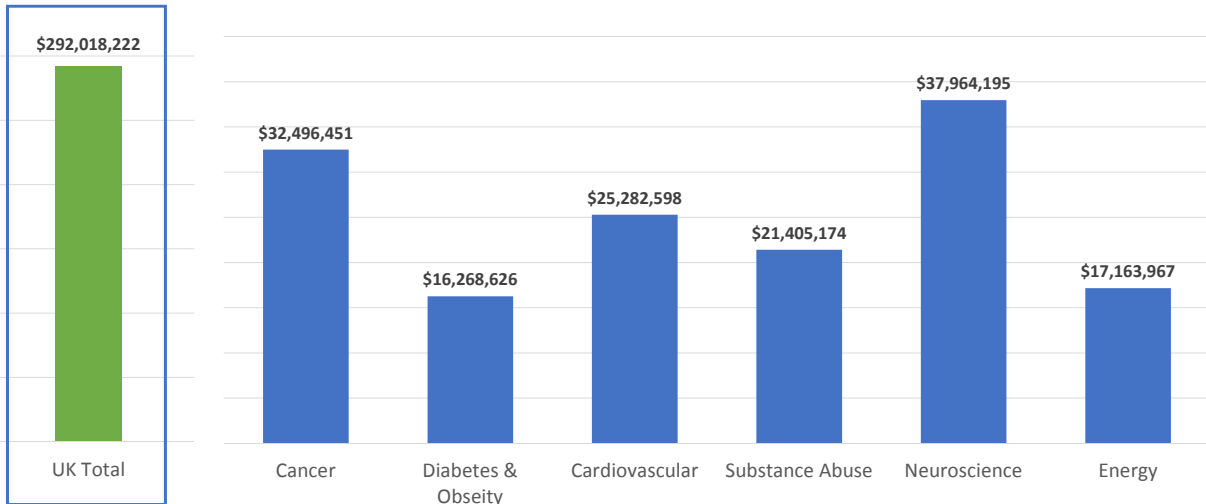
- Criteria:
  - Local relevance of the research area, global impact
  - Existing faculty strength and research leadership
  - Disciplinary research diversity
  - Potential interconnections of research with educational opportunities
  - Impact (economic, health, etc) of research on UK and the Commonwealth
  - Sustainability of research

## Criteria: Local relevance, health disparities (RB2)

Health Disparity	KY 2017 Ranking (50 is worst)
Drug Deaths	49
Obesity	44
Cancer deaths	50
Cardiovascular deaths	44
Diabetes	46
All health outcomes	46

America's Health Rankings, 2017

### Criteria: What are our strengths in extramural funding? (2017 OSPA Database Search)



The two graphs are not at the same scale.

Note: Expenditures for each thematic area are not mutually exclusive. Projects may be represented in one or more areas. Additionally, expenditures are based on keyword searches and may not include all related projects and may contain some projects that aren't specific to that area of research.



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### Criteria: What are our strengths in research scholarship? (SciVal search)

