

# OUR UMBC

*PRIORITIES AND ACTIONS TO*  
**ADVANCE EXCELLENCE**  
UNIVERSITY RETREAT 2018





# **Research Infrastructure at UMBC**

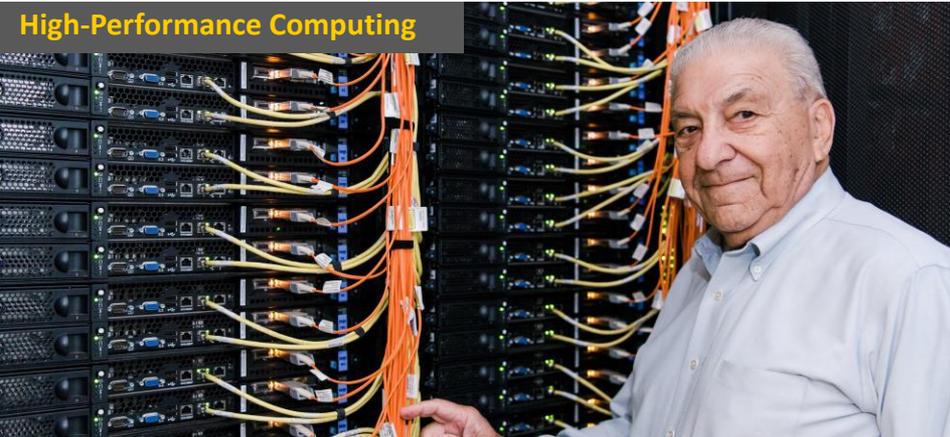
**Karl Steiner**

**Vice President for Research**

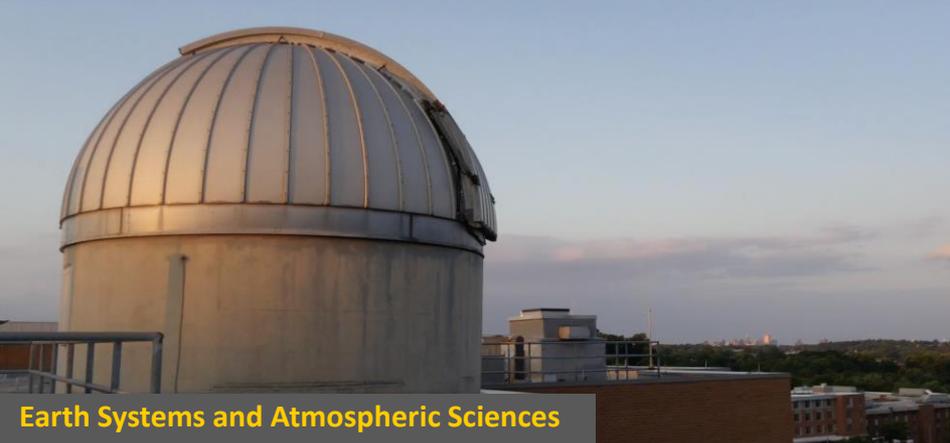


## What is Research Infrastructure?

High-Performance Computing



Galleries, Performance Space and the Library



Earth Systems and Atmospheric Sciences



Life Sciences Core Centers

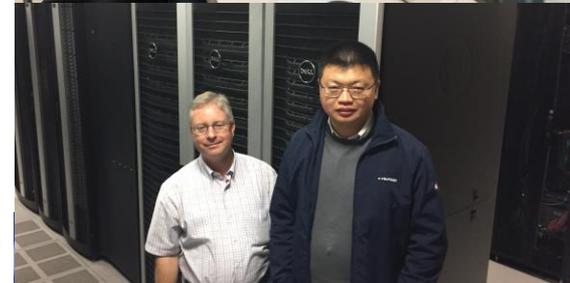
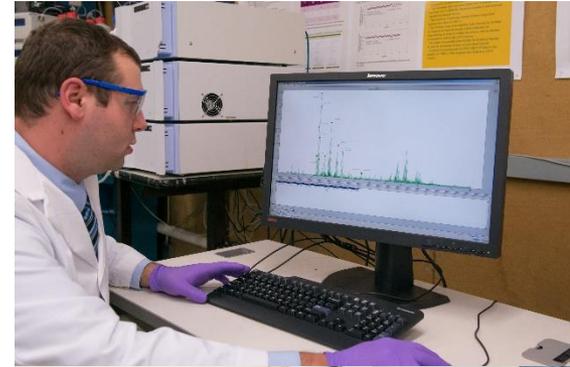
Facilities, Resources and Services to successfully conduct Research



## Core Research Facilities

- Molecular Characterization & Analysis Complex (MCAC)
  - *Joshua Wilhide, Manager*
- Keith R. Porter Imaging Facility (KPIF)
- Nano-Imaging Facility
  - *Tagide deCarvalho, Manager*
  - *Research Assistant Professor, Biological Sciences*
- High-Performance Computing Facility (HPCF)
  - *Matthias Gobbert, Director*
  - *Professor, Mathematics & Statistics*
- Aquaculture Research Laboratory (ARC) at IMET
  - *Yonathan Zohar, Director*
  - *Professor, Marine Biotechnology*

<https://research.umbc.edu/core-instrumentation/>





## NSF MRI Equipment Awards

### 3D Object and Motion Capture System

- *PI: Marc Olano, CSEE*
- Awarded Fall 2014
- \$ 175k from NSF plus \$75k UMBC Match
- Dedicated December 2015



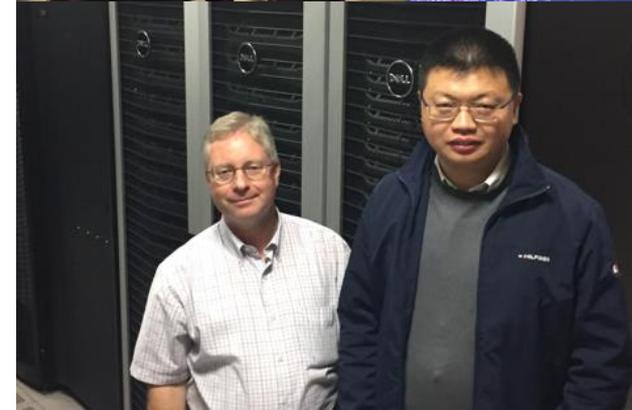
### PI<sup>2</sup> Immersive Display for Discovery, Creativity and Education

- *PI: Don Engel, CSEE & Physics*
- Awarded Fall 2015
- \$ 360k from NSF plus \$154k UMBC Match
- Dedicated May 2016



### Cutting-Edge GPU & Phi Nodes for High-Performance Computing

- *PI: Meilin Yu, Mechanical Engineering with  
 Matthias Gobbert, Mathematics & Statistics*
- Awarded Fall 2017
- \$ 553k from NSF plus \$236k UMBC Match
- Dedication Fall 2018





## Key Research Centers

Center for Urban Environmental Research & Education (CUERE)  
– *Director: Claire Welty (established 2003)*



Center for Advanced Sensor Technology (CAST)  
– *Govind Rao (2006)*



Center for Hybrid Multicore Productivity Research (CHMPR)  
– *Yelena Yesha (2009)*



Center for Cybersecurity (UCYBR)  
– *Anupam Joshi (2012)*

Center for Advanced Real-Time Analytics (CARTA)  
– *Yelena Yesha (2018)*





## NASA–Supported Research Centers

Joint Center for Earth Systems Technology (JCET)

– *Belay Demoz (1995)*

Center for Space Sciences and Technology (CSST)

– *Jane Turner (2006)*

Goddard Planetary Heliophysics Institute (GPHI)

– *Jan Merka (2011)*

Research Instrumentation on Top of Physics Lab





## UMBC Core Facilities support Arts, Humanities & Social Sciences Scholarship

### Performing and Visual Arts Spaces

- Linehan Concert Hall, Proscenium Theatre, Black Box Theatre, Dance Cube, Music Box, CADVC and Library Gallery

### Technical Core Facilities

- Scene Shop, Costume Shop and Recording Studio
- Photographic and Animation Facilities

Lion Brothers Building in Downtown Baltimore



Lion Brothers Building



UMBC  
SUMMER SESSION  
2017

GRIT  
going





## UMBC Core Facilities support Arts, Humanities & Social Sciences Scholarship

Albin O. Kuhn Library and Gallery  
“The Laboratory of the Humanities”

- Department of Special Collections
- Library Gallery

Research Tools

- Quantitative and Qualitative Software Packages
  - STATA, NVIVO, GIS, etc.
- Databases for Humanities and Social Science Research

Communities of Scholars

- Center for Innovation, Research, and Creativity in the Arts (CIRCA)
- Center for Art Design and Visual Culture (CADVC)
- Imaging Research Center (IRC)
- Dresher Center
- Center for Social Science Scholarship (CS<sup>3</sup>) and MIPAR





## Economic Development Support

- UMBC's *Office of Technology Development (OTD)* developed and implemented an *Express License Agreement* to significantly reduce the burden to start a company based on technology licensed from UMBC.
- The *Technology Catalyst Fund (TCF)* provides up to \$25,000 grants to advance innovations originating from UMBC research to commercially viable technologies.
  - 30 Awardees since 2014
  - \$513k invested to date
  - \$3.2M in External Funds secured



