

DEAN'S CELEBRATING
EXCELLENCE
IN RESEARCH 

**EXCELLENCE
IN RESEARCH
CELEBRATION**

OCTOBER 31 - NOVEMBER 2, 2022

The State of Research at the Larner College of Medicine and the Dean's Excellence in Research Awards Ceremony

Presented By Richard Galbraith, M.D., Ph.D.
Interim Senior Associate Dean for Research

TUESDAY, November 2, 2022
4:30 P.M.



The University of Vermont
LARNER COLLEGE OF MEDICINE

Firestone Building



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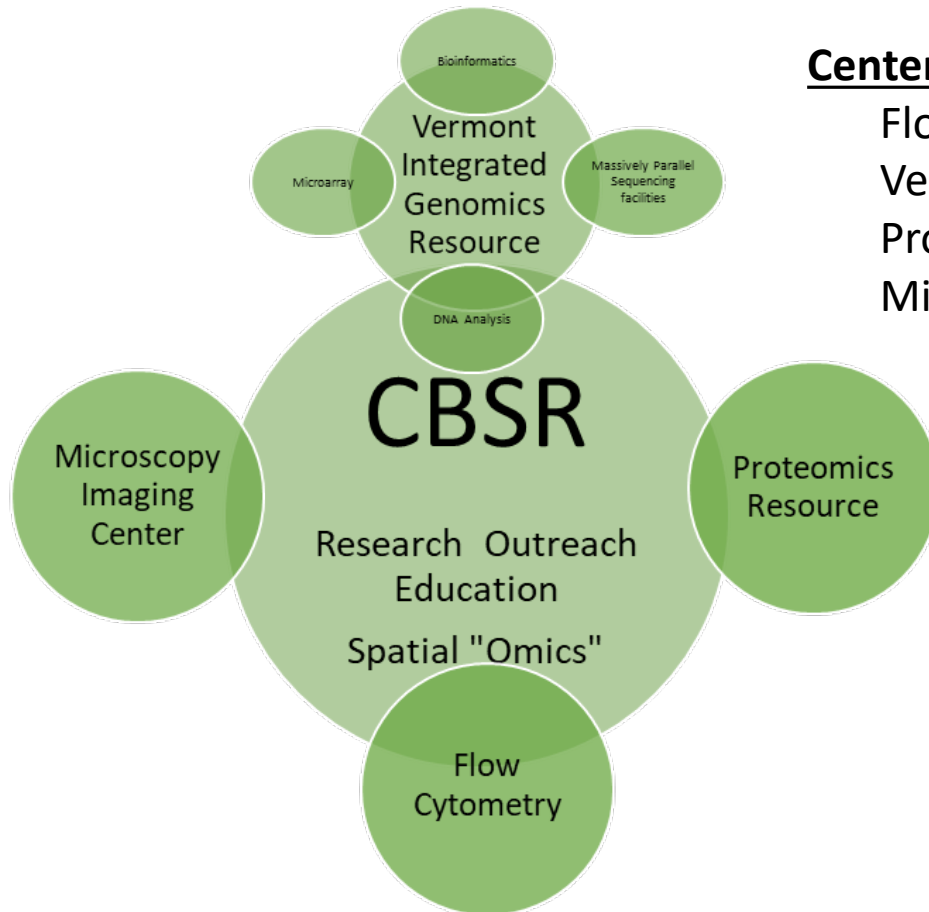


- 46,000 NSF of modular research space to support dynamic team-based science.
- Opened October 24, 2022, full occupancy by February 2023.
- Level 1 will support the Center of Biomedical Shared Resources under the direction of Douglas Taatjes, Ph.D. It includes the Microscopy Imaging Center, Proteomics, Flow Cytometry, and the Vermont Integrated Genomics Resource.
- Level 2 will support the Vermont Lung Center research teams under the direction of Anne Dixon, M.A., B.M., B.Ch.
- Level 3 will support the UVM Cancer Center researchers under the direction of Randall Holcombe, M.D., M.B.A.
- Level 4 will support the Center for Cardiovascular and Brain Health under the direction of Mark Nelson, Ph.D. and Mary Cushman, M.D., M.Sc.



