

AGING INSTITUTE

at Bridgeside Point



2019

ANNUAL REPORT

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AGING INSTITUTE

at Bridgeside Point



Toren Finkel, MD, PhD

*Director, Aging Institute of UPMC Senior Services and the University of Pittsburgh
Professor of Medicine, Division of Cardiology
G. Nicholas Beckwith III and Dorothy B. Beckwith Chair in Translational Medicine*



Kirsten Schwoegl, CRA

Administrative Director, Aging Institute

What controls how and why we age? This fundamental biological question is at the heart of the mission of the research taking place at the Aging Institute at Bridgeside Point.

What controls how and why we age? This fundamental biological question is at the heart of the mission of the research taking place at the Aging Institute at Bridgeside Point. Bringing together a large group of talented investigators, we seek to understand the biological basis for human aging. Using a range of sophisticated molecular techniques, our investigators are probing the fundamental biology of aging. We believe the answers to these questions will unlock powerful new



approaches for how we treat a range of age-related diseases. Complementing these basic mechanistic efforts, our investigators are also dedicated to finding novel small molecules (i.e., drugs) that combat the aging process. In addition, we also conducting innovative clinical trials that leverage the knowledge of aging biology to test new therapies in patients. Our goal is devise ways to extend healthspan-namely increasing the number of years patients can remain free from debilitating age-related conditions.

AGING INSTITUTE *at Bridgeside Point*

Fast Facts



17

core faculty
members



↑ 80

publications in the
last three years



\$6mil

in research funding

FACULTY

Toren Finkel, MD, PhD

Director, Aging Institute of UPMC Senior Services and the University of Pittsburgh
Professor of Medicine, Division of Cardiology
G. Nicholas Beckwith III and Dorothy B. Beckwith Chair in Translational Medicine

Anne B. Newman, MD, MPH

Clinical Director, Aging Institute of UPMC Senior Services and the University of Pittsburgh
Chair, Department of Epidemiology
Katherine M. Detre Endowed Chair, Population Health Sciences
Director, Center for Aging and Population Health
Professor of Epidemiology, Medicine, and Clinical and Translational Science

Marta Bueno, PhD

Research Assistant Professor of Medicine,
Division of Pulmonary, Allergy and
Critical Care Medicine

Beibei (Bill) Chen, PhD

Associate Professor of Medicine,
Division of Pulmonary, Allergy and
Critical Care Medicine
Director, Small Molecule Therapeutic Center
Co-Director, Acute Lung Injury Center of Excellence

Yvonne S. Eisele, PhD

Assistant Professor of Medicine,
Division of Cardiology

Daniel E. Forman, MD

Professor of Medicine,
Division of Cardiology
Chair, Section of Geriatric Cardiology, UPMC
Director of Emerging Therapeutics

Aditi U. Gurkar, PhD

Assistant Professor of Medicine,
Division of Geriatric Medicine



Gang Li, PhD

Assistant Professor of Medicine,
Division of Cardiology

Jie Liu, PhD

Research Associate Professor of Medicine,
Division of Cardiology

Shihui Liu, MD, PhD

Associate Professor of Medicine,
Division of Infectious Diseases

Yuan Liu, PhD

Assistant Professor of Medicine,
Division of Pulmonary, Allergy and Critical Care
Medicine

Ana L. Mora, MD

Associate Professor of Medicine,
Division of Pulmonary, Allergy and Critical Care
Medicine