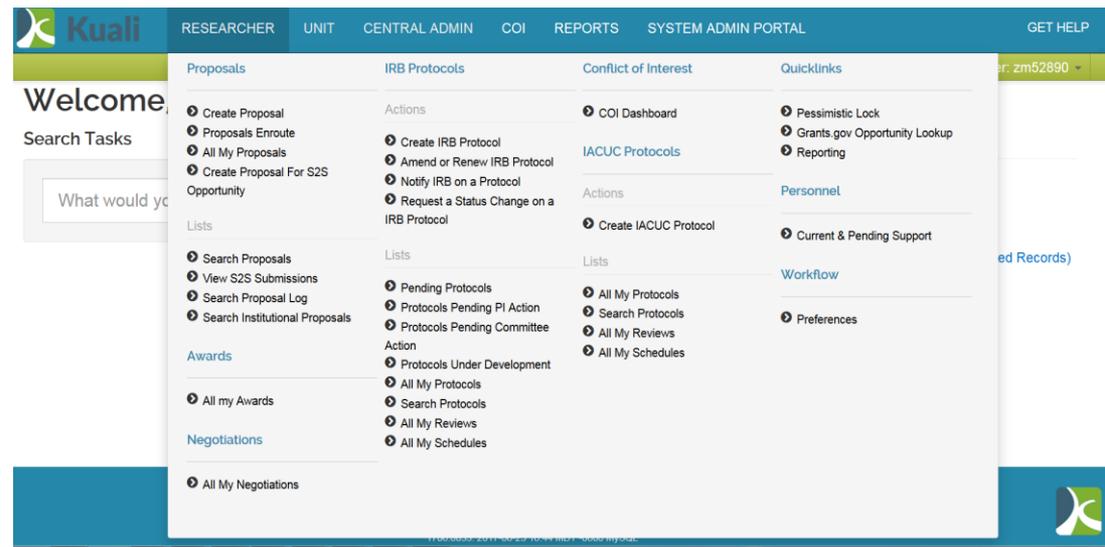


# Office for Center Awards Management (OCAM)

- A shared-services center to provide administrative support for research centers
  - Initial support for CUERE, CAST and CARTA

## Transition to Kualii Research

- Web-based administrative support for proposals and award negotiations
- Part of USM-system-wide implementation
- Contact: [OSP@umbc.edu](mailto:OSP@umbc.edu)





# **Core Facilities in CNMS**

**Bill LaCourse**

**Dean, Natural & Mathematical Sciences**



***Molecular Characterization and Analysis Complex (MCAC)***



Molecular Characterization and Analysis Complex



Email: [mcac@umbc.edu](mailto:mcac@umbc.edu)



[www.facebook.com/mcacumbc](http://www.facebook.com/mcacumbc)



@mcacumbc

<https://mcac.umbc.edu/>



## ***Molecular Characterization and Analysis Complex (MCAC)***

- **Full spectrum analytical services with a *customer focus***
  - Sample analysis to method development
  - Consultation to contract research
- **State-of-the-art *instrumentation***
  - 9 Mass Specs, multiple(U)HPLCs, GCs, UV-Vis, FT-IR, Fluorescence
  - Fully-equipped, modern laboratory facilities
- **Open source *teaching and learning environment***
  - Training and access by all users
  - **Highly qualified technical staff** - Full-time manager and technicians
  - 24/7 access for trained users





## MCAC – Access

- ***Submitted samples analysis*** – Samples are submitted for analysis and all work is performed by facility personnel. Results are returned with no interpretation.
- ***Assisted Investigator use*** – Samples are assayed by the user under the guidance of facility personnel.
- ***Investigator use*** – Investigators that have been trained on a particular instrument and authorized by the facility director are allowed to perform their own analyses at a reduced cost. This option is often used by companies that desire routine access to facility equipment.
- ***Consultation/Training*** – Facility personnel and faculty experts are available for data interpretation and general advice. MS and NMR classes and training sessions are available.
- ***Contract/Collaboration Research*** – Facility services include contract/collaboration research, which is negotiated on a per contract basis.



## ***EVOLUTION OF A CORE FACILITY: IMPLEMENTING A NEW MODEL***

- **2008: Faculty-Centered, Administered by Department**
  - Removed JEOL HX 110 Four Sector EB/EB due to obsolescence
  - Added 12T FT-ICR Apex IV for High Resolution Mass Spectrometry
  - Purchased AXion Time of Flight (TOF) Mass Spectrometer (2010)
- **2010: Initiated new Core Facility Model; Hire Facility Manager**
- **2012: Administered by CNMS; All Instrumentation becomes Open Source**
  - Collaboration with a major instrument company, PerkinElmer Inc.
  - Add Gas Chromatograph & Mass Spectrometer
  - Upgraded 500 MHz NMR to more user friendly interface
- **2014: Officially Name - Molecular Characterization and Analysis Complex (MCAC)**
  - Expands from mass spectrometry focus to general analytics;
  - Gains NMRs, spectroscopic capabilities (UV-Vis, fluorescence, FT-IR), and electrochemical detection
  - Undergraduate research training grows
  - Established collaboration with National Aquarium in Baltimore
  - Houses PerkinElmer demonstration equipment (ICP-MS) as collaboration grows
  - Self-funds a full time research assistant



## ***EVOLUTION OF A CORE FACILITY: IMPLEMENTING A NEW MODEL***

- **2016: Establishes Remote Access Instrumentation Laboratory (RAIL, 2016)**
  - Invented MIDAS: novel ionization source
- **2017: Focus on expanding Instrumentation**
  - Acquired new state-of-the-art triple quadrupole mass spectrometer
  - Acquired second AXion TOF due to increased demand
  - Added two more pieces of demonstration equipment as part of PerkinElmer Collaboration
  - Acquired GC-FID & Zeiss Brightfield Microscope (for RAIL)
  - MCAC undergoes remodeling
- **2018: Collective Impact continues to grow**
  - Over 20 UMBC undergraduates have performed multiple semesters of research
  - Hosted over 15 visiting students (high school students)
  - CBEE departments begin to use MCAC
  - Acquired additional ionization sources, including Desorption Electrospray Ionization (DESI)
- **2019: Satellite Facility in the ILSB**
  - Life Science mass spectrometry package



