

**Strategy Group: Collective Impact in Research, Scholarship and Creative Achievement
(CIRSCA)**

**FINAL DRAFT
5-11-15**

Primary goal: Elevate UMBC as a nationally recognized and regionally relevant research university. The key drivers in achieving this goal are: creating an inclusive environment for faculty and students, developing excellence in new intellectual frontiers, and fostering multidisciplinary and inter-institutional approaches that build research, scholarship, and creative achievement across the campus.

Research Questions:

1. What are UMBC's current strengths in research, scholarship, and creative activities and the potential areas of growth?
2. What are the selected areas of research, scholarship, and creative activities that with targeted investment will elevate UMBC's national prominence in the next five years?
3. How do we utilize and extend our connections with local communities and regional assets to build on our strengths in research, scholarship, and creative achievement?
4. How do we promote, sustain, and grow multi-disciplinary and inter-institutional initiatives to maximize collective impact of our research, scholarship, and creative activities?
5. What priorities and metrics should be used to track progress and success in our goal to enhance UMBC's research, scholarship, and creative activities?
6. What resources are needed to attain our goals in research, scholarship, and creative activities?

Overall Recommendations:

Note: The term “research” is used to include research, scholarship, & creative achievement activities.

Recommendation #1: Increase national prominence in selected areas that include Science, Engineering, Information Technology, Social Sciences, Arts, and Humanities.

A. Strategic Objectives:

The following have been identified as some but not all potential areas of excellence that can bring national recognition for research. Many of these areas require multi-disciplinary teams. We need to develop a campus culture of multi-disciplinary research that can be facilitated by the offices of research, institutional advancement, and various research centers.

- 1. Health Research** is a cross-cutting area with wide-ranging interest from faculty in all colleges. This research area includes basic research in the life sciences; clinical and behavioral sciences; Health IT; biomedical engineering; bioinformatics; aging and disability; the study of gender and sexuality; the study of inequalities in relation to healthcare; the philosophy of science and ethics; policy; system financing; and the role of arts in health care delivery and science. These areas overlap with existing federally funded training and diversity activities.
- 2. Security Research** includes homeland security as well as cybersecurity. While the initiatives in cybersecurity are recognized campus wide, its full potential can only be achieved with faculty participation from all three colleges including the arts and ethics.
- 3. Environmental Studies** is an area of current strength in all colleges spanning more than a dozen units, including the social sciences, arts, and humanities. These research areas can be enhanced by strengthening our ties with NASA and pursuing new collaborations and community partnerships.
- 4. Data Science Research** encompasses areas such as visualization, digital humanities, big data, and analytics. This high growth field is critical to promoting success in the research areas listed here.
- 5. Civically Engaged Scholarship** encompasses social justice research as well as a broad-range of community-focused scholarly and creative activities. This is a newly emergent field in which UMBC is already a leader, with many departments participating across CAHSS and COEIT. Projects such as Breaking Ground, Advance, Imagining America, and the Meyerhoff Program support this emphasis.
- 6. Global/Transnational Research** is a newly emergent strength across many fields and all colleges at UMBC. This category describes research that is explicitly global or transnational in focus as practiced in fields such as GLOBE, MLLI, LLC, ANTH, ASIA, AFST etc. or in the work of Engineers Without Borders. It also includes research with global implications or scope, such as work on HIV/AIDS, climate change, water policy, immigration, transnational issues surrounding diversity/inequality, international art or world literature. Furthermore, most of the areas of excellence listed above have global/transnational research aspects of interest to the UMBC community.

B. Measures of Success

Measurement will require new ways of tracking research and creative activity at UMBC. Responsibility for tracking measures of success should be clearly designated as part of the planning implementation.

1. Increased number of large and targeted small scale proposal submissions. Measurement should strive to include value, prestige and impact on the field or public.
2. Increased partnerships beyond existing relationships with external entities such as University of Maryland, Baltimore (UMB); National Security Agency (NSA) National Institute for Standards and Technology (NIST); Department of Energy (DOE); Food & Drug Administration (FDA); National Institutes of Health (NIH); Department of Health and Human Services (DHHS), NASA, Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), US Geological Survey (USGS), US Department of Agriculture (USDA), the Walters Art Gallery, the Folger Institute, the Department of Education, and the Baltimore Symphony.
3. Increased recognition through memberships in national fellows groups, honor societies, national and international disciplinary organizations, etc. Expanded number of elected and distinguished positions in such organizations. May require increased travel support and/or release time.
4. Increased number of citations, reviews of work, invited performances and exhibitions, and impacts in print, electronic media, and media/press.
5. Increased number of high-value publications, performances and exhibits. Value should be assigned on a field-specific basis.