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UVM LCOM Center for Biomedical Shared Resources (CBSR)



Center for Biomedical Shared Resources

Flow Cytometry & Cell Sorting
Vermont Integrated Genomics Resource
Proteomics Resource
Microscopy Imaging Center

Doug Taatjes

Roxana del Rio-Guerra
Julie Dragon
Ying Wai Lam
Doug Taatjes



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Center for Biomedical Shared Resources

New Technologies

Spatial-Omics options at UVM

Confocal spectral imaging with tile scan & HALO analysis



PhenoCycler - Fusion
CODEX



10X Visium
10X GENOMICS

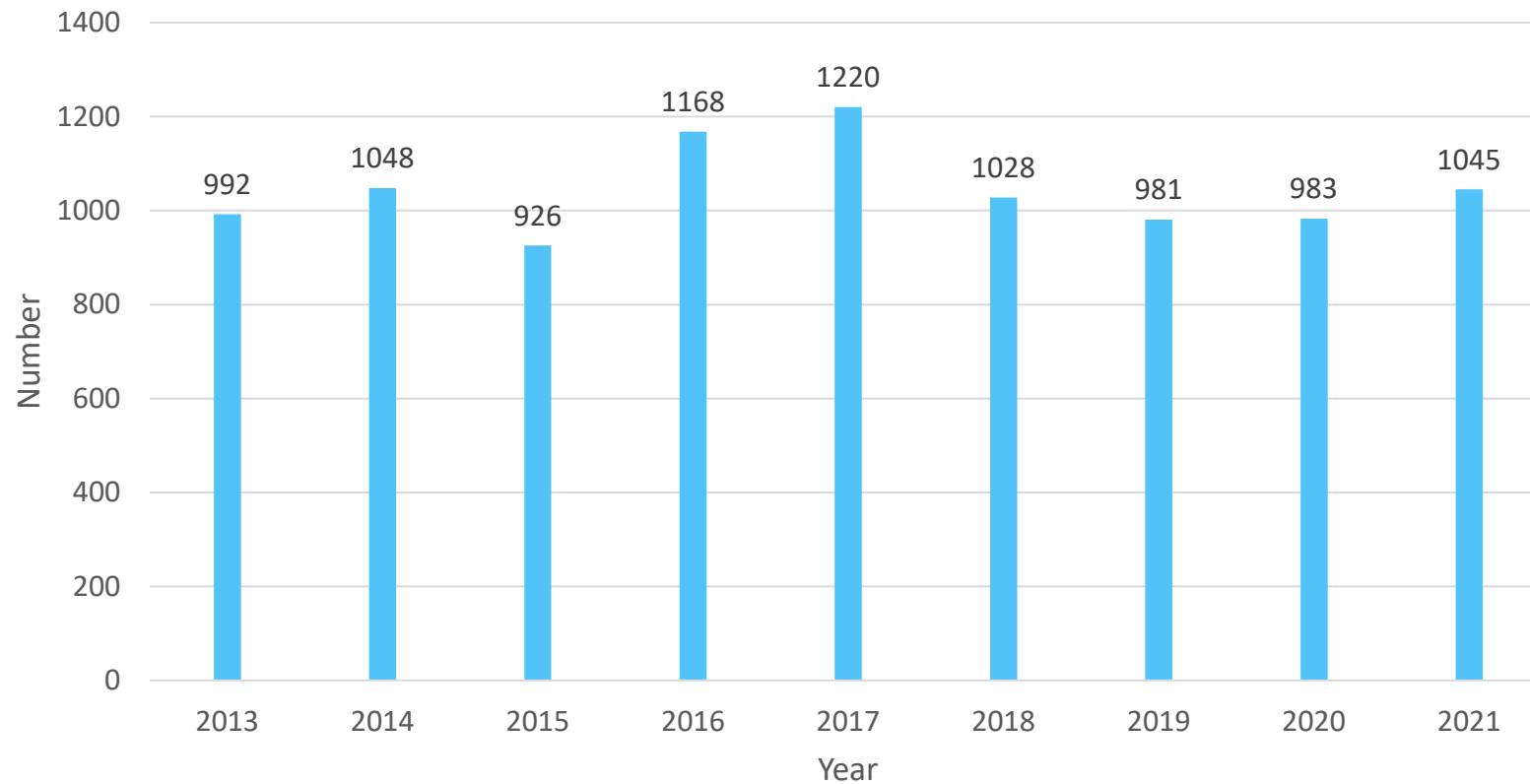
NanoString - GeoMx
nanoString TECHNOLOGIES

Spatial-Omics allows for the integration of -omics and imaging data to identify the spatial localization of molecular subpopulations within the cell.



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Peer-reviewed Publications



Larner College of Medicine researchers continued to be highly successful, publishing over 1000 peer-reviewed papers in highly respected journals in 2021.