## **BEFORE and AFTER: IMPLEMENTING A NEW MODEL**



**2008**

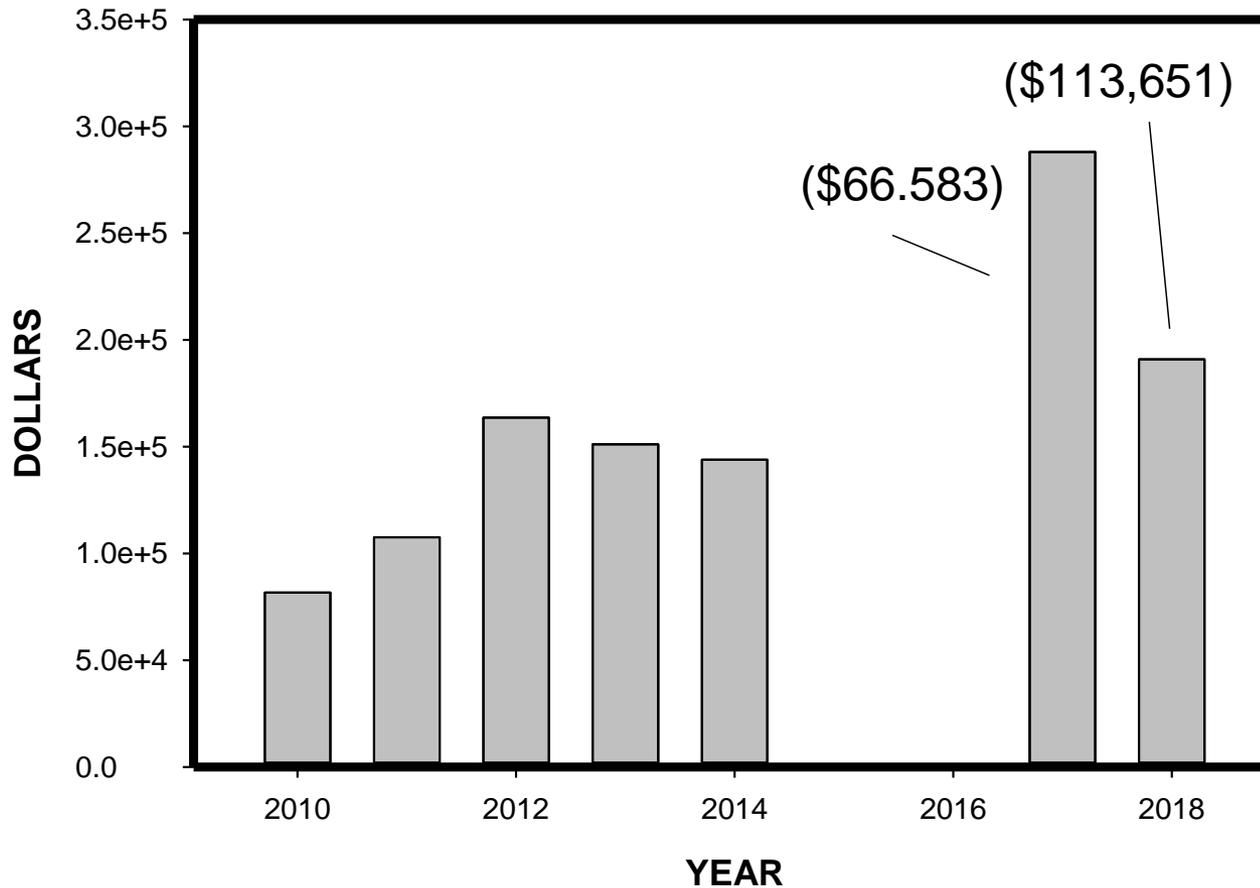
**2018**





## Revenue and (Deficit)

MCAC: Revenue





## SERVING INTERNAL AND EXTERNAL CUSTOMERS



JOHNS HOPKINS  
APPLIED PHYSICS LABORATORY



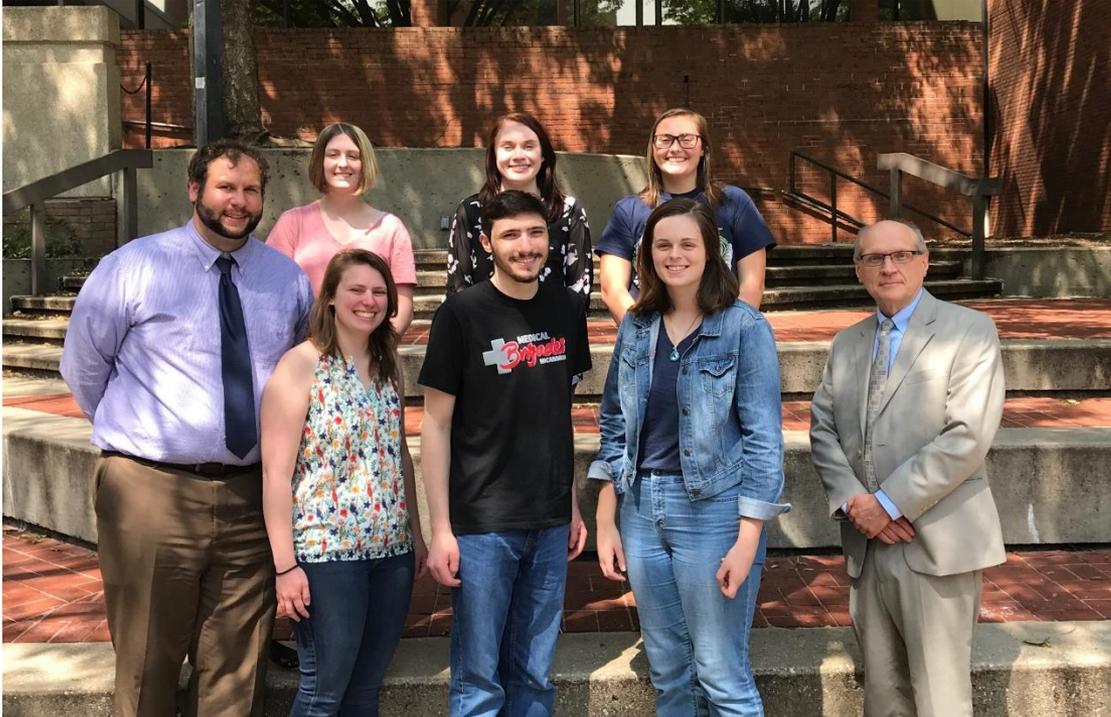


## **SERVING INTERNAL AND EXTERNAL CUSTOMERS**

- Ablitech, Inc.
- Actavis
- National Institute of Standards and Technology (NIST)
- American Dental Association
- Adventure Aquarium, NJ
- Institute of Marine and Environmental Technology (IMET)
- U.S. Army Research Laboratory
- Aurora Analytics
- Baxter
- BD
- Biomedica
- U.S Bureau of Engraving and Printing
- Carnegie Institute
- Center for Renewable Carbon
- College Park
- DSM
- FLAVORx
- GE Healthcare
- George Washington University
- GlycoPure
- Hampton University: School of Medicine
- Johns Hopkins University
- Institute of Fluorescence
- Morgan State University
- National Aquarium in Baltimore
- New Degree Technology
- Next Breath
- ChemPacific
- OriGene
- PowderCity
- Revlon
- National Cancer Institute
- University of Maryland School of Pharmacy
- University of Maryland Eastern Shore
- University of Pittsburgh
- Picatinny Arsenal
- US Food and Drug Administration
- Martek Isotopes
- Naval Research Laboratory
- NJ Sharing Network
- Unit Cell Diamond
- Up Therapeutics
- Steep Hill
- Otomagnetics



## *Who is the MCAC?*



- Faculty
- Manager
- Staff
- Graduate Students
- Undergraduate Students
- Visiting Students
- Collaborators
- Researchers

We Service:            250+ UMBC Students  
4+ Departments      15+ Visiting Students  
25+ UMBC Faculty   75+ Outside Organizations

**7 Publications/1 invention disclosure/10+ Grant inclusions/7 poster awards**





## *Molecular Characterization and Analysis Complex (MCAC)*





## Keith R. Porter Imaging Facility

 **pixelligent**

By The Numbers:

2 Years

20+ Publications

37+ Grant proposal inclusions

6 Departments

34 UMBC Faculty

100+ Students



**hhmi**

Howard Hughes  
Medical Institute

ART  
**WALTERS**  
MUSEUM

Nanolmaging Facility

<https://kpif.umbc.edu/>

<https://nanoimaging.umbc.edu/>





## **BEFORE and AFTER: IMPLEMENTING A NEW MODEL**



**Before:** Disrepair, mold & garbage



**After:** Cosmetic & security upgrades



**Before:** Obsolete microscope



**After:** Cutting edge 3D printer



**Before:** Unused equipment



**After:** New transmission electron microscope



**Before:** Old computers



**After:** Flow cytometer

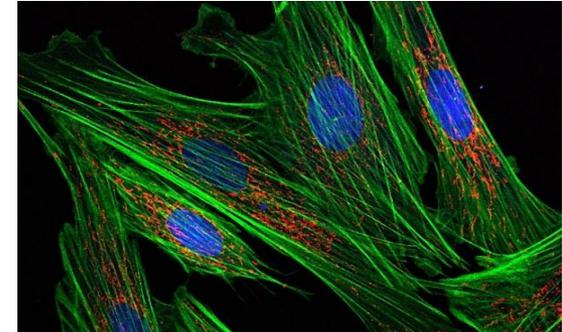


## *Keith Porter Imaging Facility (KPIF)*

Instrumentation for biological & materials science research  
Support includes protocol development, sample preparation,  
equipment training and image processing.

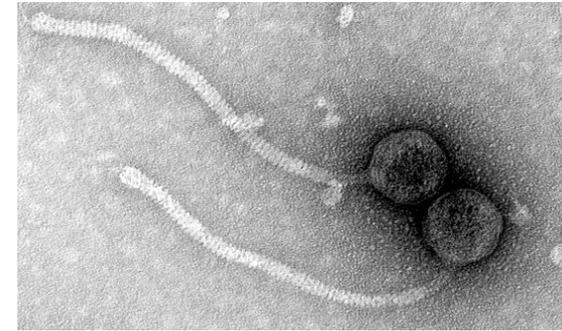
### Confocal Microscopy

- Optical microscope that provides high resolution, 3D images
- Fluorescently labeled cells and organelles for neurobiology, immunology, developmental biology research.



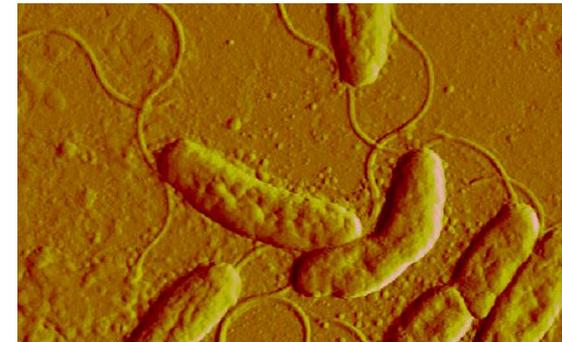
### Transmission Electron Microscopy

- Electron beam images small particles or thin specimens on the nanometer scale
- E.g. virology and nanoparticle research.