Stacey J. Sukoff Rizzo, PhD

Associate Professor of Neurobiology

Shiori Sekine, PhD

Assistant Professor of Medicine,
Division of Cardiology

Yusuke Sekine, PhD

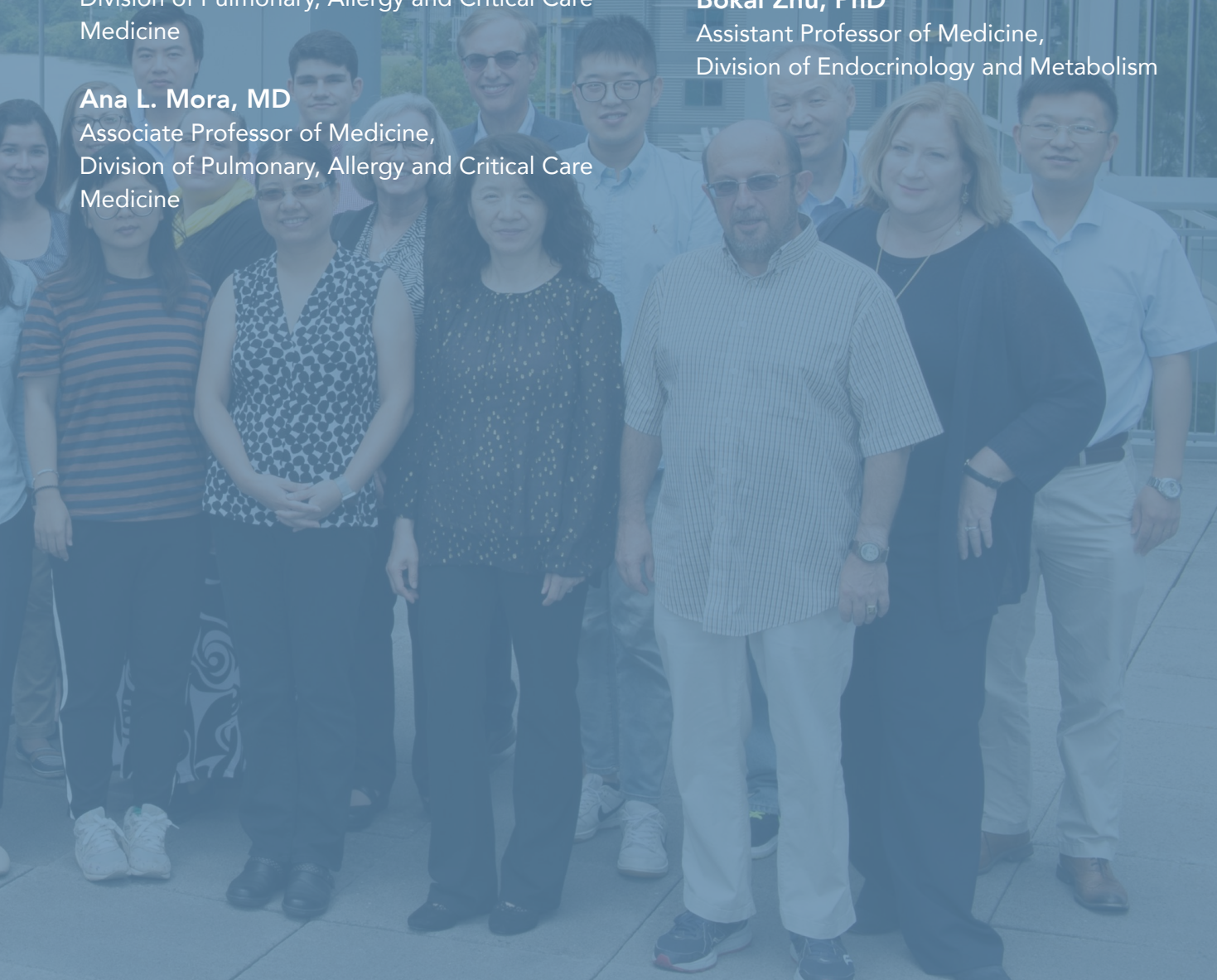
Assistant Professor of Medicine,
Division of Endocrinology and Metabolism

Xiaojun (Jay) Tan, PhD

Research Assistant Professor of Cell Biology

Bokai Zhu, PhD

Assistant Professor of Medicine,
Division of Endocrinology and Metabolism



RESEARCH AND OTHER SCHOLARLY ACTIVITIES

The Aging Institute received a significant investment from UPMC Immune Transplant and Therapy Center (ITTC) to expand the basic biology of

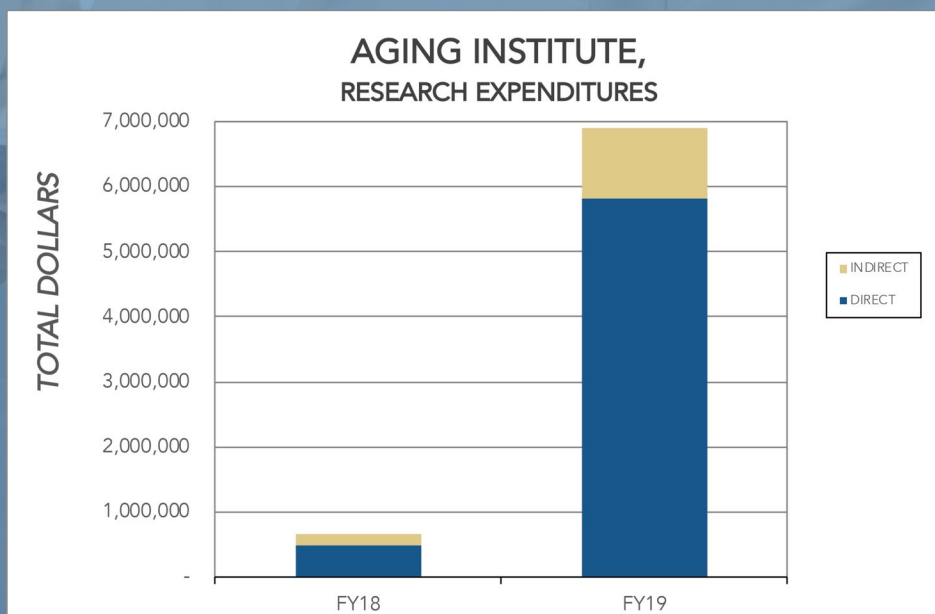
aging program. As part of this commitment, approximately 30,000 square feet of laboratory and office space was renovated at Bridgeside Point 1 to house this expanded research program. This has enabled the recruitment of a cadre of talented faculty, which now includes 12 individual Principal Investigators. Our on-site faculty include Dr. Aditi Gurkar, whose lab focuses on the role of DNA damage in the aging process; Dr. Gang Li, whose interest lies in developing new genomic technologies to understand a range of age-related diseases; and Dr. Yvonne Eisele, who studies amyloid biology both in the heart and the brain. Other investigators include Dr. Ana Mora, whose lab focuses on the age-related, telomere-based disease Idiopathic Pulmonary Fibrosis; Dr. Bill Chen, who will spearhead the drug discovery efforts at the Aging Institute; and Dr. Yuan Liu whose interest lies in metabolic pathways linked to aging. The Institute also houses the laboratories of Drs. Shiori and Yusuke Sekine who investigate organelle quality control and intra-organelle signaling; Dr. Shihui Liu, who studies the intersection of aging and infectious disease; and Dr. Bokai Zhu, who is exploring non-circadian rhythms in mammalian biology. This year, we were fortunate to recruit Dr. Stacey Rizzo, who joins us from the Jackson Research Laboratories in Bar Harbor, Maine. Dr. Rizzo is an expert on mouse phenotyping especially in regards to age-related diseases such as Alzheimer's disease.