Recommendation #2: Invest in faculty hiring, retention, and productivity as the most important route to research prominence.

A1. Strategic Objective 1: Recruit and retain a more diverse high caliber research faculty.

- 1. Develop faculty recruitment plans** that move the University and academic units away from periodic hiring (done through personnel requisition requests and formal searches) to *active recruitment* (done through sustained engagement with professional associations, campus presentations by emerging scholars, and targeted outreach efforts). UMBC must position itself as a ‘destination for emerging scholars’ if it intends to maximize the yield from formal searches.
- 2. Increase the number** of tenure-track faculty across campus.
- 3. Enhance competitive nature of startup packages** by augmenting existing research support; laboratory and studio space; salary structure and incentives; grant application and post-award support; and release time.
- 4. Prioritize research and creative activity** in hiring and promotion, merit calculations, and workload.
- 5. Develop systems for proactive retention.** Consider new policies (or revising policies) for proactive raises, partner hires, mid-career research leave/support, family leave, etc. Consider further expanding the offering of ADVANCE workshops that provide information for associate professor moving to the rank of full professor. Explore some type of permanent status for research faculty members.

A2. Strategic Objective 2: Support and increase faculty research productivity

- 1. Improve research infrastructure:** Lack of state of the art instrumentation, studio space, library resources, etc., present major roadblocks for research and creative activity. Improving and expanding infrastructure also requires adding qualified staff to support labs, studios, arts venues, the library, grant support (pre- and post-award), etc.
- 2. Attract and recruit outstanding graduate students.** Both faculty and students cite this as a key issue. This requires pro-active recruitment efforts including talent identification plans (to incentivize undergraduate students to consider UMBC), better incentives/financial support, as well as additional graduate assistant positions.
- 3. Increase incentives for internal and external collaborations** by rewarding and recognizing cross-field and inter-institutional partnerships during merit calculations, review periods, and workload policies. Market opportunities for faculty to work with a wide range of Federal and State Agencies, foundations, private industries and community partners, especially those with funding potential and significant access to communities and audiences.
- 4. Align teaching load with research activity.** UMBC’s course load in many departments is burdensome for research-active faculty. Efforts should be made towards reducing heavy obligations for research faculty by instituting variable teaching loads based in research activity, release tied to the mentorship of graduate students, developing opportunities for research-related release time and better aligning research priorities with other campus duties.
- 5. Increase communication about opportunities related to research and creative activities.** Advance the collection and dissemination of information, encourage multi-disciplinary work by supporting inter-disciplinary programs and centers.

B. Measures of success:

- 1. Increased number** of tenure-track faculty across campus.
- 2. Sustained growth** in ethnic, racial, and gender diversity amongst tenured faculty.
- 3. Fewer resignations** among research faculty.
- 4. Increased Masters and Doctoral Degrees Awarded.**
- 5. Increased internal and external collaborations** that enhance University's reputation.
- 6. Consistently reach \$100 million in research expenditures** as a campus.
- 7. Increased number of citations, reviews of work, invited performances and exhibitions, mentions/articles in the general press, media impacts, etc.**
- 8. Increased number of high-value publications and creative activities.** Value should be assigned on a field-specific and interdisciplinary basis.

CIRSCA Six Research Questions and Summary Narrative

This section integrates and summarizes responses to the six research questions gathered through the all of the committee's data collection efforts (described on page 12 below).

1. **What are UMBC's current strengths in research, scholarship, and creative activities and the potential areas of growth? [Also, identifying challenges/problems]**

According to the data and information collected, UMBC's current strengths in research, scholarship, and creative activities include health, security, research, environmental science, data science, civically engaged scholarship, global/transnational areas as well as research about teaching and learning. UMBC's connections to government agencies (such as the NIH), local universities, cultural partners and community organizations contribute to the strength in these areas. According to the CIRSCA – 2014 Strategic Planning Faculty, Staff and Student Survey, many participants indicated UMBC's library resources has had a positive influence on their research productivity but others note a need for more robust and expanded database services. Other positive factors noted include overall departmental support for faculty, UMBC's interdisciplinary research climate, and easy access to undergraduate students who want to become involved with research.

UMBC's potential areas of growth in research extend across all disciplines and include all areas of sciences, technology, humanities, arts, and the social sciences. Areas to build on in the sciences include sustainability and healthcare, while the cutting-edge technology topics to focus on include human-centered computing (HCC), robotics, "Big Data," digital humanities, and technology-infused arts. The strength of UMBC in the area of high performance computing supports these cutting-edge technology initiatives. In the social sciences, arts, and humanities, UMBC can build on current strengths in civic engagement and community-based research, extend scholarship involving diverse communities as well as conduct more interdisciplinary research in these fields.