### Atomic Force Microscopy

- Scanning probe technology for imaging on nanometer scale
- Obtains precise measurements of surface topography





## *Nanolmaging Facility*

### Scanning Electron Microscope (SEM)

- Produces images of a sample surface with a focused beam of electrons.
- Used in material science & biological research

### SEM Analysis

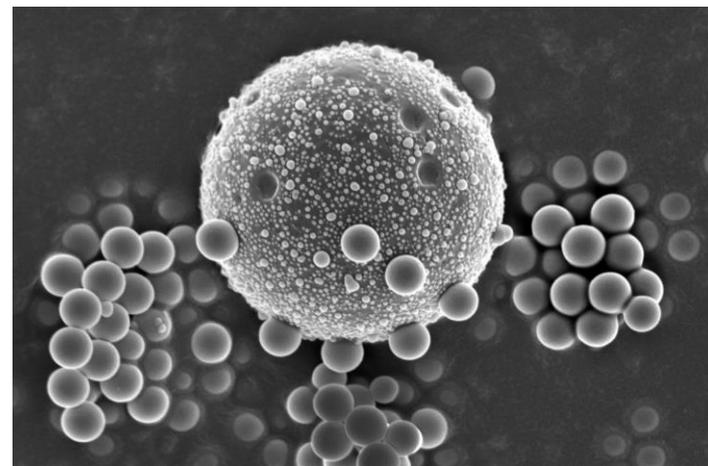
- Energy Dispersive X-ray spectroscopy (EDS)  
produces a map of sample elemental composition
- Electron backscatter diffraction (EBSD) to study crystal  
structure and crystal orientation of sample surface

### Atomic Force Microscope

- Used to measure material surface structure on the  
nanoscale

### Training & Education

- Baltimore SciArt Program (Andrew W. Mellon Foundation)
- Modern Physics laboratory course





## Keith Porter Imaging Facility (KPIF)

### Other Research Instruments & Applications

#### Flow Cytometry

- Laser analysis to count and characterize cells in a liquid suspension
- Used in cell biology and immunology

#### 3D Resin Printer(s)

- Produces highest resolution prints on campus
- Biological models for education, experimental devices and engineering prototypes

### Training

- NIH-funded STEM BUILD at UMBC Initiative
- Applied Molecular Biology (AMB) Master's degree program
- Meyerhoff Scholars
- MARC U\*STAR Programs
- NSF REU programs.

### Education

- Laboratory courses: Microscopy & Imaging techniques, Cell Biology and Developmental Biology.
- HHMI Sea Phages workshop for teachers from around the world.





## ***KPIF/NIF: Collective Impact***



### **YEAR: Revenue/(Expenses)**

2017: \$117,056/(\$133,795)

2018: \$140,030/(\$205,398)

## **Research**

- Publication rate increase: 4 → 10 per year
- Faculty user increase: 13 → 34 faculty
- Broader departmental representation: 3 (BIOL, CHEM, PHYS) → 6 (plus CBEE, CSEE & ART)
- More educational usage: 2 → 6 courses & workshops

## **Instruments**

- 3D Printer
- Transmission Electron Microscope (TEM)
- Flow cytometer
- Fluorescent microscope with structured illumination



research  
**GRAPHICS**



CAPTURE • PROCESS • PRINT • BROADCAST

<https://researchgraphics.umbc.edu/>



WHAT WE DO: CAPTURE • PROCESS • PRINT • BROADCAST

### • CAPTURE

- Still photography



- Video



- Illustration



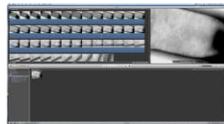
WHAT WE DO: CAPTURE • PROCESS • PRINT • BROADCAST

### • PROCESS

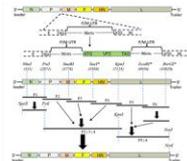
- Image processing



- Video editing



- Illustration/rendering



WHAT WE DO: CAPTURE • PROCESS • PRINT • BROADCAST

### • PRINT

- We have two 44" printers



- Print on paper



- Print on cloth



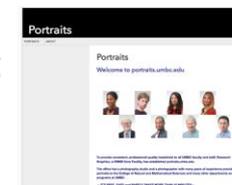
WHAT WE DO: CAPTURE • PROCESS • PRINT • BROADCAST

### • BROADCAST

- On-line video presentations



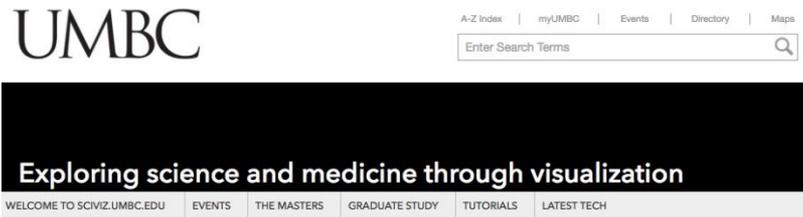
- Web design/authoring





## Instruction / Mentoring

- We host a user group and website for students interested in art as applied to science and medicine



Welcome to sciviz.umbc.edu



Welcome!

- Web Technology
- Presentation
- Animation
- Videography
- Photography
- Graphic Design
- Custom Printing
- Graphics and Logos

Pages

Welcome

Our multifaceted team produces professional and effective visual communication and deliver scientific visuals.

- Jeremy Swan (project management, wiki development, photo & video support,
- Nichole Swan (web & print design, illustration, motion graphics, video)



- We employ undergraduates who get experience in art applied to science and have gone on to top graduate schools and positions at NIH and industry.



## *RG Support for Programs and Events*

- The Meyerhoff Scholars Program
- The MARC-U-STAR Program
- The Meyerhoff Graduate Fellows Program
- The STEM BUILD Program
- The Howard Hughes Medical Institute
- The McNair Scholars Program
  
- URCAD • Summer Undergraduate Research Festival
- CNMS Fall Undergraduate Research Symposium
- A Look Ahead • Graduate Research Conference
- ABRCMS • Graduate Association of Biological Sciences



## *Research Graphics Clients include:*

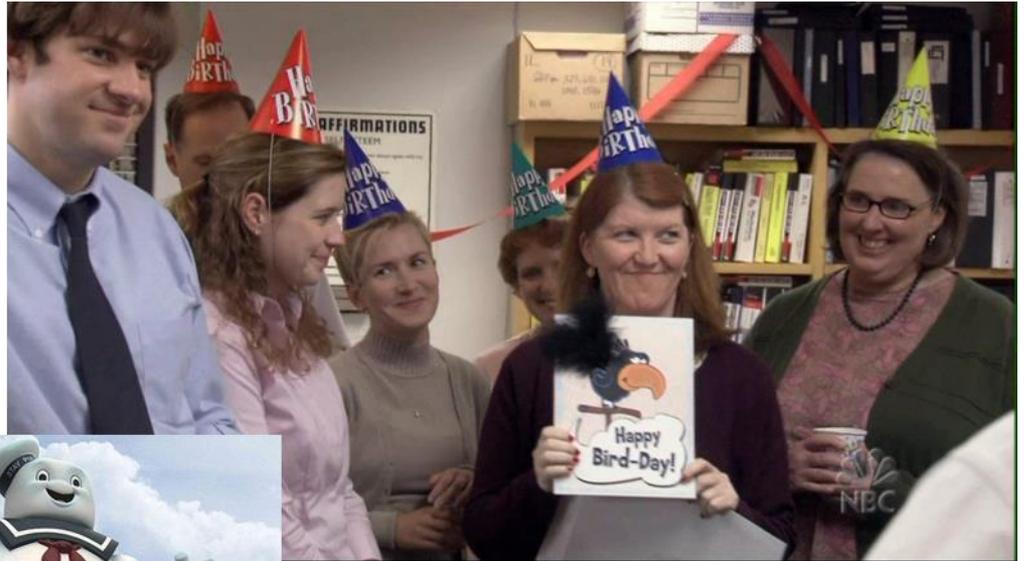
### • **Our Client List (partial):**

- UMBC College of Natural and Mathematical Sciences (all departments)
- UMBC College of Engineering and Information Technology (all departments)
- UMBC College of Arts, Humanities and Social Sciences (15 departments)
- UMBC Graduate School
- UMBC Office of the Vice President for Research
- UMBC Office of Institutional Advancement
- Institute of Marine and Environmental Technology
- Maryland Psychiatric Research Center
- University of Maryland School of Medicine
- University of Maryland Center for Environmental and Estuarine Studies
- American Society for Microbiology



## **WHAT RESEARCH GRAPHICS WILL NOT DO:**

- Birthday Parties
- Office Parties
- Weddings





## *Earth and Space Institute (ESI)*





**Earth and Space Institute (ESI): <https://esi.umbc.edu/>**

**UMBC**

A-Z Index | myUMBC | Events | Directory | Maps

Enter Search Terms

**UMBC ESI** EARTH AND SPACE INSTITUTE

HOME | ABOUT ESI | PEOPLE | CURRENT PROJECTS | GALLERY | CONTACT US

**HARP Polarimeter Specs**

- ISS orbit
- 60 angles for cloudbows @ 670nm
- 20 angles for aerosols @ 440, 550, 670, 870nm
- Nadir pixel resolution 400m
- Nadir super pixel < 4x4km
- 94 deg FOV X-track
- 113 deg FOV along track

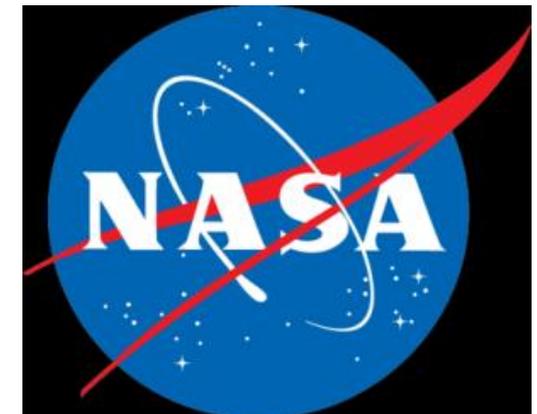
**HARP CubeSat Satellite**  
(Expected Launch: Late 2018/2019)

Repeat for all along track

**HARP Science**

**Imaging polarimeter**

**UMBC ESI** EARTH AND SPACE INSTITUTE



### Latest News

**August 29, 2018**

HARP CubeSat successfully completed open air communication testing at NASA Wallops Flight Facility, in preparation for final environmental test and launch integration.

