THE COLLEGE OF
NATURAL SCIENCES

Special Guests
Campus Librarians

Thea Atwood  Paulina Borrego  Madeleine Charney
Mike Davis  Naka Ishii  Ellen Lutz  Maxine Schmidt

THE COLLEGE OF
NATURAL SCIENCES

2017 OUTSTANDING
FACULTY & STAFF AWARDS
Outstanding Advising

Christina Metevier
Psychological & Brain Sciences
Associate Advisor

Outstanding Research

Early Career Awardee

Peter Chien
Biochemistry & Molecular Biology
Associate Professor
Narayanan Menon
Physics Professor

Outstanding Research
Senior Awards

Current: Deepak Kumar, Greg Farrell, Lee Walsh, Zhejun Shen, Jooyoung Chang, S. Ganga Prasath, Sumit Birwa, Rahul Chajwa, Guangfeng Yu, Liam O’Brien

Grads: Dominique Cambou, Jiangshui Huang, Hunter King, Vijay Narayan, Bugra Toga, Hongqiang Wang, Kevin Facto, Kyaw Zin Win, Klebert Feitosa

Postdocs: Florence Rouyer, Joel Marthelot, Joey Paulsen

Undergrads: Megan Juszkieiwicz, Emily Longhi, Paul Silva, Emily Gardol, Clay Lapointe, Robert Lyshe, Ashley DaSilva++

Collaborators: Benny Davidovitch, Tom Russell, Nalini Easwar, Sriram Ramaswamy++

Thin filaments
Granular matter
Wrapping

Outstanding Service/Outreach

iCons Family (360+ Students from 25+ STEM majors)

Scott Auerbach
Chemistry Professor
Outstanding Staff

Erin Flanagan
Biochemistry & Molecular Biology
Accountant

Outstanding Staff

Mike McDermott
Psychological & Brain Sciences
Project Manager
Outstanding Staff

Sarah Weis
Stockbridge School of Agriculture
Technical Assistant

Outstanding Teaching

Susan Han
Stockbridge School of Agriculture
Associate Professor
TEACHING ACTIVITIES:
Member Biology Teaching Committee
Member CNS Curriculum Committee
Development of Biology Peer Advising Program
Search Committee for CNS Dean
2016 UMass Innovate Fellowship
2016 UMass TIDE Ambassador
2015 UMass Fellowship for Innovative Teaching
2014 Open Education Initiative grant
Four UMass FLEX grants

Courses: Bio 312 Writing in Biology
Bio 287 Ecology
Bio 280 Evolution
Bio 152 Introductory Biology II
Bio 110 Intro Bio/Science Majors

Outstanding Teaching
Lecturer Awardee
Christiane Healey

CNS College Outstanding Awards 2017

Outstanding Advisor
Christina Metevier, Psychological and Brain Sciences

Outstanding Research
Peter Chien, Biochemistry and Molecular Biology (early career)
Narayanan Menon, Physics (senior)

Outstanding Service/Outreach
Scott Auerbach, Chemistry

Outstanding Staff
Erin Flanagan, Biochemistry and Molecular Biology
Mike McDermott, Psychological and Brain Sciences
Sarah Weis, Stockbridge School of Agriculture

Outstanding Teacher
Susan Han, Stockbridge School of Agriculture
Christiane Healey, Biology
THE COLLEGE OF NATURAL SCIENCES

Upcoming Events

COLLEGE DAY COOKOUT

Good Food! Great Friends!

THE COLLEGE OF NATURAL SCIENCES

When? Friday, September 22, 11:30 a.m. – 1:00 p.m.
Where? Integrated Sciences Building (ISB) courtyard
Who? YOU!
GEOLOGY AND SOCIETY: Out of the Ground and into Our Lives

An Exhibit presented by
Department of Geosciences
College of Natural Sciences

Integrated Science Building --- Mahoney Atrium, Sept 2017-August 2018

On-line Resources at : http://blogs.umass.edu/geoandsociety
THE COLLEGE OF
NATURAL SCIENCES

Dean’s Presentation

State of the College

Tricia Serio
September 5, 2017
Our Vision

THE COLLEGE OF NATURAL SCIENCES

• destination of choice
• investment of choice

leveraging science to tackle the greatest challenges facing our society
Our Mission