The clinical efforts of the Aging Institute continued to be directed by Dr. Anne Newman. Dr. Newman brings a wealth of experience in studying human aging and will oversee efforts designed to test the geroscience hypothesis, which posits that therapies targeting the basic biology of aging can slow or reverse human aging. Dr. Daniel Forman joins Dr. Newman in this effort while serving as the Associate Director for Clinical Translation and Director of Emerging Therapeutics. He will help direct a series on innovative clinical trials, which are anticipated to launch in late 2019. The first of these trials, termed the RIGHT study, will begin recruiting patients shortly and will

In just 2 years,
the Aging Institute
has already secured over

\$6 mil

in research support



test whether immunomodulation can alter the course of human frailty.

Our goals for the coming year include efforts to expand our research portfolio with additional faculty recruits and continued growth of external funding. For 2019, the Aging Institute expects nearly \$5.2 million in projected total costs.

Faculty Research Interests and Activities

Toren Finkel, MD, PhD

The Director of the UPMC-University of Pittsburgh Aging Institute and a Professor of Medicine in the Division of Cardiology, Dr. Finkel is a physician-scientist renowned for his research on the basic science of aging. For more than 20 years, his research group has focused on issues involved in mitochondrial function, cellular metabolism, oxidative stress, and aging. Due to the wide span of biological interests, his lab has developed expertise in mitochondrial assays, cell and molecular biology approaches, and the generation of mouse models along with whole-animal physiological measurements. A long-term goal is to uncover the molecular basis of mammalian aging and age-related diseases through the study of different cellular pathways, including stem cell self-renewal, reactive oxygen species, sirtuins, autophagy, mTOR signaling, and mitochondrial metabolism. A particular focus in the last several years has been the role that a decline in autophagy might phenocopy vascular aging. His lab has also developed novel strategies to measure mitophagy in vivo.

Advisory Committee Memberships

- Member, Steering Committee for the NIH Bone Marrow, 2010-present
- Member, Stromal Cell Transplantation Center, NHLBI iPS Oversight Committee, 2011-present
- Coordinator, Leducq Transatlantic Network, 2014-2019
- Member, Board of Directors Foundation for Advanced Education in the Sciences, 2015-present

Editorships

- Editorial Board, *Science*, 2015-present

Anne B. Newman, MD, MPH

Dr. Newman is the Distinguished Professor and Chair of the Department of Epidemiology, with a secondary appointment as Professor of Medicine in Geriatrics. A member of NIH/NIA's National Advisory Council on Aging, she is Principal Investigator for several large population studies and clinical trials and also serves as Director of the Center for Aging and Population Health at the Graduate School of Public Health. In addition, she collaborates with Dr. Greenspan as Co-PI of our Pepper Center, with Dr. Hanlon in the Health ABC Study, and with Dr. Nadkarni on the LIFE Study and the ENRGISE Study. Her research focuses on the factors associated with disability and healthy aging.

Advisory Committee Memberships

- Member, Advisory Board, NIH/NIA Baltimore Longitudinal Study of Aging (BLSA), 2005-present
- Member, Scientific Advisory Board, The Irish Longitudinal Study of Aging (TILDA), 2009-present
- Member, External Advisory Committee, ALLHAT (Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial), 2011-present
- Member, External Advisory Committee, KURE (Korean Urban Rural Elderly) Study, 2012-present

- Member, National Advisory Council on Aging (NACA), National Institute on Aging, 2014-present

Editorships

- Editorial Board, *Journal of Aging and Health*, 2010-present
- Editor-in-Chief, *Journal of Gerontology: Medical Science*, 2016-present

Marta Bueno, PhD

Dr. Bueno's research centers on unraveling the age-related mechanisms involved in the susceptibility to lung diseases, including idiopathic pulmonary fibrosis and pulmonary (arterial) hypertension, in particular. Her lab has a strong record of examining injury and repair mechanisms in the lung, including the responses of the aging lung to endoplasmic reticulum stress, senescence, and loss of mitochondrial homeostasis.