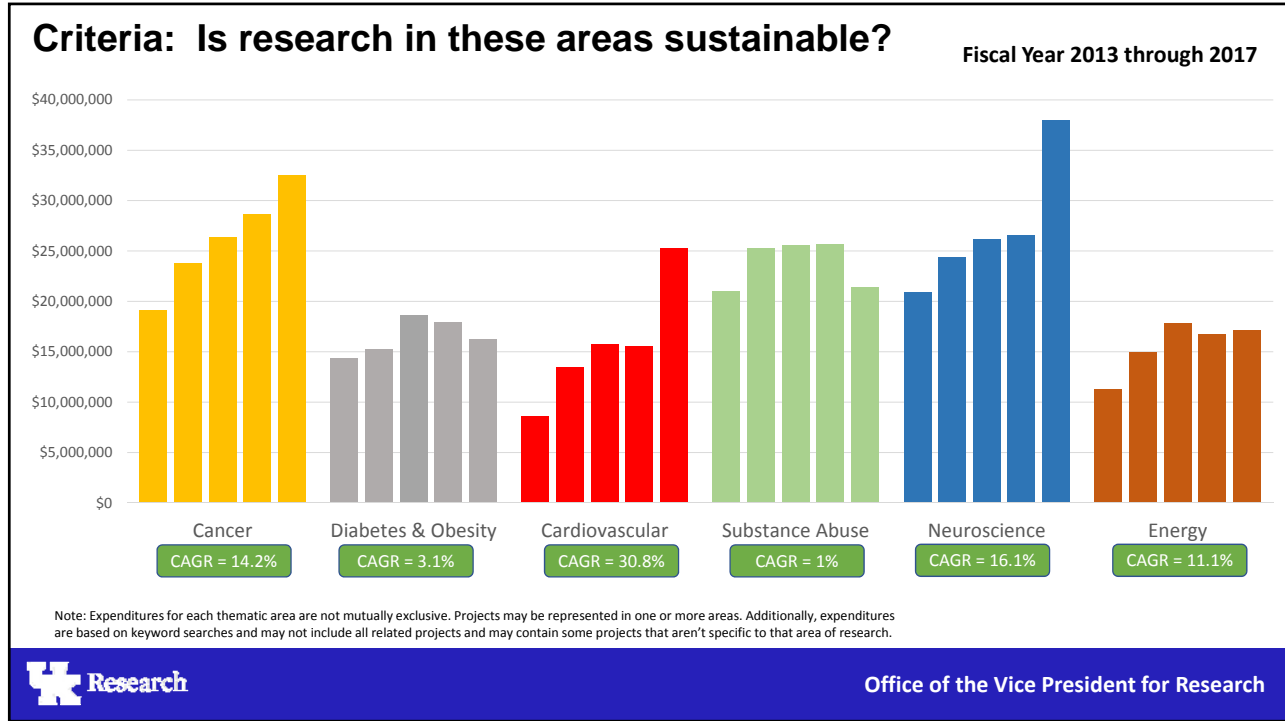
Strength	Scholarly Output	Citations	Citations/publication	Field-weighted citations	% Publications in top tier journals
Cancer	4,715	63,120	13.4	1.73	50
Cardiovascular	3,282	39,658	12.2	1.71	50
Diabetes/obesity	2,709	38,383	14.2	1.80	52
Energy	4,268	47,518	11.1	1.65	48
Neuroscience	6,592	75,839	11.5	1.66	48
Substance Abuse	1,974	19,481	9.9	1.40	42

Source: SciVal by Elsevier. 2012 through 2018 YTD



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Criteria: Does research in these areas pull in multiple disciplines?	Thematic Area	Approximate # of PIs	Colleges (Departments) Involved	Thematic Area	Approximate # of PIs	Colleges (Departments) Involved
	<b>Cancer</b> 47 patents	228	Agriculture, Food, and Environment (2) Arts and Sciences (3) Engineering (2) Health Sciences (1) Medicine (12) Nursing (1) Pharmacy (2) Public Health (5)	<b>Substance Abuse</b> 41 patents	110	Agriculture, Food, and Environment (2) Arts and Sciences (3) Engineering (2) Medicine (8) Nursing (1) Pharmacy (2) Public Health (4) Center on Drug & Alcohol Research KY Injury Prevention Research
<b>Diabetes &amp; Obesity</b> 14 patents	130	Agriculture, Food, and Environment (2) Arts and Sciences (1) Medicine (5) Nursing (1) Pharmacy (1) Barnstable Brown Diabetes Center	<b>Neuroscience</b> 20 patents	258	Arts and Sciences (2) Dentistry (2) Engineering (1) Health Sciences (2) Medicine (12) Nursing (1) Pharmacy (2) Public Health (3) Sanders-Brown Center on Aging Spinal Cord & Brain Injury Research	
<b>Cardiovascular</b> 13 patents	156	Agriculture, Food, and Environment (1) Arts and Sciences (2) Engineering (2) Health Sciences (2) Medicine (11) Nursing (1) Pharmacy (1) Public Health (6)	<b>Energy</b> 27 patents	137	Agriculture, Food, and Environment (7) Arts and Sciences (7) Design (1) Engineering (8) Public Health (2) Center for Applied Energy Research KY Geological Survey	



