UK Research

GROWTH
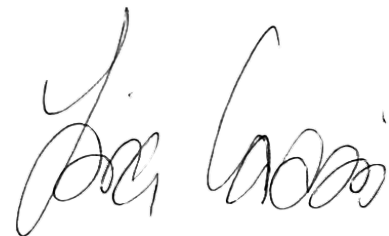## *Made Possible.*

A WELCOME FROM THE VICE PRESIDENT FOR RESEARCH

There is much to celebrate when reflecting upon our accomplishments of the last strategic plan cycle (2015-2020), especially when factoring in the challenges of the COVID-19 pandemic. Our award-winning faculty and staff remained steadfast in pursuit of innovation and in their dedication to train the next generation of scientists and scholars. Whether reaching for the stars with NASA Kentucky, connecting with communities in our backyard devastated by the opioid crisis, unlocking the secrets of our past through heritage archaeology, or delivering solutions in the fight against COVID-19, we did not back down from asking tough questions and rising to the challenge of delivering answers. The challenge before every one of us is to enhance these strengths, establish new ones and discover ways to expand and serve our institution, aligning research with University of Kentucky's (UK) greater roadmap and vision. As a research intensive (R1) university, our relentless pursuit of excellence and innovation is embedded within each goal and metric. We have promises to keep, and our commitment to advancing Kentucky is evident. This roadmap, its aspirations, and its actions embody the spirit of multidisciplinary research collaboration and align with UK-PURPOSE, the institutional strategic plan. The goals, tactics to meet stated goals, and inclusion of metrics within the Research Strategic Plan will hold us accountable to making good on our promise. No matter the scale or scope of our job responsibilities, we all play critical roles in achieving this new future. Thank you for choosing to discover, innovate and pursue knowledge and creativity with us at UK.

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EXECUTIVE SUMMARY

The UK Strategic Plan for Research covering the period of 2015 – 2020 included a strategic objective to expand scholarship, creative endeavors and research across the full range of disciplines to focus on the most important challenges facing the Commonwealth of Kentucky, our nation and our world. The plan detailed four major initiatives which served us well as we aligned research culture around this strategic objective.

As a high-level metric of research activity at UK during this period, we experienced an 8.5% compound annual growth rate (CAGR) for grant and contract awards received by UK faculty, staff and students, and a 5.7% CAGR in research and development expenditures (2015-2020). To put this into perspective, our target CAGR for research expenditures within the 2015-2020 Research Strategic Plan was 1.9%. This impressive growth in extramural support of our research mission was achieved through the four major initiatives of the 2015-2020 Research Strategic Plan. In addition to growth in grants and contracts, our faculty, staff and students transformed our research culture to one that prioritizes work that improves the lives of those in Kentucky and around the world.

We have faced challenges impacting every aspect of our university mission since the onset of the COVID-19 pandemic in March 2020. Research was no exception to upset caused by the pandemic; we were forced to reduce our capacity to very low levels of essential research only followed by a gradual resumption, all the while focusing first on safety. This unexpected situation demanded a new look at how we support and perform research, offering both ongoing challenges as well as new modalities of achieving our goals.

As we accelerate out of the pandemic, we will build upon the overall objective and four initiatives of the 2015-2020 Research Strategic Plan. Through a process of careful introspection, we have revised goals and action items for each initiative to not only move us towards a re-envisioned future but also expand our research mission to improve the lives of our citizens. The following Strategic Initiatives and associated action items will facilitate continued growth, innovation and impact of the research and scholarly pursuits across the range of disciplines that comprise the fabric of our research mission. Finally, the following revised goals and action items are put into the context of UK PURPOSE, the institutional strategic plan.