Despite UMBC's great successes, there are some problems/challenges that the UMBC community must overcome—starting with UMBC's name. Many survey participants commented that UMBC's full name – University of Maryland, Baltimore County – makes UMBC sound like a community college because it ends with the word "county" and that a unique name deleting county is required. Changing UMBC's name might contribute to changing people's perception that our campus is primarily an undergraduate teaching institute.

In addition, the survey suggests many still consider UMBC to be known narrowly as a strong STEM school. Building on demonstrated areas of excellence, such as in STEM disciplines, respondents suggest UMBC should broaden these areas of excellence through interdisciplinary connections to include research and creative work in the arts, humanities, and social sciences.

A primary challenge this institution faces is the need to hire more tenure-track faculty. This committee found faculty hiring to be the single most important way to increase research prominence. Our data suggests that UMBC also needs to simplify the grant application and management process for research faculty, provide more funding for lecturers and post-docs, and increase the funding and number of graduate students. Faculty in many departments commented that their teaching obligations are burdensome and reduce research productivity. Technology and maintenance concerns included replacement of outdated equipment and preventing/solving power outages problems more effectively. Power outages often result in lost research material, especially in science laboratories. Finally, some survey responses acknowledged the importance

of hiring specialized staff (not student interns) in departmental offices and Arts venues. Staff with specialized training is essential for the delivery of pre- and post-grant support.

2. What are the selected areas of research, scholarship, and creative activities that with targeted investment will elevate UMBC's national prominence in the next five years?

Based on department/unit level input the following initial, broad categories emerged regarding targeted areas of investment.

I.

- Health IT
- Health disparities, population health, behavioral prevention of illness, social determinants of health, aging and health
- Health care financing and delivery models
- Health Policy
- Bioethics & Philosophy of science

II.

- Cybersecurity
- Big data
- Digital humanities
- Connecting people to data - across disciplines, including visualization and human-centered computing
- 3-d acquisition, modeling, rapid prototyping and output across disciplines
- Need for a Fabrication Lab or Maker Lab to serve campus community

III.

- Earth systems technology, geospatial methods, agencies, region, national, international impacts
- Climate change, atmosphere, clean energy
- Earth systems technology, geospatial methods
- Chemistry-biology interface related to medical science
- Broad interdisciplinary collaboration across STEM areas innovatively engaging with areas including composition studies, gender studies, applied ethics, and policy
- Continued support for undergraduate research in areas across campus

IV.

- Community-based research/civic engagement
- Social Justice Research
- Global Change and Human Population Impacts
- Global Studies Across Disciplines
- Study of inequality & marginalized populations

Responses to research questions 3 & 4 were combined due to overlap.

3. **How do we utilize and extend our connections with local communities and regional assets to build on our strengths in research, scholarship, and creative achievement?**
4. **How do we promote, sustain, and grow multi-disciplinary and inter-institutional initiatives to maximize collective impact of our research, scholarship, and creative activities?**

- **Embrace and Build**

To promote multi-disciplinary and inter-institutional initiatives UMBC can embrace and build upon its existing under-recognized strengths in these areas. UMBC has a strong culture of multi-disciplinary and interdisciplinary efforts with few formal barriers to this work. A recent Provost's Task Force on Interdisciplinary Activities (March 2015) confirms these strengths. More intentional interdisciplinarity in research and creative proposals could be encouraged. Furthermore, the university's commitment to interdisciplinary activities is demonstrated by the upcoming interdisciplinary life sciences building to be completed by 2019 during this strategic plan implementation.

- **Communication and Awareness**

There is a strong desire for increased communication and awareness about the range of research, intellectual, creative, and scholarly activities as well as related supporting resources available across campus. Increased communication and awareness will facilitate connections among faculty members, researchers, and students as well as promote interdisciplinary research.

- **UMBC/UMB Partnership**

Continued development of partnership with University of Maryland, Baltimore campus. Continue to build on initial successes with collaboration across the campuses, departments, and units.

Partners/Collaborators/Connections:

Federal:

- Federal agencies for grants (NIH, NSF, NASA, DOD, USAID, NEH, DOE, NSA, EPA, Census Bureau)
- Federal agencies for contracts and cooperative agreements (HHS/Affordable Care Act funds, others)
- MITRE—FFRDCs for cybersecurity and health
- Government labs (NIST, NIH)

State:

- State agencies (Department of the Environment, Department of Health and Mental Hygiene, Maryland State Arts Council, MD Humanities Council)

Local:

- City of Baltimore for community-engaged research, applied research, public policy, creative activities, place-making, and K-12 engagement

Foundations:

- Foundations (Gates, MacArthur, Ford, health foundations, Guggenheim, Creative Capital, Pollack-Krasner, MacArthur, Mellon, health foundations)

International Exchange:

- International exchange: Fulbright, international collegial exchange

Other Universities:

- UMB, UMCP, JHU, MICA, Goucher, Morgan, UB, George Mason, George Washington, Towson, Delaware.)