Advisory Committee Memberships

- Reviewer, Society for Redox Biology and Medicine Annual Conference, 2017-present
- Member, Committee, American Thoracic Society Working Group on Lung Aging, 2017-2018
- Member, Committee, American Thoracic Society Interest Group on Aging in Critical Care, 2019-present

Professional Affiliations and Society Memberships

- Member, Spanish Society of Biochemistry and Molecular Biology, 2000-present
- Member, American Thoracic Society, 2011-present
- Member, Society of Redox Biology and Medicine, 2013-present
- Member, Leadership Academy for Early Career Faculty, University of Pittsburgh Schools of the Health Sciences and University of Pittsburgh Office of Academic Career Development, 2018
- Member, American Thoracic Society RCMB Web Committee, 2018-present

Honors and Awards

- Recipient, Junior Faculty-Basic Science Research Award, Department of Medicine Research Day, University of Pittsburgh, 2019

Beibei (Bill) Chen, PhD

Dr. Chen's primary research interest involves the study of the molecular mechanisms that control inflammation and cell proliferation via protein ubiquitination. He has identified and characterized more than 10 novel ubiquitin E3 ligases over the last four years. These works have been published in top-tier journals, including *Nature Immunology*, *Nature Medicine*, *Cell Reports*, *Science Translational Medicine*, and the *Journal of Experimental Medicine*. Dr. Chen's second area of research focus is small molecule drug design. Over the past five years, he has submitted 10 provisional patents related to novel anti-inflammatory/cancer compounds. In addition, he has successfully designed and synthesized a novel series of first-in-class small molecule FBXO3 protein inhibitors. One of his lead compounds, BC-1261, has passed preclinical PK/toxicity studies and was discussed at an FDA pre-IND meeting in May 2015. Recently, he has also designed a novel series of potent, selective PDE4, HECTD2, StamBP, Fbxo7, Fbxo48, FIEL1, DCN1 inhibitors that exhibit excellent activities in vivo. His long-term goal is to develop a new class of therapeutics that combat cancer and inflammatory diseases by focusing on novel mechanisms.

Study Sections

- Ad hoc reviewer, AFM Téléthon, 2012-present
- Reviewer, University of Pittsburgh Competitive Medical Research Fund, 2015-present

Advisory Committee Memberships

- Member, Pulmonary Medicine (PULM) Panel, Dept. of Veterans Affairs, 2016-present
- Co-Founder/COO, Genierian Pharmaceutical, Inc, 2019-present

Professional Affiliations and Society Memberships

- Member, American Society of Biochemistry and Molecular Biology (ASBMB), 2011-present
- Member, American Thoracic Society, 2012-present

Editorships

- Ad hoc reviewer, *American Journal of Respiratory Cell and Molecular Biology*, 2009-present
- Ad hoc reviewer, *Journal of Medicinal Chemistry*, 2010-present
- Ad hoc reviewer, *Journal of Biological Chemistry*, 2010-present
- Editorial Board, *Journal of Allergy and Therapy*, 2010-present
- Ad hoc reviewer, *Molecular Cancer Therapeutics*, 2012-present
- Ad hoc reviewer, *PLoS One*, 2012-present
- Ad hoc reviewer, *Journal of Clinical Investigation*, 2012-present
- Ad hoc reviewer, *Laboratory Investigation*, 2012-present
- Editorial Board, *American Journal of Respiratory Cell and Molecular Biology*, 2016-present
- Ad hoc reviewer, *American Journal of Respiratory and Critical Care Medicine*, 2016-present
- Ad hoc reviewer, *Nature Communication*, 2016-present
- Ad hoc reviewer, *BBA Molecular Cell Research*, 2016-present
- Ad hoc reviewer, *Cell Chemical Biology*, 2017-present

Yvonne S. Eisele, PhD

The Eisele lab focuses on age-related amyloid diseases, such as Alzheimer's disease and cardiac transthyretin amyloidosis. Dr. Eisele's team is interested in characterizing the protein aggregates that cause these diseases and then delineating the molecular and cellular changes they elicit in affected tissue. The lab's goal is to identify novel biomarkers and therapeutic targets. It collaborates closely with the clinical team at the recently founded Cardiac Amyloidosis Center at the University of Pittsburgh and UPMC.

Study Sections

- Grant reviewer, French National Research Agency (ANR), 2013-present
- Grant reviewer, Alzheimer's Society UK, 2018

Professional Affiliations and Society Memberships

- Member, Society for Neuroscience (SfN), 2009-present
- Member, International Society to Advance Alzheimer's Research and Treatment (ISTAART), 2018-present

Editorships

- Ad hoc reviewer, *Acta Neuropathologica*, 2007-present
- Ad hoc reviewer, *Neurobiology of Aging*, 2007-present
- Ad hoc reviewer, *EMBO Journal*, 2007-present

- Ad hoc reviewer, *American Journal of Respiratory and Critical Care Medicine*, 2018-present

Major Lectureships and Seminars

- Invited speaker, Panel on 'Contemporary Evaluation and Management of Cardiac Amyloidosis,' American Society of Nuclear Cardiology, 2018
- Invited speaker, Pittsburgh Institute for Neurodegenerative Diseases Seminar, April 2019
- Invited speaker, Department of Medicine Grand Rounds, University of Pittsburgh, February 2019
- Invited speaker, 8th Annual University of Pittsburgh and Tsinghua University Joint Symposium on the Biology of Aging, May 2019
- Invited speaker, Senior Vice Chancellor Research Seminar Series, University of Pittsburgh, June 2019

Daniel E. Forman, MD

A Professor of Medicine, Dr. Forman is dually trained in geriatrics and cardiology. He holds appointments in both Divisions at UPMC as well as in both the Geriatrics Research Education and Clinical Center (GRECC) and the Cardiology Division at the Pittsburgh VA. With NIH funding, he is studying the benefit of nitrate capsules for fatigue and function in older adults with heart failure and preserved ejection fraction. In two other NIH projects, he is studying the impact of exercise on skeletal muscle gene transcription (Molecular Transducers of Physical Activity in Humans [MoTrPAC]) and the impact of exercise training on cognition (Investigating Gains in Neurocognition in an Intervention Trial of Exercise [IGNITE]). At the VA, he is comparing the impact of different training regimens (strength, aerobic, and inspiratory muscle training) on skeletal muscle morphology, gene expression, and functional capacity. He is also researching the utility of prehabilitation in frail elderly prior to abdominal and cardiothoracic surgery. Finally, Dr. Forman is funded by PCORI to devise novel strategies to improve cardiac rehabilitation, especially methods to improve enrollment, adherence, and value for complex, older cardiovascular patients.