A LOOK AT OUR GROWTH

Over the last eight years, researchers at UK have been making a large impact on our campus community, state and beyond. Our awarded grants and contracts have increased by more than 80% between fiscal year 2014 and 2021. This increase represents an annual compound growth rate of 8.5% each year. This increase has been fueled by innovative idea generation, strategic investment and support, and from a talented research ecosystem that includes faculty, staff and our students. This new strategic plan is an effort to keep this momentum going and to support our research infrastructure and opportunities well into the future.
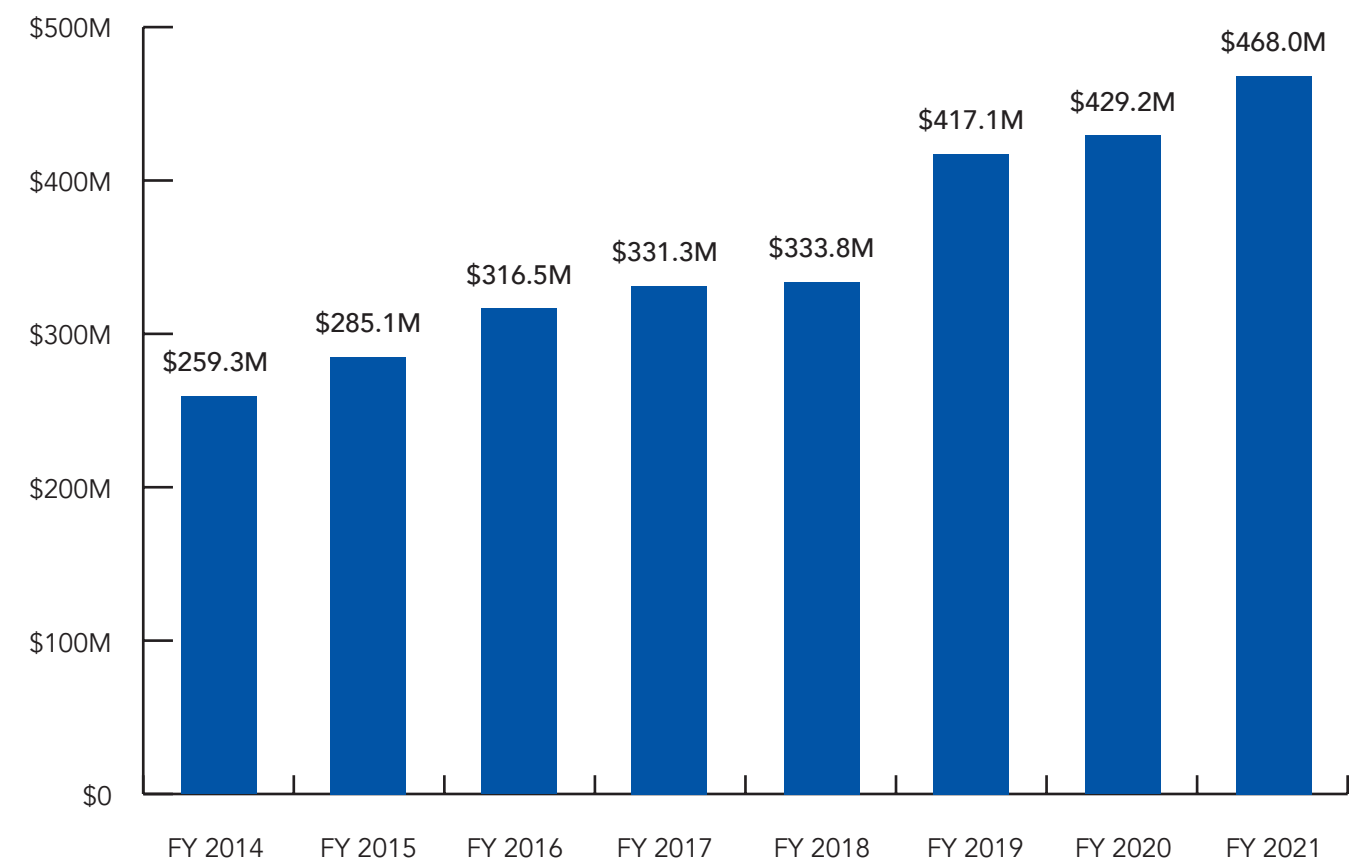

Figure 1. Awarded funding of sponsored grants and contracts (academic fiscal years 2014-2021).