## What next? Strategic Investment Initiative: FY18/19

- Use FY18/19 strategic investment funds to work with these groups over the next year to establish
  - Goals and Objectives
  - Governance and structure
  - Leadership
  - Membership
  - Metrics
  - Best practice use of funds to augment/support research across the institution

# Back to UKRF Budget

## Page 3: Expenditures (major changes)

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- II.C.7c. Markey Cancer Center Support (\$1,000,000): CCSG renewal commitment
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- II.C.9. RB2 funding (-\$1.2 million)
- Example of Strategic Investment in Markey Cancer Center



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A Cancer Center Designated by the  
National Cancer Institute



### **B. Mark Evers, MD**

Director, Markey Cancer Center  
Professor & Vice Chair for Research, Dept. of Surgery  
McDowell Foundation Endowed Chair  
Physician-in-Chief, Oncology Service Line

Dr. Evers is an accomplished clinician, cancer researcher, educator and administrator. He was recruited to the University of Kentucky (UK) in 2009 as Director of the UK Markey Cancer Center (MCC), Physician-in-chief of the Oncology Service Line, and Vice-Chair in the Department of Surgery. Under his leadership, the MCC achieved NCI designation in 2013. Prior to his recruitment to UK, Dr. Evers was the Robertson-Poth Distinguished Chair in General Surgery and Director of the University of Texas Medical Branch (UTMB) Cancer Center. He is a GI and oncologic surgeon with primary clinical and research interests in GI cancers and endocrine tumors of the GI tract.

Dr. Evers has been continuously funded from the NIH for the last 25 years and has published more than 300 peer-reviewed publications, book chapters and reviews.



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**UK Research Foundation:  
Markey Cancer Center Update**

**B. Mark Evers, MD**

June 8, 2018

## ***“Transformational . . .”***

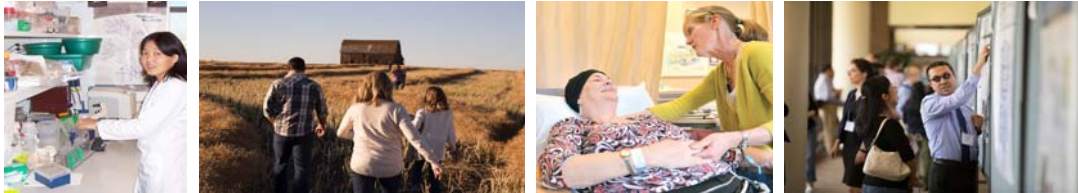


- **MCC’s Structure and Mission**
- **Scientific and Research Accomplishments Focused on our Catchment Area**
- **Collaborations at Every Level – and Beyond UK**

*Conquering Cancer in the Commonwealth*

## Our Mission

- To reduce cancer mortality in our state through a comprehensive program of cancer research, treatment, education, and community engagement with a particular focus on the underserved population of Appalachian Kentucky.

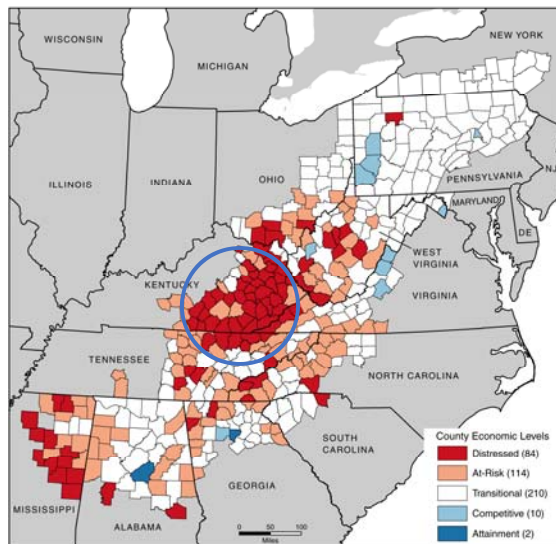


*Conquering Cancer in the Commonwealth*



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## Appalachian Kentucky



Appalachian county economic status (2016-17)