Study Sections

- Scientific Reviewer, Increasing Use of Cardiovascular and Pulmonary Rehabilitation in Traditional and Community Settings Study Section (NHLBI RFA-HL-18-019), 2018
- Scientific Reviewer, NHLBI UG3/U24 study section, 2019

Advisory Committee Memberships

- Chair, Advocacy Workgroup, Geriatric Cardiology Section, American College of Cardiology, 2014-present
- Chair, International Workgroup, Geriatric Cardiology Section, American College of Cardiology, 2014-present
- Member and Representative, Cholesterol Guideline Committee and American Geriatric Society, American College of Cardiology/American Heart Association, 2017-present
- Chair, Geriatric Cardiology Panel, Annual Update in Geriatric Medicine, University of Pittsburgh, 2019

Professional Affiliations and Society Memberships

- Member, Geriatric Cardiology Section, American College of Cardiology, 2010-present

Editorships

- Editorial Board, *Journal of the American Geriatrics Society*, 2014-present
- Associate Editor-in-Chief, *Journal of Geriatric Cardiology*, 2015-present
- Editorial Board, *Journal of Cardiopulmonary Rehabilitation and Prevention*, 2016-present
- Editorial Board, *Journal of the American Geriatrics Society*, Cardiology, 2016-present
- Editorial Board, *The Journal of Gerontology: Medical Sciences*, 2017-present
- Guest Editor, *Circulation*, 2017-present
- Guest Editor, *Journal of the American College of Cardiology*, 2018-present

Major Lectureships and Seminars

- Invited Lecturer, Department of Physical Medicine and Rehabilitation Panther Grand Rounds, University of Pittsburgh, 2018
- Invited Speaker, Plenary Session Debate, American Geriatric Society Annual Meeting, Orlando, FL, 2018
- Invited Speaker, National VA Webinar sponsored by Promising Practices, Office of Rural Health, 2018
- Invited Speaker, American Association of Cardiovascular and Pulmonary Rehabilitation Annual Meeting, Louisville, KY, 2018
- Invited Speaker, Cardiology Grand Rounds, Case Western University School of Medicine, 2018
- Invited Speaker, Update in Internal Medicine 2018, University of Pittsburgh, 2018
- Invited Speaker, American Heart Association Scientific Sessions, Chicago, IL, 2018
- Invited Speaker, Aging and Cancer Brainstorming Workshop, University of Pittsburgh, 2019
- Invited Speaker, Workshop on Embedding/Sustaining a Focus on Function in Specialty Research and Care, NIA U13 conference, Washington, DC, 2019
- Invited Speaker, Annual Update in Geriatric Medicine, University of Pittsburgh, 2019
- Invited Speaker, Delegation from the American Heart Association at the 15th International Congress of Update in Cardiology and Cardiovascular Surgery (UCCVS), Antalya, Turkey, 2019
- Keynote speaker, American Geriatrics Society, Portland, Oregon, 2019
- Invited Speaker, Meyers Visiting Professor of Geriatric Medicine, University of Massachusetts School of Medicine, 2019

Aditi U. Gurkar, PhD

Dr. Gurkar's interest is in understanding the biology of aging and age-related diseases. Her NIH-funded research focuses on identifying the signaling mechanisms that drive aging in response to endogenous DNA damage. By defining these molecular mechanism(s), she hopes to identify novel therapeutic targets that can be exploited to extend healthspan.

Advisory Committee Memberships

- Poster judge, Research Day, Department of Medicine, Pittsburgh, April 2019

Editorships

- Ad hoc reviewer, *DNA Repair*, 2019

Major Lectureships and Seminars

- Invited speaker, The Pittsburgh Institute for Neurodegenerative Diseases, February 2019

- Invited speaker, Geriatric Medicine and Psychiatry Fellowship Integrated Lecture Series on "Biology of Aging," April 2019
- Invited speaker, Veterans Administration Research Day 2019, May 2019
- Invited speaker, American Aging Association 48th Annual Meeting, San Francisco CA, May 2019
- Invited speaker, 8th Annual University of Pittsburgh and Tsinghua University Joint Symposium, May 2019

Honors and Awards

- First prize, Bench Junior Faculty, Aging Institute Research Day, University of Pittsburgh, 2018



Aging Institute faculty Dr. Aditi Gurkar focuses on the signaling mechanisms that drive aging.

Gang Li, PhD

Dr. Gang Li's lab is conducting post-GWAS functional studies by identifying and characterizing the disease-associated functional SNPs and the fSNP-bound regulatory proteins. His team will collect all the functional data to build a disease-associated risk gene transcriptional regulation network for drug target identification.