**August 27, 2018**

HARP CubeSat performed final radiometric, polarimetric, and alignment calibration at NASA GSFC.

**August 20, 2018**

ESI welcomes Dr. Xiaoguang (Richard) Xu as a new member to support algorithm development and data analysis for the HARP and HARP-2 projects.

**August 8, 2018**

The ESI support of the HARP-2 project led to a successful Preliminary Design Review at GSFC.

**July 14, 2018**

The first Level 1B AirHARP datasets from the NASA LMOS and ACEPOL campaigns are live on the Langley DAAC archive.

# OUR UMBC

*PRIORITIES AND ACTIONS TO*  
**ADVANCE EXCELLENCE**  
UNIVERSITY RETREAT 2018





# ILSB: Planning and Implementation

OUR UMBC

PRIORITIES AND ACTIONS TO  
**ADVANCE EXCELLENCE**  
UNIVERSITY RETREAT 2018





## Context

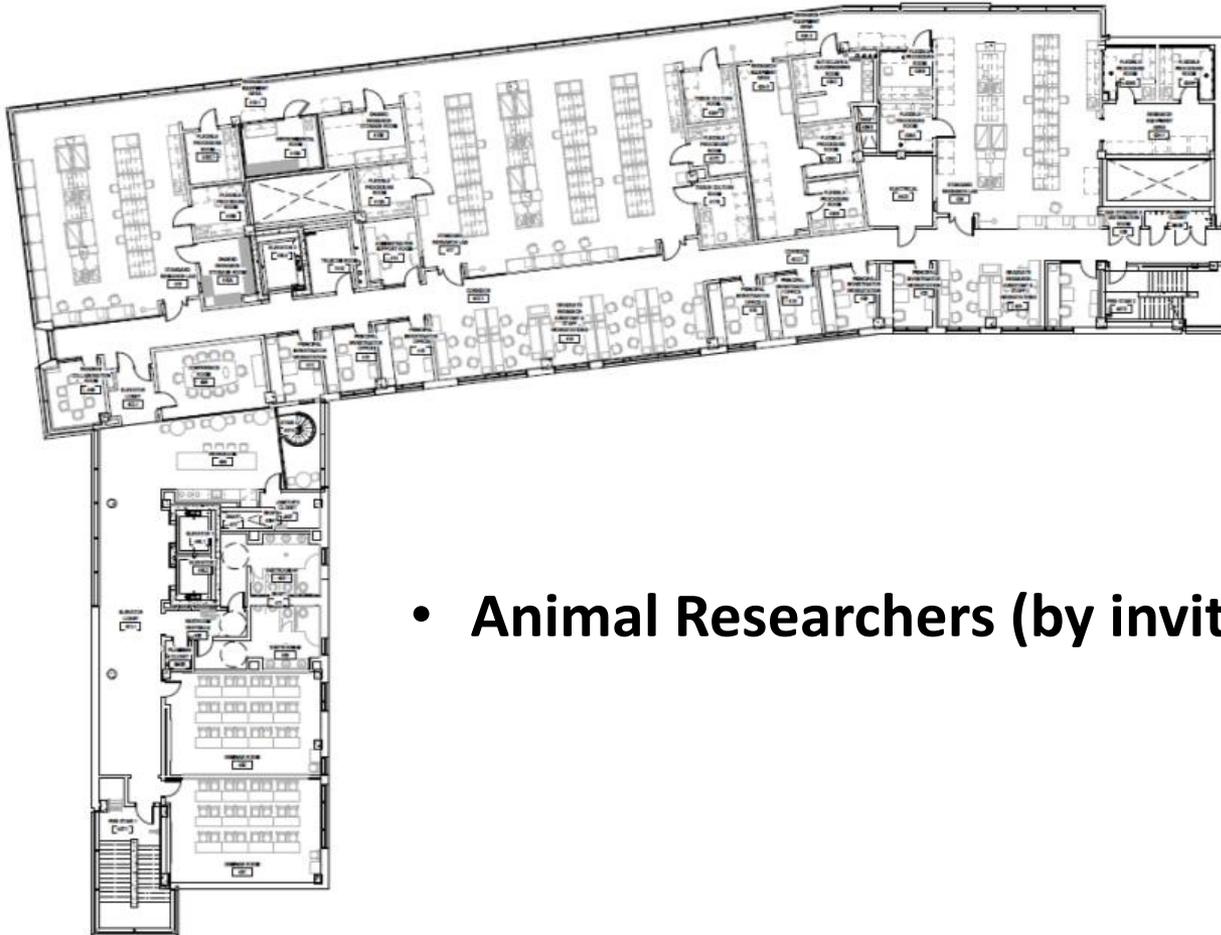
- **Past**
  - Concept
  - Construction
- **Present**
  - Equipment
  - Staffing
  - Budget
- **Future**
  - RFP
  - Space Allocation
  - Administration

UMBC's new 130,000 GSF Interdisciplinary Life Sciences Building (ILSB) will provide 70,000 NASF of flexible and adaptable research and education spaces to support on-going and future interdisciplinary life science programs.