- ↑ Cancer
- ↑ Smoking
- ↑ Obesity
- ↑ Chronic Infection (HPV & HCV)
- ↑ Poverty

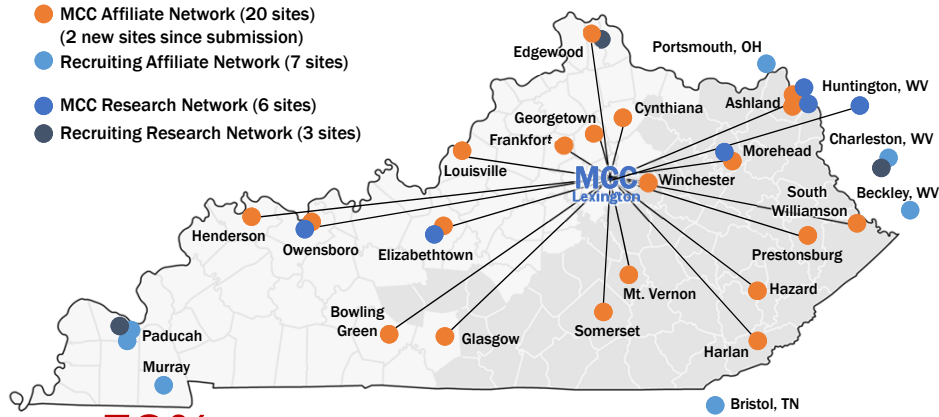


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# MCC Network: Expanding Access Throughout Kentucky and Beyond