INSTITUTIONAL ALIGNMENT

University of Kentucky Strategic Plan (UK PURPOSE)

Putting Students First

They are why we are here. Whether it is maintaining a modern curriculum that prepares our students for success, providing appropriate support for graduate students or ensuring that doctoral students start and complete their programs successfully, we must put students first.

Taking Care of Our People

We will only accomplish our mission of advancing Kentucky when our people are compensated - in terms of pay and benefits - and supported in ways that lead the state, too.

Inspiring Ingenuity

How do we embed innovation and discovery into every aspect of our institution? The breadth and depth of programming and offerings on one campus makes us distinctive in higher education. How do we incentivize the spark of ingenuity throughout our campus?

Ensuring Greater Trust, Transparency and Accountability

We are Kentucky's institution. And that mantle holds with it heightened responsibilities around accountability and transparency. But we need to do more to instill a sense of trust in each other on issues ranging from shared governance to open accountability for how we perform and what we measure.

Bringing Together Many People; One Community

UK is among the most diverse communities in the Commonwealth. Our students will enter a world riven by divisions, but more interdependent than ever before. How do we model unity amidst diversity for our state?

University of Kentucky Research Strategic Plan

Strategic Initiative 1: Improve the quality of the research infrastructure across campus.

Goal 1.1: Reassess and/or expand VPR support systems, administrative staff offices, and research workspaces to improve operational efficiency and address a changing research landscape.

Goal 1.2: Assess equipment needs within individual labs and core facilities to enhance and enable campus-wide research.

Goal 1.3: Facilitate Big Data analytic hub/ convergent research.

Goal 1.4: Support research career development and the development of new research efforts.

Strategic Initiative 2: Foster an inclusive culture of research success to retain and develop outstanding faculty, staff and students.

Goal 2.1: Continue programming that promotes an inclusive culture of research success across our range of disciplines.

Goal 2.2: Continue and expand programming that has contributed to research success.

Goal 2.3: Develop new programming that fosters a cross-campus culture of inclusive research excellence, facilitates research career development, and augments the importance of our research mission.

Strategic Initiative 3: Invest strategically in UK's existing strengths and areas of growth in selected focus areas that benefit and enrich the lives of those in the Commonwealth.