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Extramural Funding

COLLEGE	TOTAL FUNDING	TOTAL AWARDS
Larner College of Medicine (LCOM)	\$108M	400
College of Agriculture and Life Sciences (CALs)	\$49.6M	140
College of Engineering and Mathematical Sciences (CEMS)	\$16.3M	74
Rubenstein School of Environment and Natural Resources (RSENR)	\$11.9M	66
Office of the Vice President for Research (OVPR)	\$9.4M	8
College of Education and Social Services (CESS)	\$8.6M	22
College of Arts and Sciences (CAS)	\$7.8M	62
College of Nursing and Health Sciences (CNHS)	\$1.4M	15
Other	\$0.8M	11
<ul style="list-style-type: none"> Grossman School of Business Center for Health and Wellbeing Center for Academic Success Fleming Museum Graduate College Lane Series 		

The Larner College of Medicine successfully competed for 400 extramural awards in 2022. The \$108M in extramural funding accounted for more than half of the total University of Vermont in 2022.



Center of Biomedical Research Excellence (COBRE) and Clinical Translational Research (CTR) Grants

I. Vermont Center on Behavior and Health

- Stephen Higgins, PI

II. Translational Global Infectious Disease Research

- Beth Kirkpatrick, PI

III. Vermont Center for Cardiovascular and Brain Health

- Mark Nelson, Mary Cushman, PIs

IV. Northern New England Clinical and Translational Research Network

- Gary Stein, PI



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Vermont Center on Behavior and Health: Accomplishments

- I. Stephen Higgins, Ph.D., Director of the Vermont Center on Behavior and Health was awarded both the 2022 Society of the Advancement of Behavior Analysis Award for Scientific Translation and the 2022 College on Problems of Drug Dependence Nathan B. Eddy Memorial Award, for his career achievements in the field.
- II. Alexandra Potter, Ph.D., and Hugh Garavan, Ph.D., received a \$5.5 million, five-year grant to participate in the Phase II portion of the Healthy Brain and Child Development (HBCD) Study
- III. Richard Rawson, Ph.D., a leader in the VCBH and the Vermont Center for Rural Addiction, was awarded the American Society of Addiction Medicine Presidential Award
- IV. Sherrie Khadanga, M.D. received the inaugural Wohlgemuth Fellowship Award
- V. <http://www.med.uvm.edu/behaviorandhealth/home>



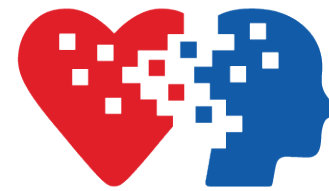
Translational Global Infectious Diseases Research Center Accomplishments



- I. Recruited new junior faculty arriving in 2022-23: Dr. John Openshaw (LCOM-MED-ID), Dr. David Bernstein (CEMS-Biomed Engineering).**
- II. Submitted our phase 2 renewal, to start August 2023. New research project leaders will be Drs. Dev Majumdar (Surgery) and Sarah Nowak (Pathology). Phase 2 plans include transdisciplinary TGIR grant submissions.**
- III. Supported a clinician-focused pilot program.**
 - Awarded to Chris Brady, MD of Ophthalmology: Diagnosis of Trachoma using AI.
 - Delia Horn, M.D. of Pediatrics: Antimicrobial resistance in an Ethiopian NICU.
- IV. Continued our academic programs including the clinician-researcher training program (CRTP) in clinical research/clinical trials, NIH grant sessions, and our new visiting international scholar program.**
- V. <https://www.med.uvm.edu/tgircobre/home>**



Accomplishments



VERMONT CENTER FOR
CARDIOVASCULAR
& BRAIN HEALTH

 @UVMHeartBrain

- **Four Project Directors:** 25 manuscripts over 2y
- **Pipeline Investigators:** 30 people from 5 UVM Colleges
- **Highlights**
 - Annual Symposium in June
 - Monthly Conference and Journal Club
 - Cores
 - **Study Design and Molecular Epidemiology**
Neil Zakai and Peter Durda
 - **Customized Physiology and Imaging**
Todd Clason

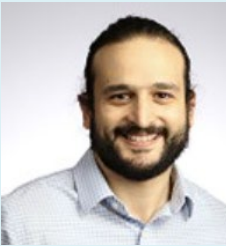
Website: www.med.uvm.edu/heartbrainhealth

2022 Pilot Grants: \$200K each over 2yrs



Matthew Caporizzo PhD: Mimicking Exercise Intolerance in Human Cardiac Slice Preparations

Mansour Gergi MD: Evaluating Cardiovascular Care Delivery in Cancer Patients and Its Complications



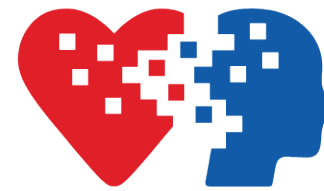
Watch for RFA for the upcoming Pilot in November

Amreen Mughal
K99/R00 application

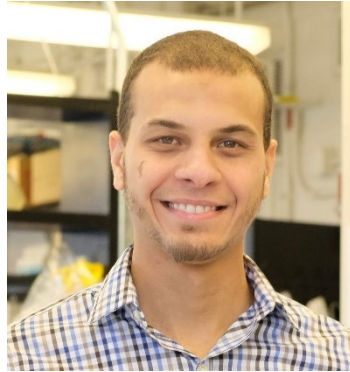
Osama Harraz
5th percentile on R21 application