Mullett

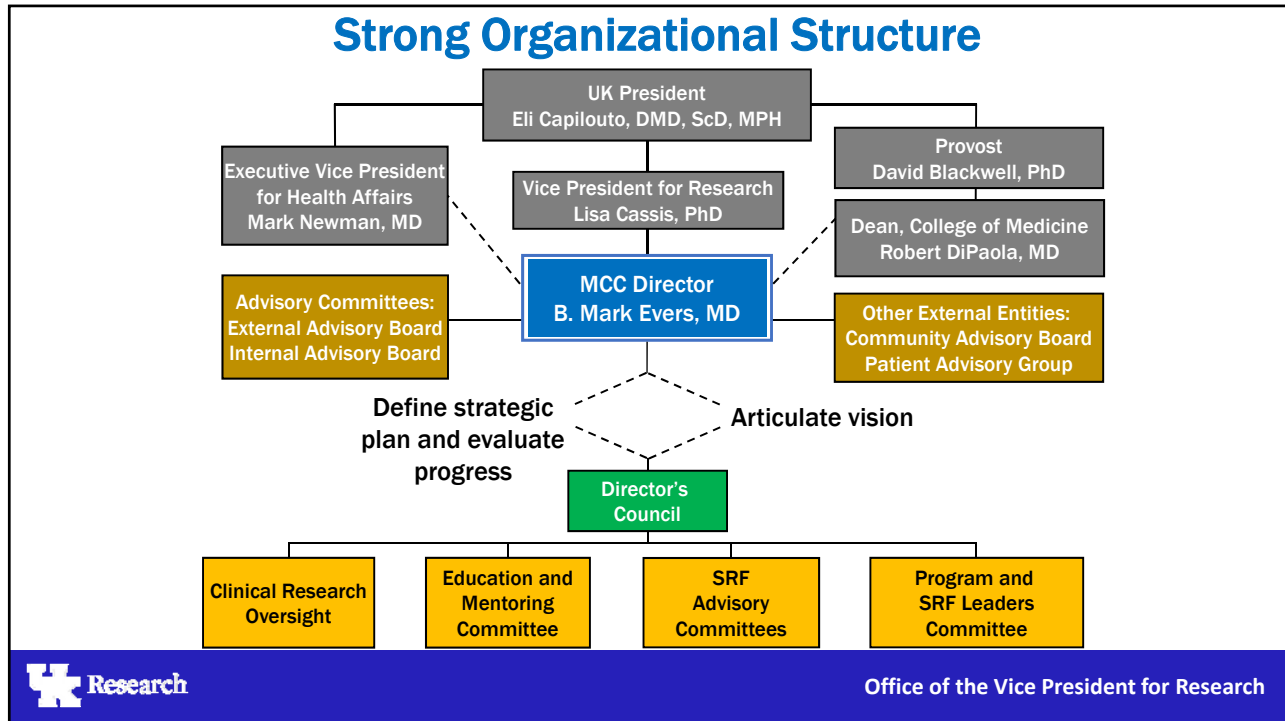


**59%** of all new cancer cases in Kentucky are directly or indirectly cared for by MCC

## Markey At-A-Glance



- 120 members (73 research members)
- \$41.9M total cancer research funding (48% increase)
- 10,084 interventional accruals (44% Appalachian)
- >1,400 students, trainees and junior faculty mentored since 2013
- >5,700 health care professionals trained since 2013



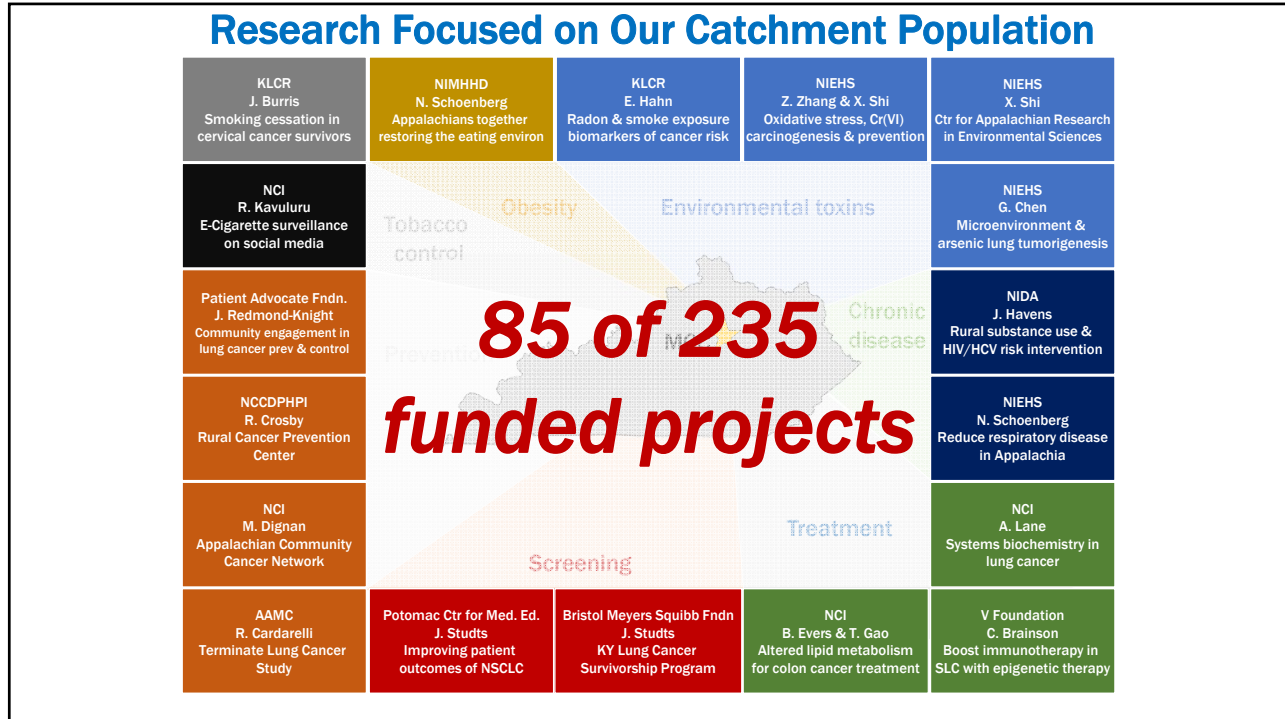
## ***“Transformational . . .”***




- MCC’s Structure and Mission
- **Scientific and Research Accomplishments Focused on our Catchment Area**
- Collaborations at Every Level – and Beyond UK