Goal 3.1: Continue to develop, support and communicate research within the seven Research Priority Areas (RPAs) to facilitate collaboration, partnership and new research directions.
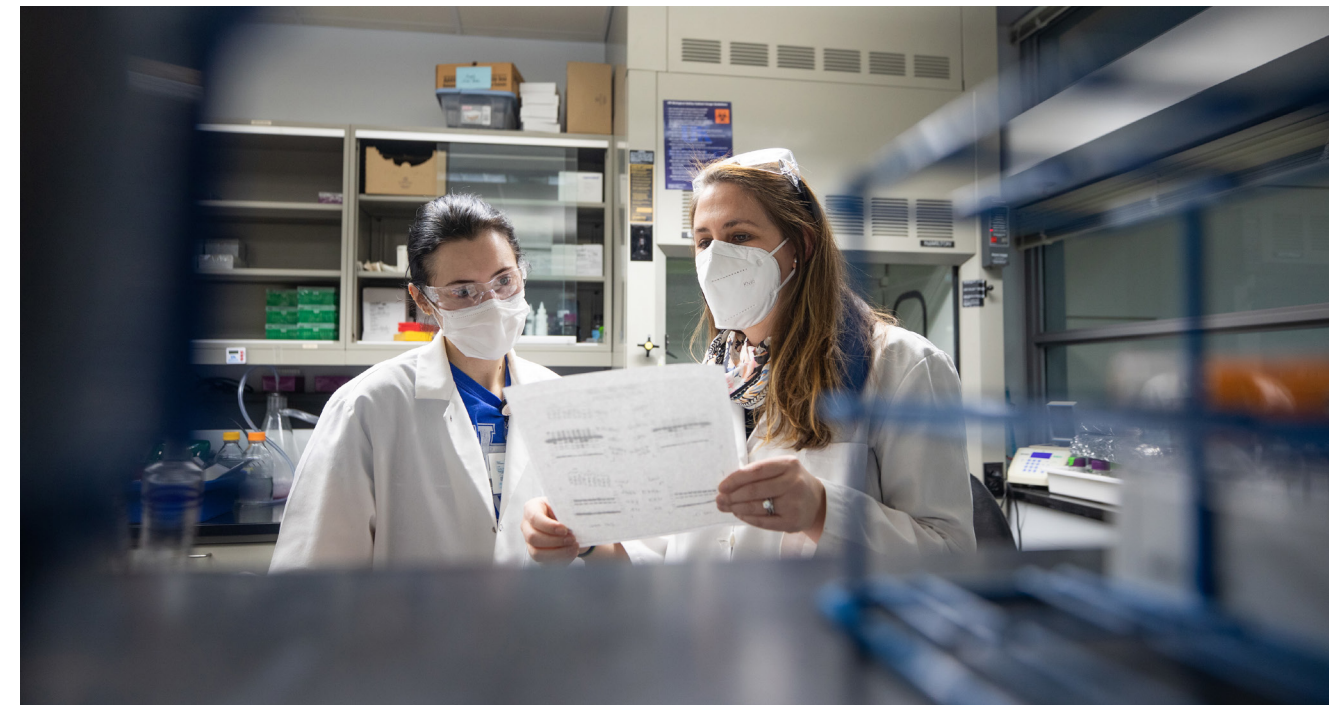
Strategic Initiative 4: Strengthen engagement with communities and translate outcomes of research for the benefit of the citizens of the Commonwealth of Kentucky.

Goal 4.1: Sustain community-engaged research.

Goal 4.2: Provide statewide leadership and develop a culture of economic and social impact through innovation in research.

Medical school students in Dr. Christine Brainson's lab on January 27, 2022.

STRATEGIC INITIATIVE 1

Improve the quality of the research infrastructure across campus.

Over the last 5 years, we have made many changes within our research infrastructure to support the vast array of research across our institution:

- Revised structure of several research administrative support units to better support researchers across the institution.

- Improved equipment and capabilities within our research service core facilities.

- Revitalized equipment within individual investigator research programs.

- Increased availability and efficiency of use of research space, including development of the research space structure, allocation of space, and metrics around space usage in the Healthy Kentucky Research Building.

- Developed new data portals to augment collaboration, find funding opportunities and partners, and illustrate researcher profiles internally and externally.

- Created a lecture series to understand the research infrastructure and all that it can provide, and communicate our research success.

- Developed new programs to support research by scholars in areas where extramural funding is not traditionally available.

- Developed new programs that support the training of under-represented researchers and areas of investigation.

- Expanded multidisciplinary seed support programs that inspire collaboration and innovation.

These improvements to research infrastructure have moved us forward effectively, but

there is still much work to be done in the ever-changing research environment. In this new strategic plan, we will focus our efforts on:

- Facilitating research in emerging areas like Big Data, impacting investigators across the university.

- Implementing the creation of a Research Leadership Academy to foster development of research careers, programmatic and collaborative funding opportunities and creation of new structures for emerging areas of research.

- Continuing to adapt research support offices to address emerging areas of need, assure regulatory compliance and recognize the accomplishments of our faculty, staff and students.

Goal 1.1 Reassess and/or expand VPR support systems, administrative staff offices, and research workspaces to improve operational efficiency and address a changing research landscape.

Goal 1.2 Assess equipment needs within individual labs and core facilities to enhance and enable campus-wide research.