- foster scientific discovery
- disseminate knowledge of these discoveries
- provide rigorous and innovative scientific education

Our Values

- excellence
- ethics
- engagement
- diversity
- transparency
Priorities

- advisory committees (staff, grad/postdoc, diversity)
- departmental meetings
- weekly lunches (faculty, staff, UG, grad)
- parallel leadership meetings (UG, grad, diversity)
- dept H/C
- restructuring of leadership meetings
  - integrate across traditional focus areas
    (research, education, outreach)
  - focus on function
    (development, communications, diversity, faculty development)

Priorities, to date

- space
- instructional stress
- research competitiveness
- workplace climate
- undergraduate success
Role of the Dean

Institution

Advocate

Facilitate

Integrate
Strengths

Community

Remove
Barriers

Approach

our advocacy
our workplace climate
our support of student success
our research competitiveness
our fiscal management/budgetary processes

Direction

focus on current needs and future goals

http://blog.cambridgecoaching.com/re-learning-english-with-non-native-speakers

Action Plan

breakdown communication silos
leverage our collective perspectives to new solutions

Supporting Our Ambitions

- Revenues generated
- Gifts
- State appropriations
- Sponsored research

Revenue Sources and Changes

<table>
<thead>
<tr>
<th></th>
<th>FY16</th>
<th>FY17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues generated</td>
<td>$14.68m</td>
<td>$16.75m</td>
</tr>
<tr>
<td>Gifts</td>
<td>$10.11m</td>
<td>$11.09m</td>
</tr>
<tr>
<td>State appropriations</td>
<td>$69.95m</td>
<td>$72.15m</td>
</tr>
<tr>
<td>Sponsored research</td>
<td>$72.59m</td>
<td>$53.34m</td>
</tr>
</tbody>
</table>

FY18 budget cut: $1.74m
FY18 strategic investments: $1.719m
Action Plan

breakdown communication silos
leverage our collective perspectives to new solutions
be proactive rather than reactionary in
  • our advocacy
  • our fiscal management/budgetary processes
focus on current needs and future goals

Supporting Our Ambitions

• Revenues generated
• Gifts
• State appropriations
• Sponsored research
Self-Advocacy

mission, value and data - informed decisions

engage in:
- your dept
- CNS
- university

with:
- funding agencies
- federal and state gov’t
- the public

THE COLLEGE OF NATURAL SCIENCES

2017-2018 Faculty and Staff Campaign

- Nearly 1 in 3 CNS students is a first-generation college student
- 72% of UMass Amherst students borrow money for college
- Despite our best efforts, 30% of CNS students don’t graduate
- Success factors include socioeconomic status and parents’ educational background
- A small investment can make a big difference

Make a gift to the Student Success Fund to ensure every CNS student has the opportunity to succeed!

✓ Give now to double your impact: $1 to $1 campus match for first $500,000 in gifts (limit of $10,000 matched per person).
Our Vision

THE COLLEGE OF
NATURAL SCIENCES

• destination of choice
• investment of choice

leverageing science to tackle the
greatest challenges facing our society

Our Status

People
• Faculty: (28%)
  • Tenure system faculty
  • Instructional faculty
  • Research and Extension Faculty
• Staff (44%)
• Undergraduate Students (31%)
• Graduate Students (25%)

Revenue
• Revenues generated
• Gifts
• State appropriations
• Sponsored research
THE COLLEGE OF
NATURAL SCIENCES

College Introductions

Tracie Gibson
Director of Student Success and Diversity
Linda Ziegenbein
Academic and Diversity Advisor

Faith Nussbaum
Pre-Med Advisor
Becky Schneider
Life Sciences Academic Advisor

THE COLLEGE OF
NATURAL SCIENCES

NEW FACULTY
The Biochemistry and Molecular Biology Department

Welcomes

Dr. Sibongile Mafu
as an Assistant Professor

Previous Positions:
Postdoctoral Research Associate, University of California, Davis with Philipp Zerbe
Postdoctoral Research Associate, Iowa State University with Reuben Peters

Focus: Biological Chemistry of Plant Natural Products

Lillian Fritz-Laylin
Assistant Professor

- Ph.D Molecular and Cell Biology, University of California, Berkeley
- Postdoctoral Fellowship, University of California, San Francisco

Evolutionary Cell Biologist:
- Studies origins of diverse types of cell motility, including flagellar and amoeboid motility, to understand the evolution of the molecular mechanisms underlying these forms of motility.
- Uses comparative genomics, advanced light microscopy, and biochemistry of contractile proteins in diverse model systems.