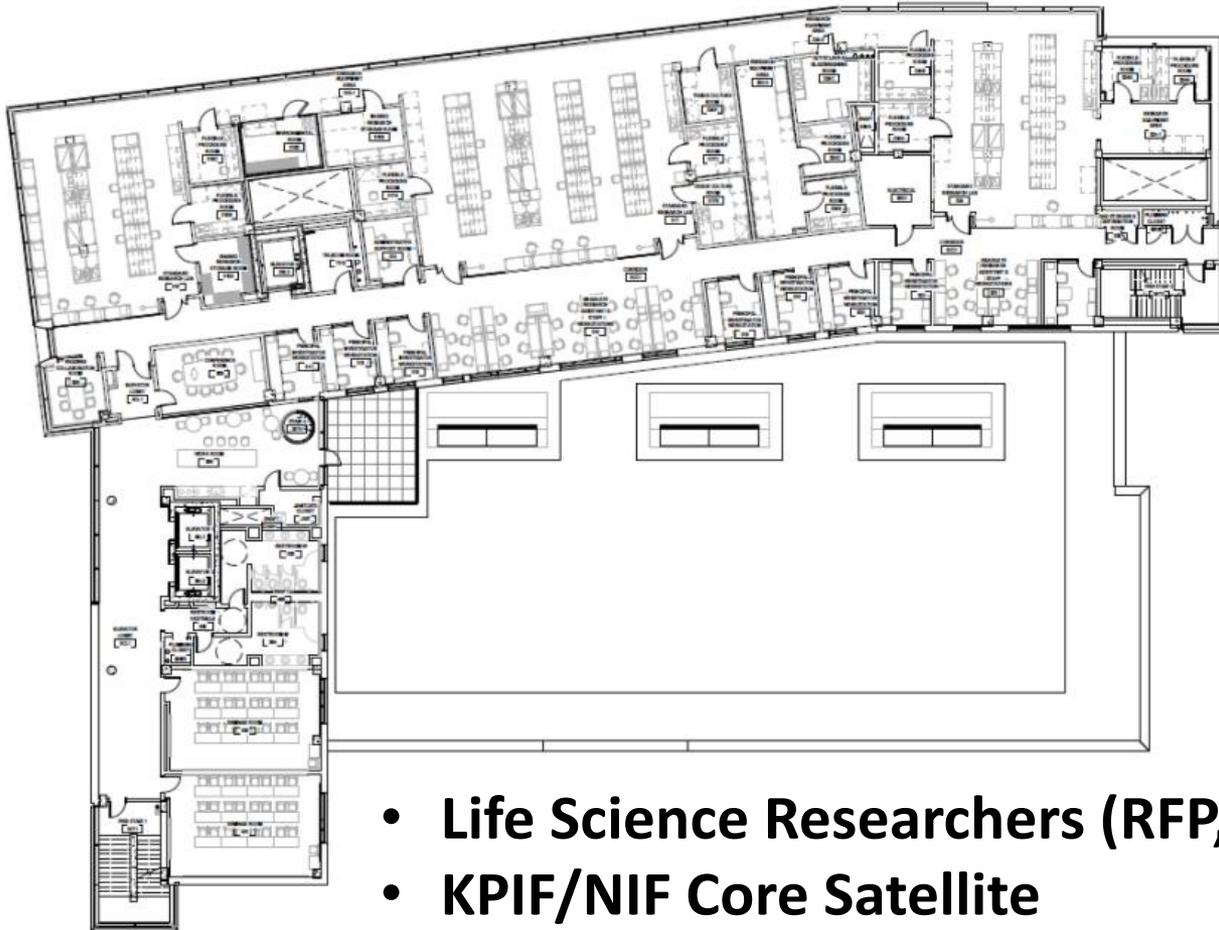
## *Fourth Floor*



- **Animal Researchers (by invitation)**



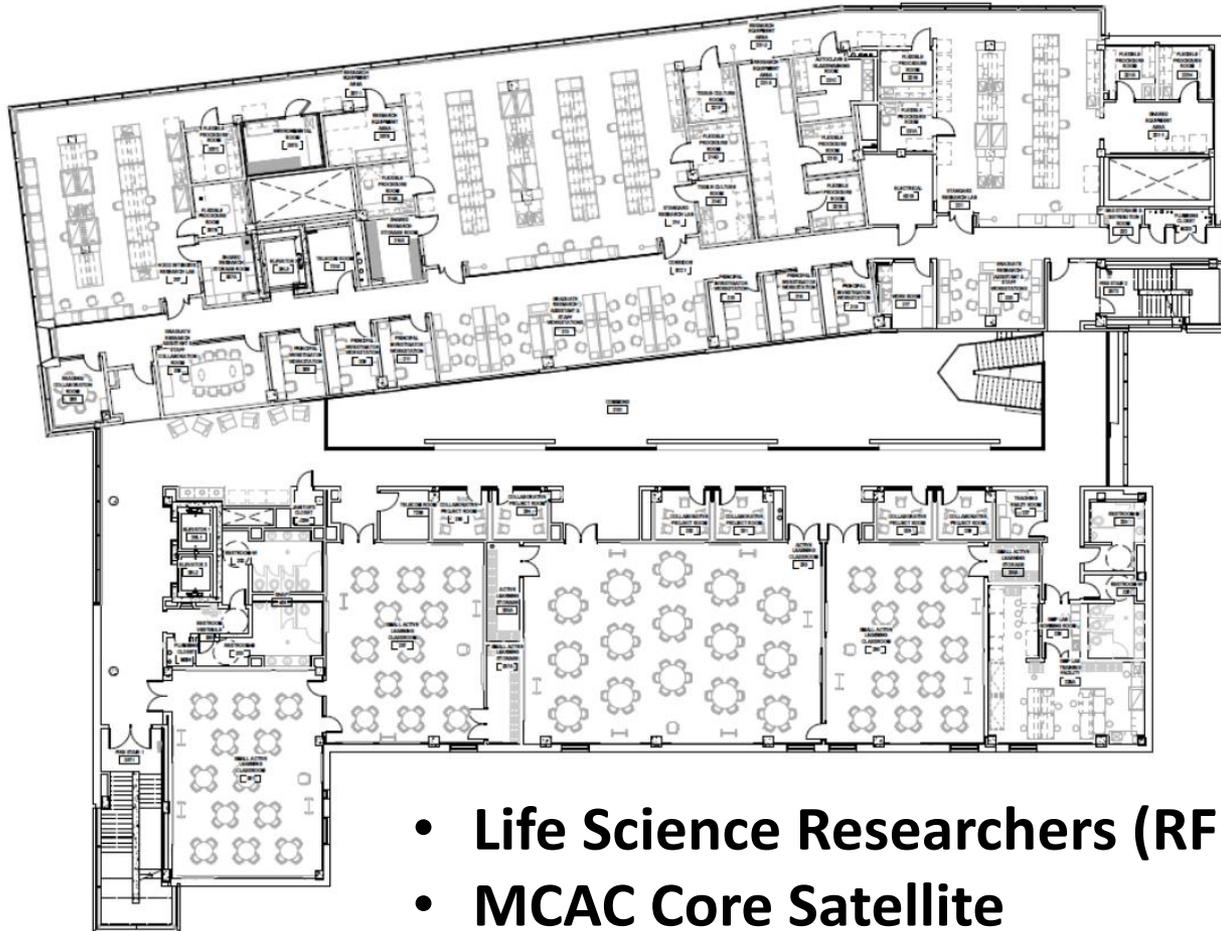
## *Third Floor*



- Life Science Researchers (RFP, visiting, swing space)
- KPIF/NIF Core Satellite



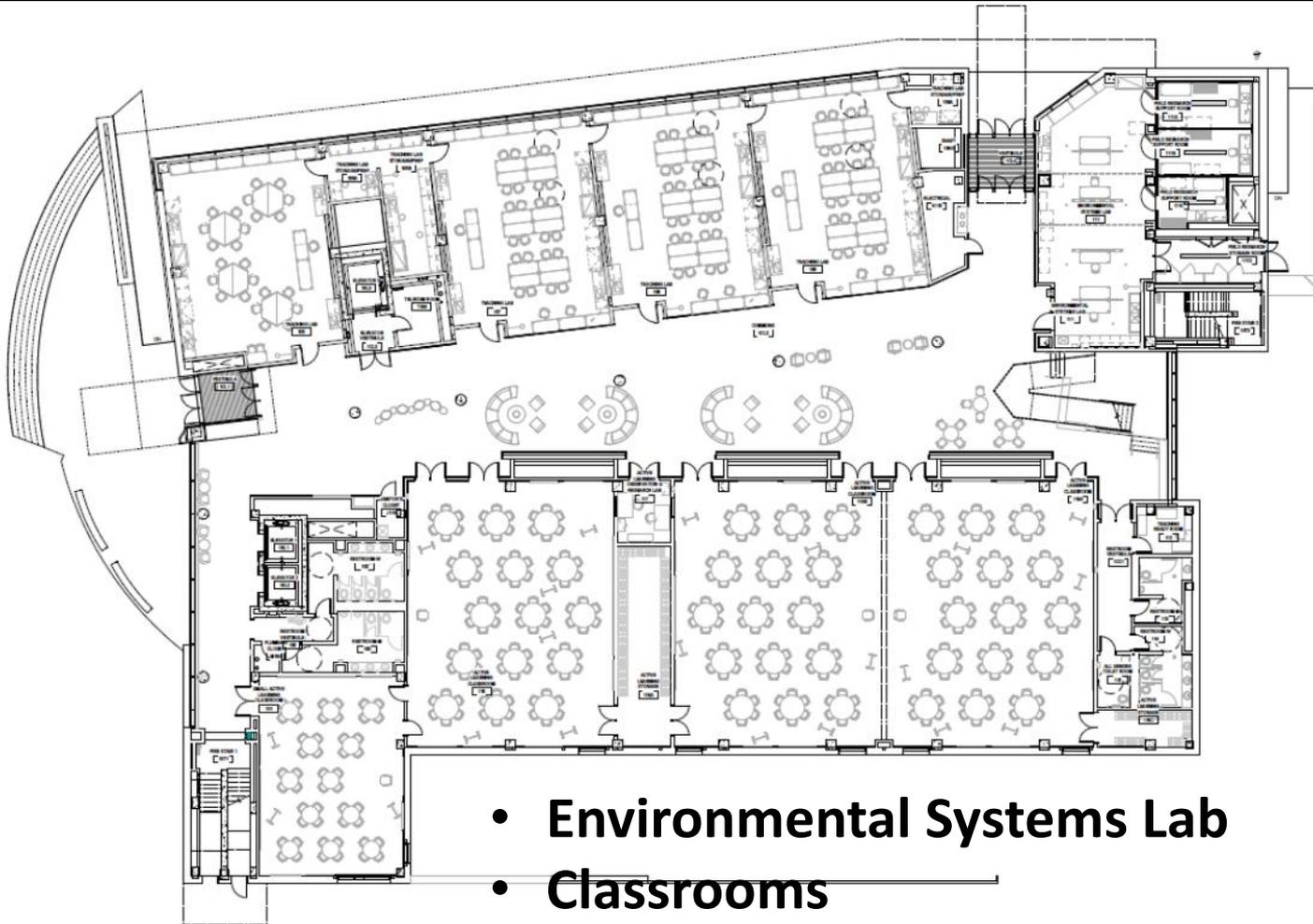
## *Second Floor*



- **Life Science Researchers (RFP)**
- **MCAC Core Satellite**
- **GMP, Classrooms, Project Rooms**