Goal 1.3 Facilitate Big Data analytic hub/convergent research.

Goal 1.4 Support research career development and the development of new research efforts.

Goal 1.1: Reassess and/or expand VPR support systems, administrative staff offices, and research workspaces to improve operational efficiency and address a changing research landscape.

- Grow research staff administration in a manner consistent with growth in extramural grants and contracts and focused on cultivating a culture of belonging, service and support.

- Expand staffing in emerging areas to address changes in federal regulations and research compliance.

- Strategically evaluate the organizational structure of research support units within the Office of the Vice President for Research and research administrative needs within Colleges and Centers to increase efficiency and effectiveness of operations consistent with best practices.

- Use the Research Space Workgroup to recommend policies and guidelines related to best practices in space allocation.

- Increase emphasis on communicating research successes to internal and external stakeholders.

- Recognize research achievements of our faculty, staff and trainees through staff assistance towards the pursuit of relevant honors and awards.

  - Develop a list/database of societies offering prestigious faculty awards and a list of faculty competitive for these awards.

  - Develop a database of awards received by faculty.

  - Identify and engage faculty nominators.

  - Monitor progress in achieving recognitions.

  - Work with the Graduate School to assure the nomination of outstanding trainees for appropriate awards.

Goal 1.2: Assess equipment needs within individual labs and core facilities to enhance and enable campus-wide research.

- Identify mechanisms to assist with equipment upgrades and needs throughout campus (i.e. individual research programs).

- Using the established review process for UK research service core facilities, evaluate potential new equipment needs or upgrades, new core facilities and services to address emerging areas of research (i.e., infectious disease and BSL3 facility), and the potential need to sunset underutilized cores.

- Ensure the maintenance of an accurate centralized inventory of available equipment across campus.

Goal 1.3: Facilitate Big Data analytic hub/convergent research.

- Engage with various stakeholders to learn more about existing expertise and create a campus-wide inventory. Identify opportunities for research growth that foster convergence of computational work and data science.

- Facilitate development of applications for funding opportunities in data science, major instrumentation/facility grants related to data science, and alignment with multidisciplinary academic programing.

- Facilitate the development of an institutional research plan for this emerging research area.

Goal 1.4: Support research career development and the development of new research efforts.

Create a Research Leadership Academy to:

- Support career development in research administration and leadership.

- Develop large programmatic grants, white papers or other mechanisms and avenues that support multidisciplinary research.

- Develop new research structures around an emerging themes.

STRATEGIC INITIATIVE 2

Foster an inclusive culture of research success to retain and develop outstanding faculty, staff and students.

The 2015-2020 UK Research Strategic Plan created an exciting and engaging culture around our research mission that made a direct impact on recruitment and retention of outstanding faculty, staff and students. It is imperative that we continue to foster a culture facilitating success of all research in an inclusive, responsible and ethical manner. As important as the research itself, it is vital that UK Research fosters a culture of working together in an inclusive and collaborative manner to improve the lives of citizens of the Commonwealth and the world. Our research must be grounded in responsible conduct and inclusive in design and implementation. Further, our research endeavors must promote and recognize success and lay the groundwork for research career advancement.

Over the last 5 years, we have:

- Developed the UNIted in True Racial Equity (UNITE) RPA to foster research on social and racial injustice and develop best practices to support and retain a diverse research workforce.

- Developed a curriculum to support training of diverse postdoctoral researchers.

- Developed the Research Scholars Program to support the success of diverse research scholars.

- Developed training and infrastructure for the Responsible Conduct of Research.

In the new Strategic Plan for Research, we will:

- Implement three tracks of the Research Leadership Academy to support research leadership development, complex grant development, submission and management, and emerging areas of research.

- Continue and expand upon training programs and platforms for inclusive research.

Goal 2.1 Continue programming that promotes an inclusive culture of research success across our range of disciplines.