Paul Katz
Professor and Director of the Institute of Neurosciences
• Georgia State University; Neuroscience Institute, Director of the Center of Neuromics

Neurobiologist:
• Studies the development, evolution, and function of neural circuits governing swimming behavior in nudibranch molluscs (sea slugs).
• Determining differences in gene expression to study specification of circuit neurons and the connectome of the entire nudibranch brain using serial electron microscopy.

Jeff Laney
Professor of Practice

Molecular Biologist
Working to improve the undergraduate academic experience in the life sciences:
• Developing strategies to increase student thinking, reasoning, and learning.
• Teaching skills needed for the logical scientific processes of discovery.
• Leading students in self assessment of their knowledge and learning using standard and non-traditional learning formats.
Skye Long  
**Lecturer: Lower Division of Life Sciences Instructor**  
- Ph.D. University of Massachusetts Amherst  
- Research Associate, University of Arizona  

**Organismal Biologist**  
- Studies the correlation between sensory system complexity and underlying brain morphology using comparative approaches to study the elaboration of visual systems in spiders and the development of neural processing centers.

Rosa Moscarella  
**Lecturer: Lower Division of Life Sciences Instructor**  
- Ph.D. Michigan State University  
- Postdoctoral Fellow, Florida State University  

**Geneticist**  
- Research associate in science education with Dr. Mark Urban-Lurian at Michigan State University  
- Publishes articles in conservation genetics and science education.
Akiko Okusu
Lecturer

- Ph.D. Harvard University
- Harvard University, Lecturer & Preceptor
- Simmons College, Assistant Professor
- Senior Research Fellow with Dr. Ben Normark, UMass Amherst

Evolutionary Biologist

- Research: Evolution of Invertebrate Forms and Functions, Molecular Systematics, and Phylogeny
- Teaching: Marine Biology, Marine Field Studies, etc.

Caralyn Zehnder
Lecturer: Lower Division of Life Sciences Instructor

- Ph.D. University of Georgia
- Associate Professor, Georgia College & State University

Ecologist

- Studies factors that impact both plant and insect populations and communities in collaboration with US Fish & Wildlife Service
- Engages in the Scholarship of Teaching & Learning and supports faculty to create courses that develop students into critical, creative thinkers.
Research in the Chen lab currently focuses on five key areas:

- Development of advanced sampling techniques and accurate implicit solvent models, particularly multi-scale enhanced sampling (MSE3) method and balanced implicit solvent force fields;
- Intrinsically disordered proteins: structure, function and disease;
- Multi-scale simulation of fibril growth and nucleation;
- Computational characterization and design of novel functional peptides;
- Advanced software for molecular modeling of small angle scattering.
Assistant Professor
Marine Ecology
PhD 2014, Ecology (University of California, Davis)
MS 2008, Biology (San Diego State University)
BS 2001, Aquatic Biology (University of California, Santa Barbara)

Research Interests
• Climate Change and Marine Ecology
• Predator-prey Interactions
• Biological Invasion

Prior Appointments
University of New Hampshire/Cornell University – Scientist-in-Residence, 2017
Smithsonian Institution - Post-Doctoral Fellow, 2014-2017

Assistant Professor
Molecular Ecology & Conservation
PhD 2015, Ecology (University of California, Davis)
MS 2009, Biology (San Diego State University)
BS 2004, Ecological & Evolutionary Biology (Tulane University)

Research Interests
• Conservation Genomics and Ecological Physiology
• Freshwater, Coastal & Marine Ecology
• Ecological Genomics

Prior Appointments
NOAA Southwest Fisheries Science Center - NRC Post-Doctoral Fellow, 2015-2017
Matthew Moore

- Food Microbiology, Applied Virology
- Areas of Expertise/Research Interest:
  - Enteric Virus-Bacteria Interactions
  - Point-of-Care/In-Field Detection and Sequencing Methods
  - Virus Concentration from Foods/Environment
  - Disinfection of Enteric Viruses
  - Novel Viral Therapeutics (Nucleic Acid Aptamers)
  - Viral Replication Strategies
  - Viral Capsid Structure