3 of 4 project directors submitted grants defining 'graduation'

Project Directors



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& BRAIN HEALTH



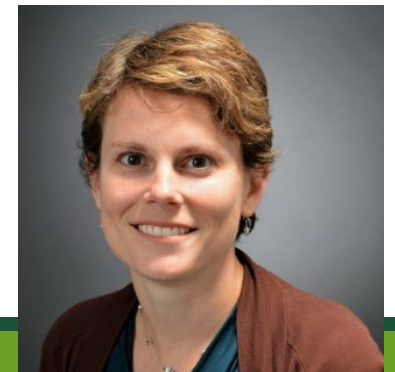
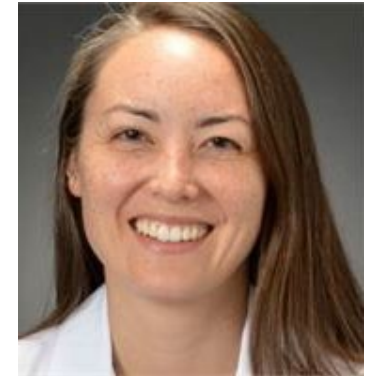
Osama Harraz, PhD, Assistant Professor
Department of Pharmacology

Katharine Cheung, MD, PhD, Assistant Professor
Department of Medicine



Masayo Koide, PhD, Assistant Professor
Department of Pharmacology

Denise Peters, PT, DPT, PhD, Assistant Professor
Dept of Rehabilitation and Movement Science



LCOM

CNHS

NNE-CTR Accomplishments

<http://www.med.uvm.edu/nne-ctr/home>

Funded Grants

- 5-year renewal for the Northern New England Clinical and Translational Research Network (NIGMS)
- Pandemic-related Food Insecurity
- Cancer-compromised Epigenetic Control (NCI Program Project)

Notable Pilot Projects

Cancer

- Noncoding RNA breast cancer biomarkers and therapeutic targets
- Harnessing the electronic health record in primary care for liver cancer surveillance
- Cardio-vascular surveillance of cancer patients undergoing immunotherapy
- Shared decision making with PSA elevation
- Thrombosis risk assessment in rural cancer clinics
- Non-steroidal hormone receptor-mediated breast cancer therapy
- Adolescent HPV vaccination hesitancy

Cardio-Vascular Disease

- Cardio-vascular disease disparities in rural populations
- Rural and urban variation in cardiac arrest care and outcomes

Covid Pandemic Related

- Impact of social distancing on wellbeing of older adults
- Communication of uncertainty about the Covid-19 pandemic
- Covid testing hesitancy in rural New England communities
- Covid vaccination resistance

Critical Care

- Leveraging telemedicine to reduce disparities in initiating therapeutic hypothermia
- Palliative care teleconsultation
- Effectiveness of a community health worker-delivered intervention to slow progression of functional decline among rural older adults
- Bedside electroencephalogram to assess severe neonatal abstinence syndrome
- Noxious electrical stimulation to treat pain
- Self-reported cognitive decline in rural versus urban-suburban older adults
- Home monitoring of lung function and symptoms in COPD patients

Addiction

- Mechanisms of opioid-induced bone loss
- Effect of buprenorphine on the epigenome throughout the lifespan