Goal 2.2 Continue and expand programming that has contributed to research success across the full spectrum of disciplines.

Goal 2.3 Develop new programming that fosters a cross-campus culture of inclusive research excellence, facilitates research career development, and augments the importance of our research mission.

Goal 2.1: Continue programming that promotes an inclusive culture of research success across our range of disciplines.

- Continue programs supporting and recognizing research across the full spectrum of disciplines.

  - Recognize success through annual naming of University Research Professorships within all academic colleges and establishment of a University Research Professorship Seminar Series.

  - Support research in areas where extramural funding is not typically an avenue for support.

  - Provide support for seed ideas that cross unit boundaries including support of the Igniting Research Collaborations (IRC) Pilot Program.

  - Provide support for on-site research conferences through annual grant opportunities.

  - Contribute to the Diversity Incentive Fund Start-up Pool to promote a diverse UK workforce.

- Continue training program offerings that promote a diverse and inclusive research workforce and train the next generation of research leaders.

  - Provide a comprehensive New Faculty Orientation to Research.

  - Continue use of the Lunch and Learn infrastructure presentations to educate, inform, train and foster inclusive and responsible research.

  - Provide cross-campus training in the Responsible Conduct of Research (RCR) and communicate compliance requirements.

  - Promote innovation through Office of Technology Commercialization (OTC) workshop offerings and other programs fostering intellectual property development, social innovation and industry partnerships, engagement and commercialization of research discoveries.

Goal 2.2: Continue and expand programming that has contributed to research success across the full spectrum of disciplines.

- Continue the Diversity Postdoctoral Fellowships and the Institutional Postdoctoral Enrichment Program (IPEP) training/mentoring program that provides training and research career development of a diverse research workforce. Working in partnership with the Graduate School, expand this program to postdocs and graduate students across campus.

Goal 2.3: Develop new programming that fosters a cross-campus culture of inclusive research excellence, facilitates research career development, and augments the importance of our research mission.

- Develop a Research Leadership Academy to mentor research career development and leadership. (See Initiative 1)

- Establish and support the newly reorganized Office of Undergraduate Research to enhance the visibility of and opportunities for students participating in undergraduate research experiences.

- Develop stronger relationships with Philanthropy to further enhance the funding base for research and the university community. Enhance the UKRF endowment, the UK Venture Fund and consider a dedicated Philanthropy position.

STRATEGIC INITIATIVE 3

Invest strategically in UK's existing strengths and areas of growth in selected focus areas that benefit and enrich the lives of those in the Commonwealth.

As the land-grant, flagship public university of the Commonwealth, we support all research across the full range of disciplines. We have an obligation as the University for Kentucky to use our research mission to improve the lives of our citizens.

During the 2015-2020 Research Strategic Plan, we:

- Used a systematic process to identify seven research priorities: cancer, cardiovascular, diabetes/obesity, energy, neuroscience, substance use disorders and diversity and inclusion/UNited In True Racial Equity (UNITE). Developed a program of financial support for research in areas not traditionally amenable to external funding.

- Created an infrastructure to identify and support nomination of UK scholars for research honors and awards.

In the new Strategic Plan for Research, we will:

- Expand access to and participation within RPAs.

- Support UK researchers across the institution, including those within RPAs, in nominations for research awards and honors.

Goal 3.1 Continue to develop, support and communicate research within the seven RPAs to facilitate collaboration, partnership and new research directions.

Goal 3.1: Continue to develop, support and communicate research within the seven RPAs to facilitate collaboration, partnership and new research directions.

- Review progress of each RPA towards strategic growth, including quantitative data and highlight drivers of growth. This should include development of a business plan for sustainability.

- Articulate a plan to enhance community and belonging within and between RPAs.
  - Develop strategic communications for internal and external stakeholders.
  - Expand and improve central and standardized RPA websites for multiple internal and external stakeholders.