Justin Richardson

Biogeochemistry
Trace Metal Cycling
Plant-soil-rock Interactions

Ph.D. 2015 Dartmouth College
Post-Doc to Present, Cornell University
Critical Zone Observatory National Office

- Transport of pollutant trace metals (e.g. lead, mercury) to determine human inputs and the natural processes that promote their sequestration.
- Mechanisms that control accumulation and bioavailability of macro and micronutrient metals
- Uses metals and metalloids to quantify biogeochemical changes during soil formation and ecosystem disturbances

Starts Jan 2018
Assistant Professor
Matthew Winnick
Assistant Professor

Aqueous Geochemistry
Biogeochemical cycles
Chemical weathering
Isotope Hydrology

Ph. D. 2015 Stanford University
Post-Doc to Present, Stanford University

• Developing reactive transport models to quantify how plants impact the isotopic composition of rainfall
• Developing reactive transport models to study interactions between precipitation, subsurface flow, plants and the terrestrial carbon cycle
• Comparisons of climate models and proxy data to reconstruct Cenozoic atmospheric circulation and climate change

Starts July 2018

Annie Raymond, Assistant Professor

B.S. Math and Music, Massachusetts Institute of Technology, 2009
Ph.D., Technische Universität Berlin, 2014

Acting Assistant Professor, University of Washington, 2014-2017

Research Area: Combinatorial optimization, polyhedral combinatorics, operations research, applied algebraic geometry, proof complexity

Will teach: Undergraduate and Graduate Offerings in Combinatorics, Discrete Optimization, Graph Theory, Applied Algebra, Fundamental Concepts of Mathematics, ...
Vincent Lyzinski, Assistant Professor

B.S. Math, University of Notre Dame, 2006
A Johns Hopkins University,
MS Mathematics, 2007
M.S.E., Applied Math and Statistics, 2011
Postdoctoral Fellow, 2013-2014
Assistant Research Professor, 2014-2017

Research Area: Random Graph Inference, statistical machine learning, Graph Matching, Markov chains, combinatorics

Will teach: A large range of Statistics and Applied Math classes including Graph Theory, Statistical Machine Learning, Statistical Inference, Linear Models, etc.

Alejandro Morales, Assistant Professor

BS Math, University of Waterloo Canada, 2007
PhD, Massachusetts Institute of Technology, 2012
CRM-ISM Postdoctoral Fellow, Université du Québec à Montréal, 2012-2014
Hedrick Assistant Professor, University of California, Los Angeles, 2014-2017

Research Area: Combinatorics, Discrete Mathematics

Will teach: Algebraic and Enumerative Combinatorics, Graph Theory, Fundamental Concepts of Mathematics, etc.
Taryn Flock, Marshall H. Stone Visiting Assistant Professor

Math, Yale University, 2009
PhD, University of California, Berkeley 2014
Research Fellow, University of Birmingham, 2014-2017
Research Area: Harmonic Analysis and Partial Differential Equations
Will teach: Calculus, Linear Algebra, Intro to Modern Analysis, Fourier Analysis, Partial Differential Equations
Mentor: Andrea Nahmod

Jeremiah Birrell, Marshall H. Stone Visiting Assistant Professor

Physics, Brigham Young University, 2007
PhD, Applied Math, University of Arizona, 2014
Research Area: Mathematical Physics, Probability, Statistical Mechanics
Will teach: Calculus, Linear Algebra, Probability, Dynamical Systems, Differential Equations
Mentor: Luc Rey-Bellet
Luca Schaffler, Marshall H. Stone Visiting Assistant Professor

BS and MS Math, Roma Tre University, 20010, 2012
PhD, University of Georgia, 2017
Research Area: Algebraic geometry: compactifications of the moduli space of Enriques surfaces and effective cycles on moduli spaces of curves.
Will teach: Calculus, Linear Algebra, Abstract Algebra, Number Theory, Algebraic Curves, Complex Analysis
Mentor: Jenia Tevelev

Anna Puskás, Visiting Assistant Professor

MS, Math, Eötvös Loránd University, 2009
PhD, Columbia University, 2014
Postdoctoral Fellow, University of Alberta, 2014-2017
Research Area: Number Theory, p-adic Whittaker functions, Representation Theory, Algebraic Combinatorics
Will teach: Calculus, Linear Algebra, Number Theory, Abstract Algebra
Mentor: Paul Gunnells
Dinakar Muthiah, Visiting Assistant Professor