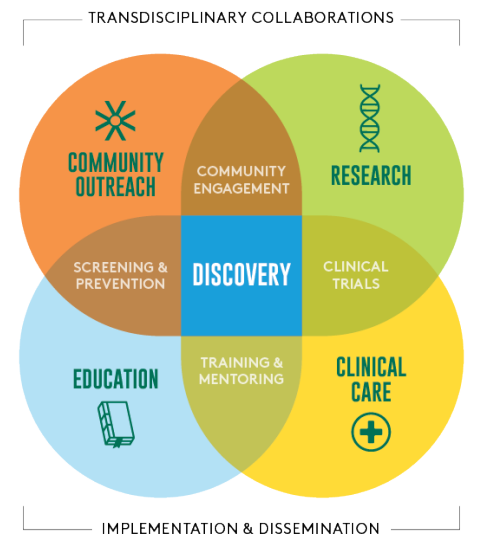


Vermont Cancer Center Accomplishments

<https://www.med.uvm.edu/uvmcancercenter/center-home>

- Randall F. Holcombe, M.D., M.B.A., recruited as UVM Cancer Center Director and Hematology-Oncology Division Chief, J. Walter Juckett Chair in Cancer Research
- Secured two grants from the Juckett Foundation totaling \$5 million over 5 years
- Assisting with recruitment of 17 faculty positions in Clinical (6 completed, 2 ongoing) and Fundamental (9 ongoing, 4 are cross-college collaborations) Research.
- Created a new career development program for clinician investigators - Alissa Thomas, M.D. and Kara Landry, M.D. named inaugural Juckett Scholars
- Established a program in Community Outreach and Engagement including a reformatted Community Advisory Board, a state-wide lung cancer screening initiative in collaboration with UVMCMC, DOH and Dartmouth, and an incorporation of the Vermonters Taking Action Against Cancer (VTAAC) program
- Enhanced Cancer Research Training and Education including a Women's Health & Cancer Conference, high school program for careers in biomedical science, and a Cancer Summer Research program

THE
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CANCER CENTER



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Vermont Lung Center Accomplishments

I. Major Awards

- David Kaminsky: American Thoracic Society Presidential Citation
- Jason Bates: American Thoracic Society Robert Crapo Achievement Award in Pulmonary Diagnostics
- Anne Dixon: University Scholar

II. Major Funding Sources

- Basic and Translational: T32 training grant, multiple NIH and DOD grants, industry funding
- Clinical Research: American Lung Association Airways Clinical Research centers, CF therapeutic development network, PHARMA clinical trials in ILD, Asthma, COPD

III. Publications

- Over 80 papers
- One book and multiple book chapters

IV. <http://www.med.uvm.edu/vermontlung/home>



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Graduate Student and Postdoc Research

I. Four NIH T32 and one Dept. of Education Training Grants

- Training in Complex Systems and Data Science Approaches Applied to the Neurobiology of Drug Use – PI: Hugh Garavan, Ph.D.
- Training in Behavioral Pharmacology of Drug Abuse – PI: Stephen Higgins, Ph.D.
- Vermont Immunology / Infectious Diseases Training Grant – PI: Gary Ward, Ph.D.
- Multidisciplinary Training in Lung Biology – PI: Matt Poynter, Ph.D.
- CMB-Graduate Assistance in Areas of National Need – PI: Matt Poynter, Ph.D. ***NEW***

II. 92 students from the CMB, Neuroscience, and Biomechanical Engineering Ph.D. programs and 34 postdocs conducting research in Larner labs

III. Graduate students and postdocs contributed to >100 peer-reviewed papers.



Medical Student Research

- I. **Renee Stapleton, M.D., Ph.D., Director Medical Student Research**
- II. Summer research fellowship programs between 1st and 2nd years - set new record this past year with 49 funded participants.
- III. Vermont Cancer Center also funds summer research opportunities.
- IV. Students are also engaged in research projects in Public Health
- V. We are also offering an internally funded research gap year fellowship between years 3 and 4
- VI. Focused on increasing awareness of opportunities



Research Support – Biomedical Statistics

I. Peter Callas, Ph.D., Core Director

- Fang-Fang Chen, Research Associate Professor
- Pamela Vacek, Research Associate Professor
- Mike DeSarno, Research Biostatistician
- Derek Devine, Research Biostatistician
- Jonathan Emery, Research Biostatistician
- Joan Skelly, Research Biostatistician
- Andrew Sparks, Research Biostatistician
- Jessica Lalime, Administrative Professional



II. Biomedical statistics support for consultation

- Up to 5 hours of assistance per grant application is available for LCOM faculty members or trainees



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Clinical Research Support - Directed by Kim Luebbers, MSHS, RN, BSN, Asst. Dean for Clinical Research

Office of Clinical Trials Research (OCTR) – FY22

- Regulatory, contact and budget support – 112 Agreements
- Research staff support – 119 projects, supporting 66 unique PIs
- Total profit \$247,878, half of which was returned to the departments
- Nine Research QA reviews conducted