*Conquering Cancer in the Commonwealth*


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## Establishing MCC as a National Leader in Cancer Metabolism/Systems Biochemistry




Andrew Lane, PhD



Hunter Moseley, PhD








Rick Higashi, PhD



Teresa Fan, PhD

- **P01 CA163223**: “Systems Biochemistry in Lung Cancer: Toward a Mechanistic Understanding of NSCLC”
- **U24 DK097215**: “Resource Center for Stable Isotope-Resolved Metabolomics”
- **23** new grants and contracts, **4** new R01s, **1** P30 (NIEHS), and **1** P20 (COBRE)
- **40** collaborative papers



## Mining for Novel Cancer Drugs

Appalachian Soil → New Cancer Agents



Thorson

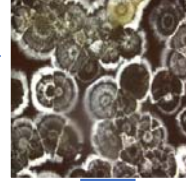


She

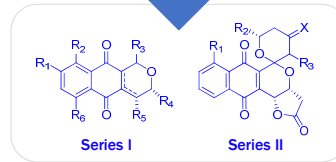
Novel Appalachian collection sites



Unique Natural Product Repository



>900 distinct microbial strains /  
350 pure products



### Impact

- Using the natural resources of our catchment area to develop novel anti-cancer drugs

Angew Chem Int Ed Engl (2015, 2017); Nat Commun (2017); Provisional patent  
Funding sources: R01 CA 091901; R21 CA139359; R01 CA203257 (multi-PI)

## Par-4: Tumor Suppressor

Bench → Clinic



Rangnekar (CS)



Wang (DT)



Watt (DT)



Normal Cells

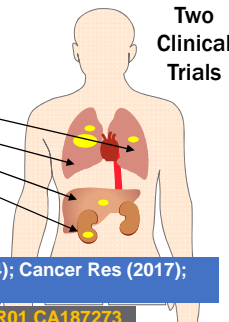
↓ Hydroxychloroquine

↑ Par-4 secretion

↑ Tumor Cell Apoptosis

### Impact

- Par-4, a potent tumor suppressor, discovered at MCC
- First clinical trial demonstrating anti-tumor effects of Par-4 secreted from normal cells



Cancer Cell (2013); Cell Rep (2014; 2017); Nat Chem Biol (2014); Cancer Res (2017);  
two provisional patents

Funding sources: CCSG pilot; R01 CA60872; R21 CA165469; R01 CA187273

## CCSG Pilot Funds: Return on Investment (2013–2017)

37 applications reviewed ➔ 19 awards (\$50,000 each)

Outcome: 16 external grants, >\$11M total costs

**ROI: \$12 for every \$1 invested**  
(half from CCSG; half from VPR)



Cardarelli

AAMC Funding  
R01 (submitted)



Xu

NCI R21  
NCI R01



Liang

NHLBI R01  
NHLBI R21



Wang

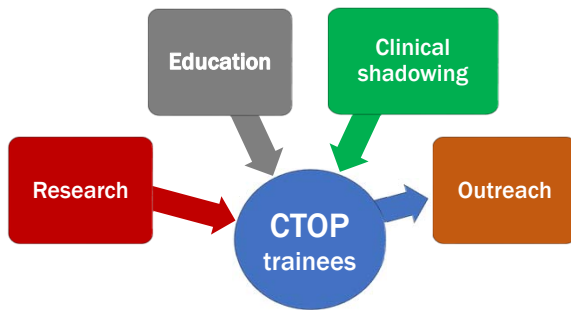
Clinical Trial  
(completed)



Office of the Vice President for Research

## Career Training in Oncology Program (CTOP)

- 2-year program providing cancer training and mentoring to underserved undergraduates from Appalachian Kentucky