Cultural Organizations/Media Outlets:

- Walter Gallery
- The Contemporary
- Folger Institute and Library
- Greater Baltimore Cultural Alliance
- Maryland/Baltimore Arts and Entertainments Districts
- WYPR and WEAA (esp. Marc Steiner show)
- Baltimore Sun, City Paper, Baltimore Business Journal, etc.

Private Industry:

- Chemical, biotech, environmental engineering companies—for internships, lab experiences, adjunct faculty
- Government contracting firms in metro area

Strategies to build research & scholarly capacity:

- Hiring “big name” faculty who can bring federal funding with them
- Cluster hires in key emerging areas: health disparities, health & basic life sciences, visualization, 3-d rapid-prototyping
- Research, exhibition, and performance opportunities for graduate students
- New creative ways to promote collaborative relationships/interdisciplinary research teams: digital humanities, Orch Kids, interdisciplinary approaches to climate change and land use; health disparities, health & basic life sciences, pre-k – 16 education
- Provide mechanism for UMBC Research Center faculty to collaborate with tenured faculty and train graduate students

5. What priorities and metrics should be used to track progress and success in our goal to enhance UMBC’s research, scholarship, and creative activities?

Standard metrics were endorsed including: # of peer reviewed publications, publication impact scores, # of book manuscripts, # of grant/contract dollars received, # and type of prestigious awards/fellowships, # of performances, performance/exhibit attendance. However, it was frequently noted that establishing meaningful metrics to track progress is a challenging task that requires additional focus by the university community. The current metrics fail to capture the diversity and value of the research, scholarship, and creative achievements across the university.

6. What resources are needed to attain our goals in research, scholarship, and creative activities?

Financial:

- Seed grants/pilot funding for investigators
- Competitive start up funding and seed grant programs
- Increase number and amount of graduate student stipends
- Bridge funding opportunities for on-going successful research

Personnel:

- Recruitment of tenure track faculty
- Focus on recruiting the highest quality graduate student
- Support for administrative staff that support faculty research
- Technical assistance to support and promote digital humanities, creative use of technology across media platforms, including digital networks, radio, television

Infrastructure:

- More and better offices, laboratories and equipment/instruments
- Instrumentation Support & Shared Instrumentation
- Infrastructure to facilitate contracting with government agencies (as opposed to grant support)
- IT infrastructure, labs, software, and technical assistance to support and promote digital humanities, creative use of technology
- Enhanced media center/TV studio upgrades to next generation production technologies
- “Maker lab” or “Design Lab” to promote interdisciplinary collaboration, and creativity through fabrication and other activities

Equipment:

- 3D printing capability
- Instrumentation related to biotechnology and interdisciplinary life science collaborations

Administrative:

- Clearinghouse for research information and people on campus
- Administrative infrastructure support to facilitate contracting with government agencies (as opposed to grant support)
- Support for developing large interdisciplinary collaborative research teams.
- Promote ease of cooperation with non-profit agencies
- Removing or streamlining structural, administrative, legal impediments to cooperation with universities, agencies, non-profits, industry, and community partners
- Pre/post-grant professional support
- Replacement of PeopleSoft with a grant management software suited to UMBC’s needs
- Evaluating teaching load in relation to high research active faculty success

Summary of Stakeholder Engagement & Data Collection:

The data was collected from a series of campus-wide engagement process over a period of almost two years. The process began with review of historical data and an environmental scan of

the university created by OIR. The CIRSCA strategy group began its formal meetings in May 2014 and during the past year, CIRSCA participated in a series of formal and informal meetings with members of the campus community including: the university-wide retreat in August 2014, a retreat with Vice Presidents and Deans, a retreat with Department Chairs and Center Directors, multiple interactive galleries presented to the entire campus community, meetings with key leadership groups including the Research Council, Academic Planning and Budget Committee, Research Administrators Group, the Graduate Student Association. Separate meetings were also held with the deans, chairs and directors of each of the three colleges hosted by each dean. Individual level input was solicited by means of a campus-wide survey distributed to faculty, staff, and student as well as the opportunity to submit electronic comments throughout the process. In addition, each department, centers, and units was invited to hold their own collective discussion on selected research questions on research priorities and submit a summary memo as part of the data collection. The strategy group met regularly to discuss and analyze the data collected throughout the process. The recommendations made in this document are the results of the cumulative effort of the members of the strategy group based on the feedback received from the entire campus community.

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Appendices

- Results from Campus Wide Survey
- Reports from Departments, Programs, Centers & Units