Clinical Research Center (CRC) - FY22

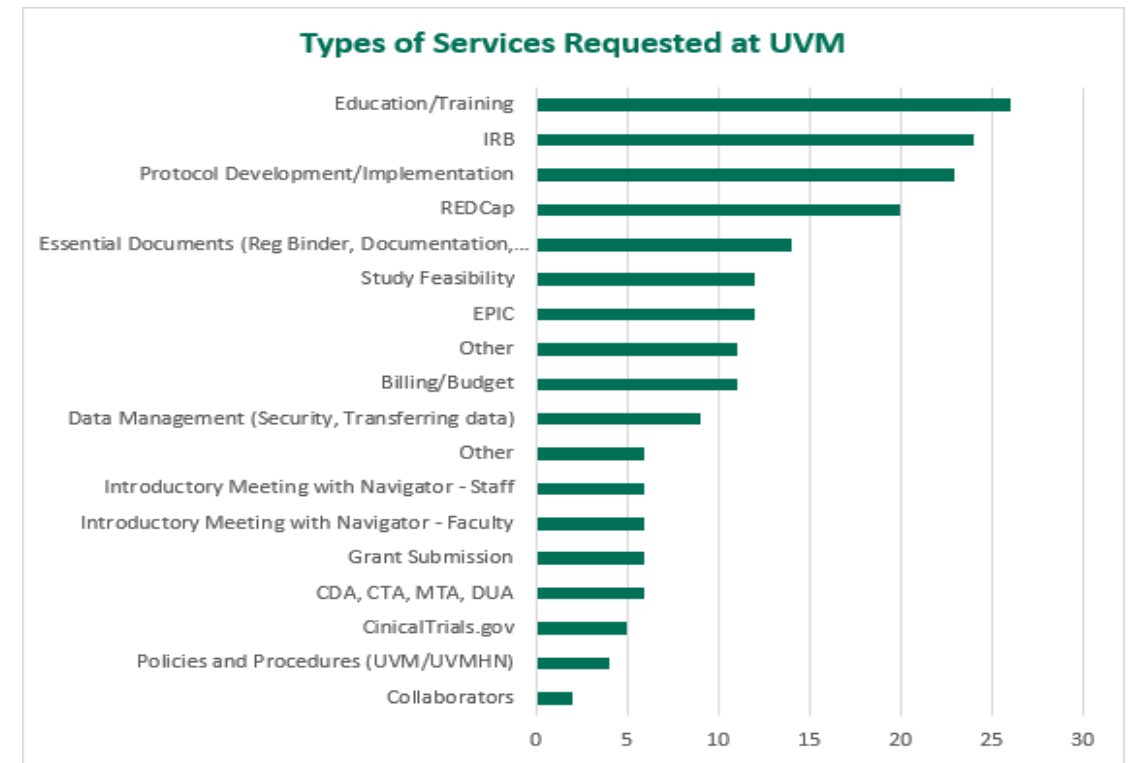
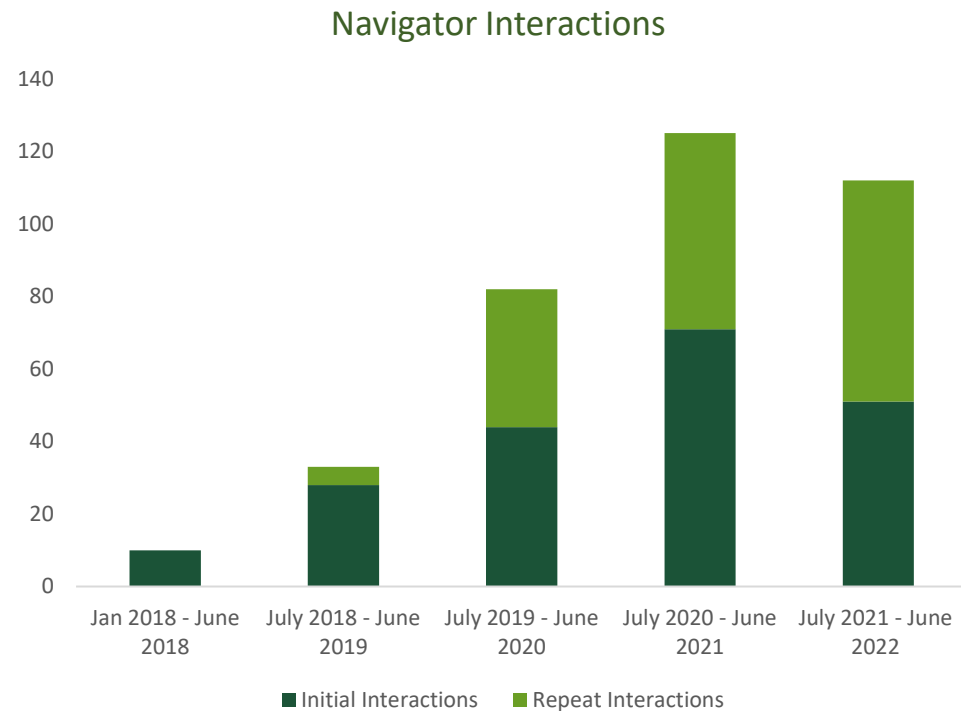
- Inpatient Research Unit containing the following resources: outpatient/extended stay rooms (6 private or 12 semi-private beds), research nurses, bionutrition kitchen and nutrition staff, physiology and exercise physiology staff, and research support staff
- 77 projects, supporting 48 unique PIs
- 1,975 outpatient visits in the CRC, and 8 extended stay/ overnight visits