Major Lectureships and Seminars

- Invited speaker, Division of Rheumatology, UPMC, January 2019
- Invited speaker, University of North Carolina, Chapel Hill, NC, 2019

Jie Liu, PhD

Dr. Liu is a research associate professor who studies the biology of aging and the aging-related diseases using various cell biology approaches and various mouse genetic models. Currently, she is focusing on the generation and characterization of BiOLD2 transgenic mice, which are important tools in the study of in vivo alterations in proteins secretion and chronic inflammation during aging.

Shihui Liu, PhD

Dr. Liu investigates bacterial protein toxins, including anthrax toxins in pathogenesis, and develops therapeutics for the related diseases. In addition, he studies the signal transduction pathways, with special emphasis on the RAS-RAF-MEK-ERK pathway in cancer, and he is working to develop therapeutics for targeting these pathways for cancer therapy.

Editorships

- Academic Editor, *Journal of Toxins*, 2013-present
- Ad hoc reviewer, *Oncotarget*, 2017-present
- Ad hoc reviewer, *Proceedings of the National Academy of Science of the USA*, 2019-present

Yuan Liu, PhD

Dr. Liu's research focuses on the mechanistic study of TFEB protein degradation and small molecule TFEB activator development targeting age-related diseases, including neurodegenerative diseases and lung bacteria clearance. In addition, she participates in a joint effort to develop anti-inflammatory small molecules and autophagy activators.

Study Sections

- Reviewer, American Heart Association, 2017-present

Advisory Committee Memberships

- Member, University of Pittsburgh Competitive Medical Research Fund Committee, 2019-present

Editorships

- Ad hoc reviewer, *The Journal of Biological Chemistry*, 2014-present
- Ad hoc reviewer, *The Journal of Allergy & Therapy*, 2014-present
- Ad hoc reviewer, *The Journal of Anesthesia & Clinical Research*, 2014-present
- Ad hoc reviewer, *American Journal of Respiratory Cell and Molecular Biology*, 2014-present
- Ad hoc reviewer, *Journal of Diabetes & Metabolism*, 2016-present
- Ad hoc reviewer, *PLoS One*, 2016-present
- Ad hoc reviewer, *Journal of Clinical Investigation*, 2016-present
- Ad hoc reviewer, *The American Journal of Physiology*, 2016-present

Ana L. Mora, MD

Dr. Mora is a research scientist with a strong record of examining the pathogenic mechanisms involved in the disrepair and fibrosis in the lung, including how aging-related cell perturbations contribute to this pathogenic process. Her group has made seminal contributions to the novel concept that mitochondrial dysfunction and alterations in mitophagy have a key role in idiopathic pulmonary fibrosis pathogenesis. Currently, the Mora lab is studying how mitochondrial dysfunction and metabolic adaptations to stress promote senescence and profibrotic responses.

Study Sections

- Reviewer, NIH NHLBI SEP, 2018
- Reviewer, NIH NHLBI repository RFA, 2018
- Reviewer, NIH NHLBI Physician Scientist RFA, 2018
- Ad hoc reviewer, NIH NHLBI study section Maximizing the Scientific Value of the NHLBI Biorepository: Scientific opportunities for exploratory research (R21), 2018
- Ad hoc reviewer, NHLBI Physician Scientist – Early Stage Investigator, 2018
- Permanent member, LIRR Study Section NIH, 2019-2025

Advisory Committee Memberships and Leadership Positions

- Director, Small Animal Hemodynamic Phenotyping Core, Vascular Medicine Institute, University of Pittsburgh, 2014-present
- Elected member, Nominating committee, RCMB Assembly ATS, 2017-present
- Director of Education, Aging Institute, University of Pittsburgh, 2017-present
- Member, Scientific Committee, ICLAF 2018, 2018

- Member, DOM PhD Task Force, 2019

Professional Affiliations and Society Memberships

- Member, American Thoracic Society, 2002-present
- Member, Aging Committee, RCMB Assembly, ATS, 2012-present
- Member, Society for Free Radical Biology and Medicine, 2013-present

Editorships

- Academic Editor, *PLoS One*, Journal, 2012-present
- Editorial Board, *American Journal Respiratory Cell and Molecular Biology*, 2013-present
- Editorial Board, *American Journal of Physiology-Lung*, 2015-present

Major Lectureships and Seminars

- Invited speaker, ICLAF Summit, San Francisco, CA, 2018
- Invited speaker, European Respiratory Society International Conference, 2018
- Invited speaker, Immunity, Inflammation and Disease Laboratory seminar series, National Institute of Environmental Health Sciences, NIH, Research Triangle Park, NC, 2018
- Invited speaker, Immunity & Fibrosis Symposium, Mayo Clinic, 2019
- Invited speaker, Vascular Medicine Institute Research Seminar series, University of Pittsburgh, 2019

Stacey J. Sukoff Rizzo, PhD

Dr. Rizzo's research focuses on the use of genetics and systems biology data from clinical datasets in patient populations to identify putative variants, genes, and biomarkers related to susceptibility and resilience in the diseases of aging and Alzheimer's disease. The goal is to inform the selection and generation of new disease models and targets and to ultimately identify therapeutic agents. In this respect, her lab focuses on comprehensively characterizing animal models of neurodegenerative disorders to identify robust and reliable genotype-phenotype relationships that can be used to study the trajectory of disease progression and as model systems to evaluate therapeutic agents; and to design innovative, quantitative outcome measures with translational relevance in mice and marmoset models that can be used to evaluate in vivo target engagement and potential therapeutic efficacy of novel drug candidates.

