2017-2018 Research Report to UKRF Board of Directors

Lisa A Cassis, PhD  
Professor, Department of Pharmacology and Nutritional Sciences  
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)
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 Doerning, Jennifer Miles, Katherine Adams, Baron Wolf, Alex Dixon, Mary Lowell, Stacy Gaylor

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.
Metric: Research & Development Expenditures
Strategic Plan Goal = 1.9% increase/year

Source: University of Kentucky, OSPA database.

A Closer Look at R&D Expenditures:
We continue to be a federally funded research enterprise

Source: University of Kentucky, OSPA database.
NIH is the largest source of F&A to the UKRF Budget (FY 2017)

Source: University of Kentucky, OSPA database.

Our Progress thus far in 2017/18: Grant & Contract Award Data
July – May 31st of Each Year

Source: University of Kentucky, OSPA database.

Office of the Vice President for Research
Source of Federal Awards
FY 2018 as of May 31st

NIH 59%
DHHS, Non-NIH 15%
DOE 7%
NASA 1%
DOD 1%
USDA 5%
NSF 7%
Other 5%

Source: University of Kentucky, OSPA database.

Largest NIH Increases from FY 17 to FY 18 YTD
July through May 31st

Source: University of Kentucky, OSPA database.
NIH is not the only federal agency awards that have increased
Other Federal Increases from FY 17 to FY 18 YTD
July through May 31st

- Dept. of Education: 347%
- Dept. of Energy: 158%
- USDA: 46%
- DHHS, non-NIH: 14%

Source: University of Kentucky, OSPA database.

Scholarly Output & Performance: UK SciVal Data
2013-2018 YTD

Overall research performance
- Scholarly Output: 19,355
- Citation Count: 138,775
- Field-Weighted Citation Impact: 1.40
- Citations per Publication: 7.2

Collaboration
- International collaboration: 30.5%
- Only national collaboration: 34.3%
- Only institutional collaboration: 26.6%
- Single authorship (no collaboration): 9.7%
- Field-Weighted Citation Impact: 1.97

Performance indicators
- Publications in top 10% most cited worldwide:
  - University of Kentucky: 17.3%
  - United States: 16.8%
- Publications in top 10% journals by CiteScore Percentile:
  - University of Kentucky: 37.2%
  - United States: 37.6%
- Publications co-authored with institutions in other countries:
  - University of Kentucky: 30.5%
  - United States: 32.5%
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 5th floor, +$15,660
  - RB2 Internal Loan Debt Service, +$1,035,040

- Examples/updates on use of these funds

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…
Women’s Postdoctoral Fellowship &
Lyman T. Johnson Postdoctoral Fellowship

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

- **Honore Djiutedjeu, 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*

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

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>State provides $132.5M for health disparities research building</td>
<td>RFA for Architects</td>
<td>UK Design team established</td>
<td>Building construction begins</td>
<td>Working Group established, themes chosen</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Thematic groups begin meeting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dry lab space working group</td>
</tr>
</tbody>
</table>

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
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.
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 2nd floor
- Computational suite on 2nd 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)
- 2nd floor: diabetes
- 3rd 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
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

<table>
<thead>
<tr>
<th></th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017*</th>
<th>FY 2018** (On Pace)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventions Disclosed</td>
<td>55</td>
<td>53</td>
<td>54</td>
<td>100+</td>
</tr>
<tr>
<td>Patents Filed</td>
<td>25</td>
<td>27</td>
<td>39</td>
<td>55+</td>
</tr>
<tr>
<td>Licenses Executed</td>
<td>4</td>
<td>7</td>
<td>13</td>
<td>26+</td>
</tr>
<tr>
<td>Startups Created</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>12+</td>
</tr>
</tbody>
</table>

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

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
**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

**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

Marketplace for Industry-Sponsored Collaborative Research Opportunities

Establishing: A KY Commercialization Ecosystem Through Partnership

UK and EKU to Partner on Technology Commercialization
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)

<table>
<thead>
<tr>
<th>Non-Exclusive License with Option for More</th>
<th>Pre-Negotiated Exclusive License to Sponsor</th>
<th>Sponsor Pays for Patent Costs</th>
<th>Bonanza Clause</th>
<th>University Reserves Right to Use IP</th>
<th>Faculty Can Opt in Opt Out</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lets Work It Out</strong></td>
<td>Research Rights to Commercial Rights</td>
<td>7 (option)</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td><strong>CNERF</strong></td>
<td>Commercial Rights in Field of Use (Option for Exclusive)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Exclusive</strong></td>
<td>Field of Use and Time limited (Option to extend)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>All-Inclusive</strong></td>
<td>All Fields and Perpetuity</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Creating: Community Through Recognition (Patent Palooza! Style)

Over 100 Inventors Honored at UK’s Patent Palooza
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

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
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
- II.C.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.