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Research Navigators

Access via simple online consultation form



Research Education and Training Initiatives

Fundamentals in the Conduct of Clinical Research

- Required Clinical Research Coordinator Training Program
- Piloted Feb 2020, formally launched August 2020
- Conducted 20 sessions, 206 individuals have successfully completed the training program
 - CITI Clinical Research Coordinator Foundations
 - 10 hours, 4 – 2.5-hour sessions zoom classroom
 - Competency Assessment

Research Professionals Network

- Collaboration with BU, UF, and MUSC
- Ongoing Professional Development and Training – Monthly during the academic year (10/workshops/year)
- Contact Hours Offered for Certified Clinical Research Professionals (ACRP/SOCRA)



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Salary support for PI's for major institutional grant opportunities

- I. LCOM has budgeted \$100K annually to provide 20-40% effort of PI salary at the NIH cap for a maximum of 3 months to support development and submission of training or other major institutional grant opportunities.
- II. Office of Graduate Education & Postdoctoral Training support assembly of data tables for T32 applications.
- III. LCOM will provide 5% effort for the PI of a funded T32 training grant at the NIH cap for up to 5-years corresponding to the period of grant funding. If there are two Co-PI's, then the salary support can be split.
- IV. These support mechanisms have already been associated with successful COBRE and training grant applications.



Pilot Research Funds

- I. We have resumed our internal pilot and bridge support programs.
 - I would like to acknowledge the assistance of Matt Wargo, Ph.D., Chair, and other members of the Research Committee
- II. In the context of the CBSR grant we will aim to resume targeted pilot funding in 2023 for new methodologies in basic research in conjunction with a research core.



Research Incentive Program

- I. LCOM budgeted \$1 million per year.
- II. Amount of incentive based on a percentage of total F&A brought in by each qualified faculty member. Can be used as unrestricted fund or additional pay.
- III. Payments for FY22 will be forthcoming.



Research Objectives Vision 2025

- I. Improve infrastructure
- II. Provide sustainable shared resources – CBSR, alignment bioinformatics/biostatistics
- III. Enhance data processing and storage capabilities
- IV. Focus on current strengths and future opportunities
- V. Support innovation and entrepreneurship
- VI. Strengthen mentorship and career development for faculty, students, and trainees
- VII. Maximize faculty recruitment and retention
- VIII. Diversify funding portfolio for research support



Dean's Excellence in Research Awards



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2022 UVM Medical Alumni Association Distinguished Graduate Alumni Award



- **Elizabeth J. Kovacs, Ph.D.'84**, Cell Biology, University of Vermont
- Professor of Surgery and Director of the Burn Research and the Alcohol Research Programs at University of Colorado Anschutz Medical Campus
- As part of alumni weekend in early October, Dr. Kovacs presented “Burns are more than skin deep: Aging, inflammation and the gut-lung axis”



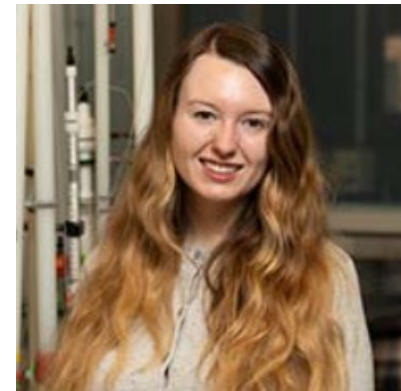
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Graduate Student Research Showcase

Junior Division



First Place:
Kanayo Ikeh, CMB
Nimrat Chatterjee, Ph.D.
“Unraveling the Functional Dynamics of REV1 during cancer cells' response to therapy”



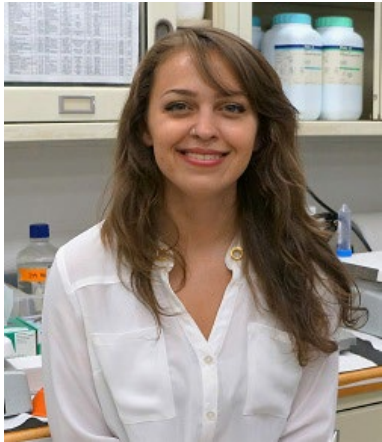
Runner Up:
Ally Morrissey, CMB
John Salogiannis, Ph.D.
“Picking Up Hitchhikers: A Novel Mechanism of Cellular Transport”



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Graduate Student Research Showcase

Senior Division



First Place:
Annalis Whitaker, CMB
Jason Botten, Ph.D.
“An agnostic interrogation of the early plasmablast repertoire from COVID-19 patients reveals broadly neutralizing SARS-CoV-2 antibodies”



Runner-up:
Bay Vagher, CMB
Eyal Amiel, Ph.D.
“Secondary Metabolite Uridine Diphosphate Glucose (UDPG) Alters Dendritic Cell Mitochondrial Respiration via a P2Y14R/iNOS-dependent Axis”



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Dean's Excellence in Research Awards



Medical Student – Outstanding Research Publication

- **Jennifer Holland**
- Mentor: Valerie Harder, Ph.D., M.H.S., Pediatrics
- **Holland JE, Varni SE, Pulcini CD, Simon TD, Harder VS.** Assessing the Relationship Between Well-Care Visit and Emergency Department Utilization Among Adolescents and Young Adults. *J Adolesc Health.* 2022 Jan;70(1):64-69. doi: 10.1016/j.jadohealth.2021.08.011. PMID: 34625377.