Study Sections

- Reviewer, NIH Drug Discovery for the Nervous System Study Section, 2018-present

Advisory Committee Memberships

- Advisory Board, Alzheimer's Disease Cooperative Study Compound Selection Committee, 2017-present
- Advisory Board, Prader-Wili Syndrome Foundation Preclinical Animal Models Working Group, 2017-present
- Chair, Education and Training Committee (IBNS), 2018
- Member, European Quality in Preclinical Data Stakeholder Group (EQIPD), 2018-present
- Member, Education and Training Committee (IBNS), 2019
- Member, Alzheimer's Association International Conference (AAIC) Scientific Program Committee, 2019

Professional Affiliations and Society Memberships

- Member, Society for Neuroscience (SFN), 1996-present
- Member, International Behavioral Neuroscience Society (IBNS), 2015-present
- Member, Innovative Medicine Initiative (IMI), 2018-present

Major Lectureships and Seminars

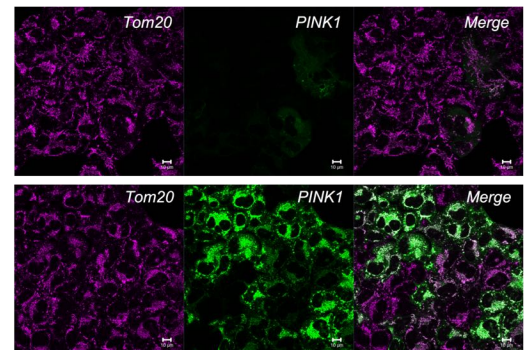
- Invited Speaker, Alzheimer's Association Business Consortium Translational Animal Models Think Tank, 2018
- Invited speaker, International Society for Autism Research (INSAR), Montreal, Canada, 2019
- Invited speaker, Alzheimer's Disease Research Center Scientific Symposium, University of Washington, Seattle, WA, 2019
- Invited Speaker, International Behavioral Neuroscience Society, Cairns, Australia, 2019

Shiori Sekine, PhD

Mitochondria dysfunction is associated with various diseases and aging. To maintain a healthy mitochondrial network, mitochondria are equipped with several systems that can evoke stress-signaling pathways. Dr. Sekine's lab studies the stress-sensing mechanisms of mitochondrial proteins and, in particular, the stress-dependent regulation of mitochondrial proteases and mitochondrial import machineries. Her research goal is to provide therapeutic targets for mitochondria dysfunction-related diseases through the manipulation of stress-signaling in mitochondria.

Professional Affiliations and Society Memberships

- Member, The Molecular Biology Society of Japan, 2006-present
- Member, The Japanese Biochemical Society, 2006-present



As part of her research Dr. Shiori Sekine is screening for PINK1 import regulators under mitochondrial damage

Yusuke Sekine, PhD

Dr. Sekine's research interests focus on understanding molecular mechanisms that underlie cellular responses to a variety of stresses, including oxidative, endoplasmic, and metabolic stresses. Using biochemical and cell genetic approaches, his lab is studying acetyl-CoA fluctuation-dependent functional changes of organelles (including nucleoli, mitochondria and lysosomes) and the activation of organelle-associated signaling pathways. His team is working to understand the sensing mechanisms of metabolite fluctuations in mammalian cells and to reveal their relevance to human diseases and aging.

Professional Affiliations and Society Memberships

- Member, The Molecular Biology Society of Japan, 2004-present
- Member, The Japanese Biochemical Society, 2005-present

Xiaojun (Jay) Tan, PhD

Aging is a consequence of increased cellular stress and decreased homeostasis. Dr. Tan's research focuses on the basic molecular mechanisms underlying cell homeostasis and stress response. Currently, his lab is working

and that spatiotemporal lipid signaling is one such general principle. Dr. Tan's long term goal is to identify the molecular basis of aging with a focus on lipid signaling and to develop pharmacological strategies to fight aging and age-related diseases.

Bokai Zhu, PhD

Dr Zhu's lab discovered a cell-autonomous mammalian 12h-clock that runs independently from the circadian clock to regulate 12h oscillations of gene expression and metabolism. Dr. Zhu's lab is currently investigating the regulation, as well as the physiological/pathological functions, of the 12h-clock, with an emphasis on its roles in maintaining hepatic metabolic homeostasis and preventing aging-associated diseases.

Professional Affiliations and Society Memberships

- Member, American Diabetes Association, 2018-present

Editorships

- Ad hoc reviewer, *Journal of Toxicological Science*, 2018-2019
- Ad Hoc Reviewer, *Journal of Cell Reports*, 2018-2019

Major Lectureships and Seminars

- Invited speaker, Carnegie Mellon University/University of Pittsburgh Computational Biology (CPCB), 2018
- Invited speaker, Bridgeside Point Research Forum, University of Pittsburgh, 2018
- Invited speaker, Pittsburgh Institute for Neurodegenerative Diseases, 2019
- Invited speaker, '12 at 12' Senior Vice Chancellor Research Seminar Series, University of Pittsburgh, 2019
- Invited speaker, Keynote, University of Pittsburgh Center for Sleep and Circadian Science Retreat, 2019

Honors and Awards

- Recipient, American Diabetes Association Junior Faculty Development Award, 2018-2021