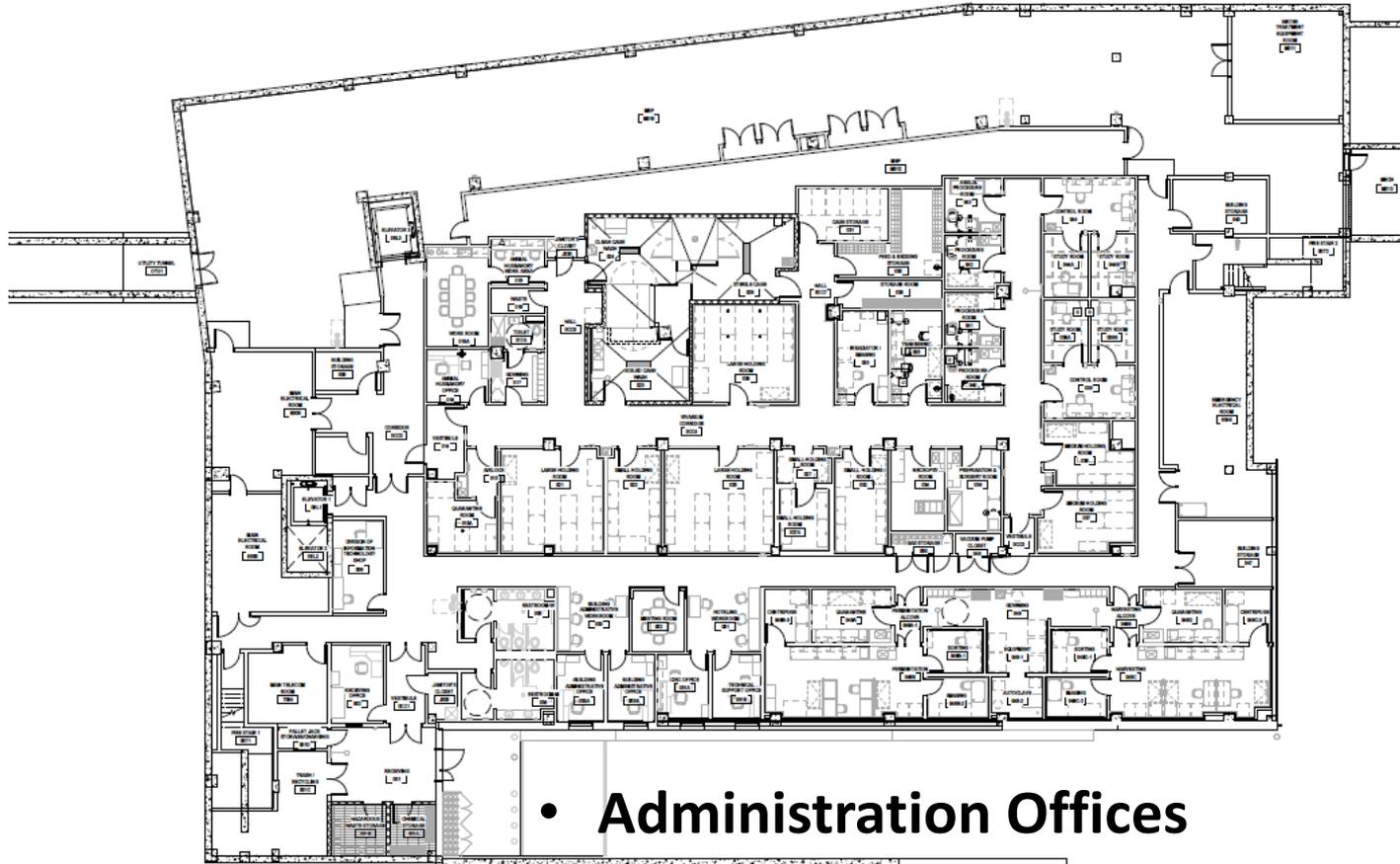
## *First Floor*



- **Environmental Systems Lab**
- **Classrooms**
- **Teaching Labs (by RFP)**



## *Lower Level*



- **Administration Offices**
- **Vivaium Technicians**
- **Cell Processing/Hoteling Space**



*The website is presently under construction!*

The screenshot shows the UMBC website header with the logo on the left and navigation links (A-Z Index, myUMBC, Events, Directory, Maps) and a search bar on the right. Below the header is a black banner with the text 'Interdisciplinary Life Sciences Building'. A yellow navigation bar contains links for HOME, ABOUT, ADMINISTRATION (with a dropdown arrow), TEACHING AND LEARNING, RESEARCH, RESOURCES, BUILDING UNITS, and ARTWORK. The main content area displays 'Page Not Found' in a large font, followed by the message 'Sorry, the page you're looking for cannot be found.' and a blue link for 'Home'.



### ILSB: CONVERGENT RESEARCH INITIATIVES (ILSB-CRI)

#### REQUEST FOR PROPOSALS

UMBC – College of Natural and Mathematical Sciences

Submission Date for Proposals: October 1, 2018

**Purpose:** Solicit proposals for Areas of Excellence from UMBC faculty to work as teams in areas of novel or existing research related to life sciences and biotechnology. This request supports UMBC's Strategic Plan in all goals under *Collective Impact in Research, Scholarship, and Creative Achievement*. The intent is to create and develop areas of excellence that will attract significant external support and enhance the reputation of UMBC.

**Background:** The Interdisciplinary Life Sciences Building (ILSB) is scheduled to be officially opened fall 2019. The ILSB is designed to support interdisciplinary research, active/applied learning, and STEM workforce development. A detailed description of the building and its design can be found at <https://fm.umbc.edu/projects/ilsb/about-the-project/>. The ILSB will provide many new opportunities for integrating research, teaching, and learning across departments and colleges in support of our mission of student success and expanding research in areas of strategic importance.

Through a convergence of skills and disciplines, societal problems of critical significance will be addressed by bringing together researchers in the life sciences from across the campus to work together in a unified manner. Collaboration areas for formal and informal interchanges and meetings are found throughout the ILSB – with the goal of cross-fertilization of ideas as dedicated teams pursue novel and promising leads in the pursuit of life science research, advance the State's biotechnology industry, and increase the number of STEM graduates.

**Eligibility:** Initiative Leaders must hold a tenured appointment at UMBC. Center personnel and other individuals both internal and external to UMBC are encouraged to participate in collaboration with tenured, academic faculty.

**Support:** Proposals can be for requesting research space, offices, or access to shared facilities in the ILSB and may include justification for complementary new faculty lines to strengthen the proposed research initiative.

**Review:** Each application must include letters of support from all academic department chairs where participating and potentially requested new faculty reside. The Review Committee is comprised of the College Deans (CAHSS, CNMS, and COEIT) and the Vice President for Research.

**Criteria:** Proposals will be reviewed for:

- Qualifications of Initiative Leader and associated faculty to implement the proposed initiative
- Quality of proposed collaboration and its significance to the vision of the ILSB
- Description of a life sciences-focused vision with multiple disciplinary partners
- Strategic alignment with complementary efforts at UMB or other institutions, if any
- Likelihood of sustainability, future funding, and collective impact
- Justification for space and resources specific to the ILSB

**How to apply:** Complete the attached application form (only one proposal per initiative will be considered – faculty can participate on up to two proposals) and submit the original application in electronic form (PDF) to the Dean of CNMS ([lacourse@umbc.edu](mailto:lacourse@umbc.edu)).

**Deadline:** Rolling Submission: October 15, 2018 (Start)      Notification: December 15, 2018 (Earliest)  
**Contact:** Bill LaCourse, [lacourse@umbc.edu](mailto:lacourse@umbc.edu) or ext. 52105

### ILSB: CONVERGENT RESEARCH INITIATIVES (ILSB-CRI) APPLICATION FORM

INITIATIVE LEADER (*one only*) \_\_\_\_\_

DEPARTMENT \_\_\_\_\_ COLLEGE \_\_\_\_\_

CAMPUS MAILING ADDRESS \_\_\_\_\_  
(Office) (Phone #) (email address)

COLLABORATORS (Additional names should be included in the proposal.)

NAME \_\_\_\_\_ DEPT/CAMPUS \_\_\_\_\_ EMAIL \_\_\_\_\_

NAME \_\_\_\_\_ DEPT/CAMPUS \_\_\_\_\_ EMAIL \_\_\_\_\_

NAME \_\_\_\_\_ DEPT/CAMPUS \_\_\_\_\_ EMAIL \_\_\_\_\_

TITLE OF RESEARCH INITIATIVE \_\_\_\_\_

SPACE REQUESTED \_\_\_\_\_

JUSTIFICATION FOR ADDITIONAL FACULTY LINES \_\_\_\_\_

OTHER SUPPORT \$ \_\_\_\_\_ EQUIPMENT \_\_\_\_\_ PERSONNEL \_\_\_\_\_

SOURCES OF EXTERNAL SUPPORT / 5 YEARS \_\_\_\_\_

#### CONDITIONS OF AWARD:

The Initiative Leader affirms that if receiving an award:

1. Awardee(s) will relocate to the ILSB space as determined by the ILSB Responsible Agent.
2. Awardee(s) will adhere to all required hazardous procedures, animal and human subject approvals, conflict of interest, and/or intellectual property submissions in accordance with university policy.
3. Awardee(s) will seek external funding to support the proposed initiative.
4. Awardee(s) will submit an annual report describing status and progress to the Dean of CNMS for UMBC review.
5. Awardee(s) understands that space assignment is subject to productivity assessment on a periodic basis.
6. Awardee(s) understands that the amount and type of space available to the initiative will depend on continued progress and productivity.