Trevor Farmer  
1 publication  
(in revision)



Kristen O'Leary  
Scholarship  
AACR poster

**IMPACT:** 6 of 16 current students are applying to medical school or graduate school this summer; 3 papers in preparation; 1 paper published; 2 scholarship recipients

## Turning CTOP into ACTION

Appalachian Career Training In Oncology  
Potential funding through NCI YES R25; Impact score = 18

- **ACTION program will expand on CTOP through:**
  - Continue undergraduate component (8 per cohort)
  - Summer camp for 15 high school students each summer
    - Focus on outreach in their own communities, research, clinical experiences, education and workshops
  - Expanded mentorship and career development
    - Each student paired with 1 basic/behavioral science mentor and 1 clinical mentor
    - MCC providing additional career guidance and mentorship
    - Coaching through UK's career center
  - Increase in outreach and dissemination
    - 3 community events each year to increase cancer and disparity awareness and understand the benefits of research
    - Focus on how students from rural areas can be best prepared for college and professional scientific environments
      - Dissemination to Kentucky schools and nationally to other rural areas



Research

Office of the Vice President for Research

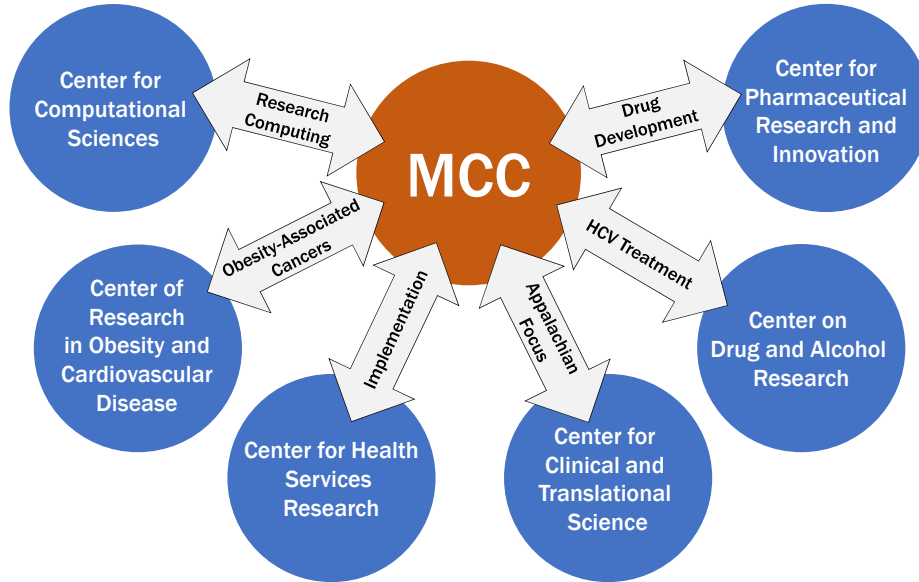
## ***“Transformational . . .”***



- MCC's Structure and Mission
- Scientific and Research Accomplishments Focused on our Catchment Area
- Collaborations at Every Level – and Beyond UK

*Conquering Cancer in the Commonwealth*

## Taking Full Advantage of Our Institutional Capabilities and Strengths



## MCC National and International Collaborations

**58%** of MCC publications represent collaborations with investigators around the world.



## New Basic Research Space (RB2) (Opening in August 2018)



\*MCC will obtain 2 floors

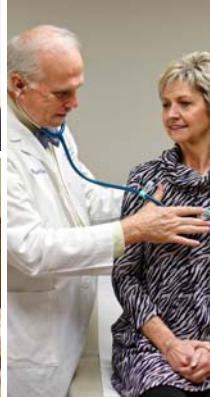
*Impactful*

*Innovative*

*Collaborative*

*Dynamic*

*Transformative*



A Cancer Center Designated by the  
National Cancer Institute

*Markey makes a difference.*



 **HealthCare**  
**MARKEY CANCER CENTER**

**NCI** Cancer Center

A Cancer Center Designated by the  
National Cancer Institute

# Questions?