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

- II.C.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
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.

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
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)

<table>
<thead>
<tr>
<th>Health Disparity</th>
<th>KY 2017 Ranking (50 is worst)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Deaths</td>
<td>49</td>
</tr>
<tr>
<td>Obesity</td>
<td>44</td>
</tr>
<tr>
<td>Cancer deaths</td>
<td>50</td>
</tr>
<tr>
<td>Cardiovascular deaths</td>
<td>44</td>
</tr>
<tr>
<td>Diabetes</td>
<td>46</td>
</tr>
<tr>
<td>All health outcomes</td>
<td>46</td>
</tr>
</tbody>
</table>

America’s Health Rankings, 2017
Criteria: What are our strengths in extramural funding? (2017 OSPA Database Search)

Bargraph showing funding distribution by thematic area:
- UK Total: $292,018,222
- Cancer: $32,496,451
- Diabetes & Obesity: $25,282,598
- Cardiovascular: $21,405,174
- Substance Abuse: $37,964,195
- Neuroscience: $17,163,967
- Energy: $17,163,967

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.

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

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

Source: SciVal by Elsevier. 2012 through 2018 YTD
Criteria: Is research in these areas sustainable?

Fiscal Year 2013 through 2017

Criteria: Does research in these areas pull in multiple disciplines?

<table>
<thead>
<tr>
<th>Thematic Area</th>
<th>Approximate # of PIs</th>
<th>Colleges (Departments) Involved</th>
<th>Thematic Area</th>
<th>Approximate # of PIs</th>
<th>Colleges (Departments) Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>47 patents</td>
<td>Agriculture, Food, and Environment (2) Arts and Sciences (3) Engineering (2) Health Sciences (1) Medicine (12) Nursing (1) Pharmacy (2) Public Health (5)</td>
<td>Substance Abuse</td>
<td>41 patents</td>
<td>Agriculture, Food, and Environment (2) Arts and Sciences (3) Engineering (2) Medicine (8) Nursing (1) Pharmacy (2) Public Health (4) Center on Drug &amp; Alcohol Research KY Injury Prevention Research</td>
</tr>
<tr>
<td>Diabetes &amp; Obesity</td>
<td>14 patents</td>
<td>Agriculture, Food, and Environment (2) Arts and Sciences (1) Medicine (5) Nursing (1) Pharmacy (1) Barnstable Brown Diabetes Center</td>
<td>Neuroscience</td>
<td>20 patents</td>
<td>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 &amp; Brain Injury Research</td>
</tr>
</tbody>
</table>

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.
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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- Example of Strategic Investment in Markey Cancer Center

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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.
"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

Appalachian Kentucky

- Cancer
- Smoking
- Obesity
- Chronic Infection (HPV & HCV)
- Poverty
MCC Network: Expanding Access Throughout Kentucky and Beyond

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

- **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

**Impact**

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

Funding sources: R01 CA 091901; R21 CA139359; R01 CA203257 (multi-PI)

Angew Chem Int Ed Engl (2015, 2017); Nat Commun (2017); Provisional patent

Par-4: Tumor Suppressor

Bench ➞ Clinic

**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

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)

AAMC Funding
R01 (submitted)
NCI R21
NCI R01
NHLBI R01
NHLBI R21
Clinical Trial (completed)

Career Training in Oncology Program (CTOP)

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

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

“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

Center for Computational Sciences
Center of Research in Obesity and Cardiovascular Disease
Center for Health Services Research
Center for Pharmaceutical Research and Innovation
Center on Drug and Alcohol Research
Center for Clinical and Translational Science

MCC National and International Collaborations

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

Collaborations with investigators at 41 other NCI Cancer Centers.
New Basic Research Space (RB2)
(Opening in August 2018)

*MCC will obtain 2 floors

Impactful
Innovative
Collaborative
Dynamic
Transformative

Markey makes a difference.
Questions?