I (the initiative leader) have read and accept the conditions under which this grant will be awarded:

Initiative Leader Signature: \_\_\_\_\_ Date \_\_\_\_\_

Department Chair's Signature or Departmental Faculty Committee Chair's Signature: \_\_\_\_\_

\_\_\_\_\_ Date \_\_\_\_\_

Dean's Signature: \_\_\_\_\_

\_\_\_\_\_ Date \_\_\_\_\_



ILSB: CONVERGENT RESEARCH INITIATIVES (ILSB-CRI)

PROPOSAL INSTRUCTIONS

The proposal must include:

- I. **VISION STATEMENT (up to ¼ page).** Provide a vision statement that clearly defines the ultimate outcome of the initiative.
- II. **SUMMARY (up to ½ page).** The summary should be written in non-technical language that clearly highlights the need for space in the ILSB and for other key resources required to successfully launch the initiative. Keep in mind that the summary may be used as a source for promotion and publicity of the initiative.
- III. **PROPOSAL BODY (limited to five pages not including references).** Figures or tables may be submitted in an Appendix. Font should be at least 11 points and margins should be at least one inch on each side. Include the following:
  - a. clear and concise statement of the specific aims or goals of the initiative
  - b. significance of the proposed initiative to the research and education mission of UMBC
  - c. alignment of the initiative with the strategic plan of the university
  - d. strategic alignment with complementary efforts at UMB or other institutions, if any
  - e. detailed description of the initiative
  - f. justification for need of ILSB space,
    - i. How is current space inadequate for the identified need? Or what is the advantage of ILSB space?
    - ii. How does the initiative fit with the mission of the unit, school, college, division, and university?
    - iii. What are the benefits (financial, programmatic, etc.) that will occur as a result of having the initiative selected? If this request is denied, what will be the consequences?
  - g. justification for and expected expertise of additional faculty line(s) to complement the existing team
  - h. administration and oversight of the team and the initiative
  - i. evaluation of potential for sustainability, external support, or expanded scholarly activity
  - j. needs and support beyond space that would facilitate the success of your initiative
  - k. specifics and timeline for expected external sources of funding and support
- IV. **LITERATURE CITED (no limit)**
- V. **LETTERS of SUPPORT (from each department chair of each initiative participant)**
- VI. **BIOGRAPHICAL SKETCH.** Please attach an NSF or NIH biographical sketch of each participant in the initiative.

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TERMS AND CONDITIONS

- a. The Awardee must submit an annual progress report for at least the next 5 years addressing and identifying outcomes or scholarly accomplishments associated with the ILSB-CRI support (e.g., publications, exhibits, conferences, research funding proposals and awards, etc.). The progress report should contain quantitative information as to the impact of this award.
- b. The Awardee is expected to submit multiple proposals to external agencies or sponsors during the funding year in order to seek a significant increase in funding over current levels (i.e., a first grant, a new direction, or a significant increase over current work) to support the team research initiative.



## Timeline

ITEM	COMMENT	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
Website		•															
RFP Release			•														
TownHall - RFP			•														
TownHall - Teaching	Combine Sections		•														
TownHall - General				•													
Workshop - RFP				•													
Workshop - Teaching				•													
RFP Due					•												
RFP Select					•	•											
Active Learning - Teaching						•	•	•	•								
Active Learning - ILSB Tech										•	•	•	•				
Faculty Move In										•	•	•	•	•	•	•	•
Core Facility																	
Vivarium																	
Env. System Lab																	
GMP																	
Cell Process																	
Teaching Labs																	

*“Similar RFP process for ILSB Teaching Laboratories.”*



ILSB Personnel/Research Equipment Budget						
Category	Description	Funding			Year Funded	Justification
		Base	One-time	Source		
<i>Personnel</i> <sup>(1)</sup>	Building Manager	\$ 100,500	\$ -	new money	Year 1	tie need to Strategic Plan & management of bldg (form of shared service)
	Manager, Chemical Stores	\$ -	\$ -	extant; CNMS shared services Procurement staff		
	Accounting Associate	\$ -	\$ -	extant; CNMS shared services Procurement staff		
	Lab Animal Technician 1	\$ 53,600	\$ -	1/3 base CNMS	Year 1	
	Lab Animal Technician 2	\$ 53,600	\$ -	1/3 base CNMS	Year 1	
	Lab Animal Technician 3	\$ 53,600	\$ -	1/3 base CNMS	Year 1	
	Lab Animal Technician 4 (IACUC recommendation)	\$ 53,600	\$ -	new money	Year 2	tie need to Strategic Plan, best practices, or other need identified after Year 1
	Core Facility Technician 1 (MCAC)	\$ 60,300	\$ -	new money	Year 1	tie need to Strategic Plan
	Core Facility Technician 2 (KPIF, NIF)	\$ 60,300	\$ -	new money	Year 1	tie need to Strategic Plan
	Cell Processing Technician/Manager	\$ 100,500	\$ -	new money	TBD/Year X	
	<b>Total Personnel</b>	<b>\$ 536,000</b>				
<i>Equipment</i> <sup>(2)</sup>	Year 1		\$ 5,913,954	capital budget - State of MD		
	Year 2		\$ 2,274,171	capital budget - State of MD		
		<b>Total capital budget</b>		<b>\$ 8,188,125</b>		
	Year 1		\$ 373,057	UMBC		
	Year 2		\$ 61,658	UMBC		
		<b>Total UMBC</b>		<b>\$ 434,715</b>		
	Core service agreements	\$ 200,000		UMBC	on-going expense	
<i>Animal rederivation</i>	Option 1 - 3rd party <sup>(3)</sup>		\$ 375,000	UMBC	Year 1, Year 2	
	Option 2 - UMBC contingent II <sup>(4)</sup>		\$ 123,800	UMBC	Year 1, Year 2	



**ADDITIONAL ILSB RESEARCH EQUIPMENT COSTS TO BE CONSIDERED**

Category	Description	Funding		
		Base	One-time	Source
Cell processing	CP - equipment maintenance			
Common areas	chairs			
Environmental System	ESL - equipment maintenance			
GMP	GMP - equipment maintenance			
Research 2	R2 - equipment maintenance			
Research 3	R3 - equipment maintenance			
Research 4	R4 - equipment maintenance			
Teaching	TLC - equipment maintenance			
Tissue culture	TC - equipment maintenance			
Vivarium	V - equipment maintenance			
Furniture	F - maintenance			
AV	AV - equipment maintenance			
IT	IT - equipment maintenance			
BLDG	hoods, water, compressors, gases			



## *What's Cooking?*

- iCARE: Proposal being developed for field ecology – center on the Environmental System Laboratory
- Faculty from Physics, Biological Sciences, and Mathematics are writing a proposal.
- A faculty member wants to study the formation of scientific teams or convergent groups.
- A team of faculty developing true interdisciplinary life science laboratory.
- Autoimage tables will support premed education
- Interest in having a Bioethics Office in the ILSB
- Next generation mass spectrometry equipment for proteomics
- Next generation fluorescence microscopy for imaging
- No nuclear radiation source/in vivo animal imaging system

# OUR UMBC

*PRIORITIES AND ACTIONS TO*  
**ADVANCE EXCELLENCE**  
UNIVERSITY RETREAT 2018





# Breakout Groups

## Format

- Break into groups – *“as you are or move around”*
- Select a scribe – *“record question # and page #”*
- Discuss questions – *“your input is valued”*
- Summarize findings – *“write on poster sheets”*
- Report to others – *“most important point”*



# Group Discussions





**– Question #1 –**

**What are the strategic research infrastructure needs of UMBC?**



# Feedback Examples – Q1

## Strategic Research Infrastructure Needs

- Enhance pre-award support
- Hire grant writers on staff
  
- Provide bridge funding between grants
- Establish mid-career Faculty – “Start-up” funds
  
- Provide outdoor space for environmental research
- Assure reliable facilities – power, A/C, maintenance
  
- Enhance campus communication about existing research infrastructure



**– Question #2 –**

**What is the best approach to promote team research/initiatives?**



# Feedback Examples – Q2

## Best Approach to Promote Team Research

- Align incentives and rewards with teamwork
- Remove P&T barriers that may prevent team building
  
- Bring people to the table across fields/units/disciplines
- Organize around a common goal
  
- Support cluster hires
- Provide seed money to establish team research
  
- Ask yourself: “What will I get out of the effort?”



**– Question #3 –**

**What opportunities  
does the ILSB offer?**



# Feedback Examples – Q3

## What Opportunities does the ILSB offer?

- Bring students and faculty from different departments together
- Remove walls between social sciences and life sciences
- Support Collaboration between life and data scientists
- Opportunity to cluster
  
- “Interdisciplinary” goes beyond life sciences
  - The building name should not limit who can be involved
  
- Meeting rooms – who will control them?
- Clarify policies on “hoteling space” in ILSB and for other spaces
  
- Recording capabilities in active learning classes for pedagogical research



**THANK YOU!!!**

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