- Working with the UNITE RPA, develop plans for diversity, equity and inclusion.
  - Develop innovative steps to foster creative new directions and grant-seeking.
  - Implement practices (i.e., research symposia) and processes (i.e., Scholars@UK) that facilitate communication and belonging.

- Develop commercialization plans/pathways/maps for research within RPAs.
  - Facilitate intellectual property opportunities and commercialization agreements.
  - Cultivate partner pathways to research investment opportunities
  - Showcase social, commercial, economic impacts of RPA research via OTC Immersion Day.
  - Communicate RPA commercialization successes.

- Implement a critical pathways model for RPA member awards, honors and nominations.
  - Develop a list/database of societies offering prestigious faculty awards specific to each RPA, and a list of competitive faculty for these awards.
  - Develop a database of awards received by RPA members.
  - Identify and engage faculty nominators.
  - Monitor progress in achieving recognitions.

STRATEGIC INITIATIVE 4

Strengthen engagement with communities and translate outcomes of research for the benefit of the citizens of the Commonwealth of Kentucky.

In response to the 2015-2020 strategic plan, UK Research achieved growth in its research enterprise through partnership engagement. Partnerships were realized through large research projects, innovation-driven economic development initiatives, and infrastructure building through new centers and institutes. UK Research will continue and grow engagement efforts to empower translation of research to improve the lives of the citizens of the Commonwealth and the world.

During the 2015-2020 Research Strategic Plan, we:

- Increased the impact of its intellectual property portfolio with record-breaking metrics of commercialization and entrepreneurial activity.

- Led numerous important research and community programs and partnerships to support commercialization of intellectual property through training and increased capacity services across the Commonwealth.

In the new Strategic Plan for Research, we will:

- Sustain statewide leadership and develop a culture for economic and social impact through research innovation and commercialization.

Goal 4.1   Sustain community-engaged research.

Goal 4.2   Provide statewide leadership and develop a culture of economic and social impact through innovation in research.

Goal 4.1: Sustain community-engaged research.

- Promote greater awareness of existing community-engaged program and projects.
  - Examples include: Helping End Addiction Long Term, CCTS, CHET, Center for Appalachian Research in Environmental Sciences, Kentucky Geological Survey, UNITE, NAACP Education and Civil Rights Initiative, Kentucky Network for Innovation & Commercialization, Community and Economic Development Initiative of Kentucky, and the James B. Beam Institute for Kentucky Spirits.

- Cultivate community-engaged research and innovation for continued growth.
  - Strengthen engagement utilizing extension and related land-grant initiatives.
  - Broaden community-engaged innovation activities and events utilizing points of campus-community intersection such as The Cornerstone and Coldstream Research Campus.

Pharmacy students bottle hand sanitizer on campus in response to COVID-19.

Goal 4.2: Provide statewide leadership and develop a culture of economic and social impact through innovation in research.

- Enhance and promote a culture for innovation.
  - Use data to position UK as a nationally recognized leader in innovation impact.
  - Reevaluate metrics used to measure successful innovation impact with a specific focus on inclusive innovation metrics while maintaining traditional metrics (inventions, licenses, patents, startups, income) supplemented by new best-practice indicies of impact (engagement, sustainability, partners, funding and reputation recognition).
  - Motivate innovation culture by recognizing the value of innovation and entrepreneurism in tenure and promotion.
- Focus on equitable, innovation-based economic development by broadening participation in innovation and economic impact activities.
  - Develop equity mapping across UK and Lexington innovation ecosystems to provide baseline metrics.
  - Create strategies and develop programs focused on building and supporting an inclusive innovation ecosystem, emulating the Engaging Researchers and Innovators for Commercialization at HBCUs program.
  - Sustain support for innovation practices at public institutions across the state, such as through the Kentucky Commercialization Ventures program.
  - Develop cross-campus partnerships to pursue research grants and innovation projects to support expanding innovation activities within UK and with community partners.

ACKNOWLEDGEMENTS

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