Math and Electrical Engineering, Stanford University, 2007
MS, Electrical Engineering, Stanford University, 2008
PhD, Brown University, 2013
Postdoctoral Fellow, University of Toronto, 2013-2015
PIMS Postdoctoral Fellow, University of Alberta, 2015-2017
Research Area: Geometric and combinatorial aspects of representation theory, affine Kac-Moody groups
Will teach: Calculus, Linear Algebra, Abstract Algebra, Number Theory
Mentor: Ivan Mirkovic

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Eric Hall, Visiting Assistant Professor

BA, Math, University of Pennsylvania, 2008
PhD, University of Edinburgh, Scotland, United Kingdom 2013
Goran Gustafsson Postdoctoral Fellow, KTH Royal Institute of Technology, Sweden, 2013-2015
Postdoctoral Research Associate, Umass Amherst, 2015-2017
Research Area: Uncertainty quantification and numerical analysis for SPDE, SDE, and random PDE.
Will teach: Differential Equations, Probability and Statistics
Mentor: Markos Katsoulakis
Mohammedzuhair Mullath, Visiting Assistant Professor

BS and MS, Math, Indian Institute of Science Education and Research, Pune India, 2012
PhD, University of California, Los Angeles 2017
Research Area: Number theory (Galois representations, automorphic forms), Algebraic groups and Galois cohomology.
Will teach: Calculus, Linear Algebra, Number Theory, Abstract Algebra
Mentor: Tom Weston

Mareike Haberichter, Visiting Assistant Professor

Diploma, University of Karlsruhe, Germany, 2009
PhD, University of Manchester, United Kingdom 2013
Postdoctoral Position, University of Kent, 2013-2014
Research Associate, University of Cambridge, 2014-2015
Research Associate, UMass Amherst, 2016-2017
Research Area: Nonperturbative QFT, topological defects and solitons, in particular topological solitons in Skyrme, Faddeev-Skyrme and Baby Skyrme models, numerical classical field theory.
Will teach: Calculus, Linear Algebra, Differential Equations
Mentor: Panos Kevrekidis
Noriyuki Hamada, Visiting Assistant Professor

BS and MS, Math, Kagoshima University, Japan, 2007, 2009
PhD, Kyushu University, Japan 2012
Postdoctoral Fellow, Kyushu University, 2012-2013
Project Researcher, University of Tokyo, 2013-2017
Research Area: 4-dimensional Topology, Lefschetz fibrations/pencils, and Surface Mapping Class groups.
Will teach: Calculus, Linear Algebra, Differential Equations
Mentor: R. Inanç Baykur

Maria Nikolaou, Lecturer

BSc Physics, National Kapodistrian University of Athens, Greece, 1998
MSc and PhD in Medical Physics, University of Patras, Greece, 2000, 2008.
Research Associate - Physics Department, National Kapodistrian University of Athens, Greece, Sept 2002 – June 2008
Lecturer - Dept of Mathematics and Statistics, UMass, Amherst, Spring Semester 2014, September 2015 – Current
Will teach: Calculus, Linear Algebra, Differential Equations
Michael Hayes, Lecturer

BA Math, University of California, Santa Cruz, 1997
MA Math Education, University of Massachusetts, Amherst, 2002
Principal, Amherst Regional Middle School, April 2010-June 2012
Lecturer - Dept of Mathematics and Statistics, UMass, Amherst, Spring 2015 – Current
Will teach: Calculus for Life & Social Sciences, Math for Elementary School Teachers, TA training Seminar

Barry Goodell

Ph.D. from Oregon State University in Wood Science & Engineering

Previous Appointments:
University of Maine (1983-2010): Asst – Full Professor
Virginia Tech (2010-2017): Professor and Dept. Head

Over 130 publications
President of Forest Products Society
Distinguished Forest Resources Professor Teaching Award

Research Interests include:
- Fungal Oxidative Mechanisms & Disease Initiation
- Non-Enzymatic Extracellular Mechanisms for Biomass Conversion by Fungi
- Fungal and Neurodegenerative Disease
**Mandy Muller**

Ph.D. in Virology from the Pasteur Institute (2009-2013)

Interactions among Viral proteins from the Human Papillomavirus (HPV) leading to development of potential therapeutics.