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Dean's Excellence in Research Awards



Graduate Student – Outstanding Research Publication

- **Alex Thompson, Ph.D.**
- Mentor: Jason Stumpff, Ph.D. - Molecular Physiology and Biophysics
- **Thompson AF, Blackburn PR, Babovic-Vuksanovic D, Lian JB, Klee EW, and Stumpff JK. (2021) Pathogenic mutations in the chromokinesin KIF22 disrupt anaphase chromosome segregation. Elife 11 (e78653). PMID: 35730929**



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Dean's Excellence in Research Awards



Postdoctoral Fellow – Outstanding Research Publication

- **Nicholas Klug, Ph.D.**
- Mentor: Mark Nelson, Ph.D., Pharmacology
- Sancho, Maria, **Klug, Nicholas** et al. "Adenosine signaling activates ATP-sensitive K⁺ channels in endothelial cells and pericytes in CNS capillaries." *Science Signaling* 15.727 (2022): eab15405.



Dean's Excellence in Research Awards



Resident – Outstanding Research Publication

- **Serena Murphy, M.D.**
- Nominated by Michelle Sowden and Brian Sprague
- **Murphy S, Yu Y, Kerrigan C, Sprague B, Sowden M.** Gradual adoption of needle biopsy for breast lesions in a rural state. *Cancer Medicine* 10:8320-8327, 2021.



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Dean's Excellence in Research Awards



UVM Health Network Medical Group – Research Grant

- EMMETT WHITAKER, M.D. - PI
- JONATHAN RIDDELL, M.D. – Co PI

“Expanding the Reach of Awake Spinal Anesthesia (SA) in Neonates and Infants to Improve Perioperative Safety”



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Dean's Excellence in Research Awards



UVM Health Network Medical Group – Innovation Grant

- MARJORIE MEYER, M.D. - PI
- CAROLE MCBRIDE, PH.D. – Co PI



“Meeting the Needs for New Americans in Obstetric Care: An Opportunity to Improve Outcomes”



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Dean's Excellence in Research Awards



**UVM Health Network Medical Group
Junior Researcher of the Year Award**

- **Jessica Heath, M.D.**



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Dean's Excellence in Research Awards



**UVM Health Network Medical Group
Senior Researcher of the Year Award**

- **Gary An, M.D.**



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Dean's Excellence in Research Awards



Clinical Research Coordinator Staff

- Stephanie Burns - Vermont Lung Center
- Nominated by Sara Ardren



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Dean's Excellence in Research Awards



Scientific Research Laboratory Staff

- **Scott Tighe - Vermont Cancer Center**
- Nominated by Julie Dragon



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Dean's Excellence in Research Awards



Dean's Clinical Trials Research Award

- **Renee Stapleton, M.D./Ph.D.**
- Pulmonary Disease and Critical Care Medicine
- Nominated by Gary Stein, Ph.D.



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Dean's Excellence in Research Awards



Dean's Research Mentorship Award

- Jane Lian, Ph.D.
- Biochemistry
- Nominated by Gary Stein, Ph.D.



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Dean's Excellence in Research Awards



Dean's Rising Star New Investigator Award (Assistant Professor)

- Ellen McGinnis, Ph.D.
- Psychiatry
- Nominated by William Copeland



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Dean's Excellence in Research Awards



Dean's Mid-Career Investigator Award (Assoc. Professor)

- **Valarie Harder, Ph.D., M.H.S.,** Pediatrics, nominated by Lewis First and Rachel Garfield
- **Matthew Wargo, Ph.D.,** Microbiology and Molecular Genetics, nominated by Beth Kirkpatrick.



Dean's Excellence in Research Awards



Dean's Research Laureate Award (Professor)

- **Sylvie Doublie, Ph.D.**
- Microbiology and Molecular Genetics
- Nominated by Beth Kirkpatrick, Ph.D.



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2021 Research Laureate Presentation



- Yvonne Janssen-Heininger, Ph.D., Pathology and Laboratory Medicine
- Presenting Wednesday, November 3 at 12 noon in Medical Education Center Room 200, Sullivan Classroom



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