TEACHING ACTIVITIES

A central part of the Aging Institute's mission is to promote both innovative research in aging and a rich environment for training a new generation of investigators in the aging field. Beyond individualized mentorship, we want to provide support in career development, presentation skills, grant writing, and opportunities for collaboration and networking with researchers within and outside the University. This past year, the Institute played a substantive role in securing renewal of the Geriatrics T32 award. With the new research resources available to trainees at the Aging Institute, this T32 training program will now bridge basic and clinical geriatrics. Additionally, the Aging Institute also offers several ongoing educational activities including:

Research Conference Series

Meeting monthly, the research conferences will be followed by a gathering to stimulate informal discussions, socialization and networking. All postdocs are highly encouraged to attend the conferences to enable informal interaction with faculties and to become familiarized with the non-scientific skills required to pursue and succeed in an academic career.

AI Research in Progress

During the academic year, the Research in Progress presentations were a monthly activity. All graduate students and postdocs are required to attend this meeting and to present their work at least once a year. We scheduled two presentations per session of 20 minutes with 5-10 minutes for questions. This seminar is a more informal venue in which junior investigators present their current research in order to gain scientific feedback as well as to develop their oral presentation skills.

Aging Institute Retreat

A Spring Retreat is planned that will focus on research presentations by the research faculty as well as by post docs and research scientists. These presentations will be followed by a team-building activity intended to provide opportunities to build relationships and foster future collaborations.

Translational Aging Forum

In an effort to encourage crosstalk among basic, translational and clinical scientists, regular meetings will occur for the members of the Aging Institute, the Geriatrics Division of the DOM, the Pepper Center and the School of Public Health. These conversations are focused on ways that the Aging Institute's basic science discoveries can help inform clinical studies and how observations in human participants can better guide laboratory research efforts.

The Aging Institute
supports **basic** geriatric training
as part of a collaborative

NIA T32

with the
Division of Geriatric Medicine

Aging Institute Journal Club

The journal club is a monthly activity and all postdocs and junior faculty are required to attend and to present at least once a year. The goal of this meeting is to review current publications and to gain the skill of critically reviewing the literature. Participants are encouraged to present innovative, paradigm-shifting, thought-provoking and/or disruptive publications that will be of general interest to a broader audience and are not necessarily work directly related to the presenter.

Postdoctoral Fellows, FY2019

Heather Ballance, PhD

Mentor: Bokai Zhu, PhD

Dr. Ballance investigates the function and significance of the recently discovered 12-hour molecular clock in physiology and aging.

Diana Milena Davidek, MD

Mentor: Ana L. Mora, MD

Dr. Davidek is studying how mitochondria dysfunction result in metabolic adaptations that promote senescence and fibrosis in the lung.

Maria del Jazmin Calyeca Gomez, PhD

Mentor: Ana L. Mora, MD

Dr. Calyeca's research focuses on how the expression of Cyb5R3 with advanced age impairs the resilience to disrepair and fibrosis in the lung. These studies will allow us to identify therapeutic targets and to develop novel therapeutic strategies for IPF.

Jiyong Jang, PhD

Mentor: Toren Finkel, MD, PhD

Dr. Jang studies mitochondrial biology in aging- and immune-associated diseases.

Danli Jiang, PhD

Mentor: Gang Li, PhD

Dr. Jiang is interested in the application of SNP-seq to identify and validate 11 fSNPs from all the 165 SNPs that are associated with CDKN2A/B locus in LDs based on current GWAS data, using FREP-MS to identify multiple proteins that specifically bind to each of these 11 fSNPs.

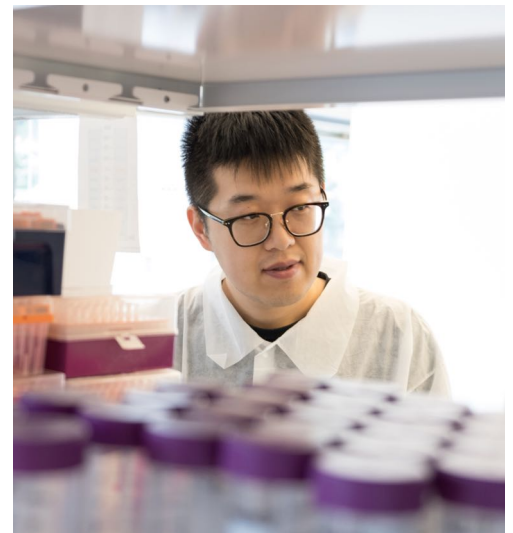
Xiaoni Li, PhD

Mentor: Gang Li, PhD

Dr. Li researches the molecular mechanisms and novel therapeutic targets of Hutchinson-Gilford progeria syndrome (HGPS), as well as the potential connections between HGPS and normal vascular aging.

Meijuan Zou, PhD

Mentor: Toren Finkel, MD, PHD



Dr. Zhang works with Dr. Gang Li, studying later onset Alzheimer's Disease.

Dr. Zou's research focuses on functional studies of SNPs-associated with autoimmune diseases.

Xiaoyu Zhang, PhD

Mentor: Gang Li, PhD

Dr. Zhang's research focuses on using cutting-edge techniques, SNP-seq, and FREP-MS to identify later onset Alzheimer disease (LOAD)-associated, non-coding functional SNPs and their regulatory proteins based on GWAS data.

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