Post-Doctoral Studies:
Britt Glaunsinger Laboratory at UC Berkeley

Identified an “Escape Element” found on certain mRNA transcripts that both stabilize and destabilize them against potent Ribonucleases during Kaposi Sarcoma-Associated Herpes Virus (KSHV) infection.

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**Verena Martinez Outschoorn**

Assistant Professor

PhD Harvard University, 2011; postdoc Fermilab; Asst Prof. University of Illinois

Experimental High Energy Physics

New physics beyond the standard model
ATLAS Collaboration at the Large Hadron Collider at CERN.
Rafael Coelho Lopes de Sa  
Assistant Professor

PhD Stony Brook University, 2013; postdoc Fermilab

Experimental High Energy Physics

Role of the Higgs boson in electroweak physics  
CMS Collaboration at the Large Hadron Collider at CERN.

UMass Physics

Romain Vasseur
Assistant Professor

PhD Ecole Normale Superieure Paris, 2013; postdoc Lawrence Berkeley National Lab

Theoretical Condensed Matter Physics

Strongly correlated electronic systems, emergent new states of matter and non-equilibrium quantum phenomena

UMass Physics
Scott Hertel
Assistant Professor
PhD MIT 2012, postdoc UC Berkeley
Experimental High energy Physics
Searches for dark matter
Developing liquid noble element detectors

UMass Physics

Polymer Science and Engineering

Assistant Professor Laura Bradley
HIP Materials Lab:
Harnessing Interfacial Phenomena to Design New Soft Materials

The HIP Materials Lab aims to develop new strategies merging interfacial assembly and polymer synthesis for designing hierarchical composites. Strategies will exploit fluid interfaces to leverage trapped states of colloidal assemblies and dynamic polymer growth via chemical vapor deposition. The research outlook is to establish design rules for bottom-up processing of soft composites to meet design requirements in sensing, separations, and biomedical technologies.

Email: laurabradley@umass.edu
Office: Conte Building, A612
Phone: 413-577-0949
B.S. Chemical Engineering, Pennsylvania State University
Ph.D. Chemical Engineering, University of Southern California
Postdoc, Chemical and Biomolecular Engineering, University of Pennsylvania
PSYCHOLOGICAL & BRAIN SCIENCES

Dr. Marcela Fernandez-Peters
Visiting Assistant Professor, Behavioral Neuroscience


PSYCHOLOGICAL & BRAIN SCIENCES

Dr. Adam Grabell
Assistant Professor, Clinical

Dr. Holly Laws
Lecturer, Research Methodologist
Licensed clinical psychologist
PhD, 2014, University of Massachusetts
Postdoc: Yale School of Medicine
Research Associate: Connecticut VA

Expertise in research methodology; modeling dyadic relationships. Funded by NIH K1 award. Will teach advanced statistics courses + serve as statistical & methodology consultant for Center for Research on Families.

Dr. Tara Mandalaywala, developmental
PhD 2014, University of Chicago
Postdoc, NYU
Expertise in development of beliefs about racial identity

Dr. Bruna Martins, clinical
PhD 2016, University of Southern California
Now on clinical internship
Studies emotional regulation and aging, using fMRI
Renee Ciulla
Lecturer of Sustainable Food & Farming

B.S. Saint Lawrence University
(Environmental Studies, Geology, Psychology)
M.S. Norwegian University of Life Sciences
(Agroecology)

Experience:
Farmer for 8 years
Agricultural community support
International

Offers numerous courses in the Sustainable Food & Farming curriculum on campus and online. Oversees online A.S. degree in Sustainable Food & Farming and will oversee online B.S. degree.

Veterinary and Animal Sciences Department
Wei Cui, Ph.D.
Extension Assistant Professor
Director of Animal Models Core Facility

Ph.D.: Shandong Agricultural University, China, 2013
Postdoc: University of Kansas Medical Center, 2013-2014
University of Massachusetts Amherst, 2014-2017
Honor: Lalor Foundation Postdoctoral Fellowship, 2015

Research and Service:
Generation of Animal Models  https://www.vasci.umass.edu/research-faculty/wei-cui

Selected publications:
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THANK YOU