



University of Rochester
School of Medicine & Dentistry

Medical Scientist Research Symposium

Friday, April 14, 2023

12:00PM-4:00pm

Keynote Address at 12:00PM

Adolph Auditorium (1-7619)
Flaum Atrium

Proudly sponsored by the University of Rochester Medical Scientist Training Program (MSTP)*
and the Dr. Thomas A. and Joyce E. Pearson Endowed Lectureship Fund

*The MSTP is supported by a grant from the NIH (T32 GM007356)

Schedule of Events

11:45 AM

Adolph Auditorium 1-7619

Arrival, registration and pick up boxed lunch

*Feel free to set up poster in Flaum Atrium prior to start

12:00 PM

Adolph Auditorium

Keynote Address with Q&A

Melissa B. Davis, PhD

Resolving Race vs Ancestry in Breast Cancer Disparities

1:15 PM

Flaum Atrium & Adolph Auditorium

Coffee Break

1:30 PM

Adolph Auditorium

Student Talk Session #1

Emily Isenstein, G3, Brain & Cognitive Science

Neural Correlates of the Visual Expectation of Active and Passive Touch in Autistic Adults

Michael Shen, 1st Year Medical Student

Barriers to Smoking Cessation for Rural Head and Neck Cancer Patients

Mike Sportiello, G4, Immunology, Microbiology & Virology

Nfil3 directs the CD8 T cell immune response in acute and memory settings

2:15 PM

Flaum Atrium

Student Poster Session and Coffee Hour

3:00 PM

Adolph Auditorium

Student Talk Session #2

Noah Salama, G4, Immunology, Microbiology & Virology

Itisocitrate Dehydrogenase 2 Mutation Drives Bone Marrow Macrophage Dysfunction without a Complete Block in Hematopoietic Differentiation

Catherine Beamish, G3, Toxicology

Arc1, a regulator of synaptic plasticity, rescues DOHaD effects of MeHg on the motor unit in Drosophila

Uday Chockanathan, PhD, M3, Neuroscience

Alzheimer disease warps the neural code

4:00 PM

Adolph Auditorium

Closing Remarks

Dr. Thomas A. and Joyce E. Pearson Endowed

Keynote Speaker

Melissa Boneta Davis, PhD

Associate Adjunct Professor of Development and Cell Biology in Surgery,
Weill Cornell Medical College

Scientific Director, International Center for the Study of Breast Cancer
Subtypes (ICSBCS)

Interim Director of Health Equity, Englander Institute of Precision Medicine



Melissa B. Davis, PhD is the newly appointed Director of the Institute of Translational Genomic Medicine at Morehouse School of Medicine, and Distinguished Investigator with the Georgia Research Alliance. She also serves as Scientific Director of the International Center for the Study of Breast Cancer Subtypes (ICSBCS), (Interim) Director of Health Equity for the Englander Institute of Precision Medicine and Associate Professor of Cell and Developmental Biology in the Department of Surgery and at Weill Cornell Medicine in New York, NY. She is also a Cancer Ethnicity Scholar, co leading the PolyEthnic-1000 project at New York Genome Center.

Dr. Davis received her Ph.D. in Molecular Genetics at the University of Georgia (Athens, GA, USA) where she completed groundbreaking work on developmental functions of steroid signaling in model organisms. She completed postdoctoral training in Functional Genomics and Systems Biology at Yale School of Medicine (Human

Genetics) and the University of Chicago (Human Genetics and Institute for Genomics and Systems Biology). Her work involved key elements of the ModENCODE project, showing the genome-wide and tissue-specific dynamics of hormone receptor binding, establishing the dynamics of these functions on a cellular level. Her postdoctoral training in Cancer Health Disparities at University of Chicago at the Interdisciplinary Center for Health Disparities, led the current trajectory of her work to uncover the biological determinants of cancer health disparities and how they intersect with marginalization of minoritized population.

Dr. Davis's has published groundbreaking findings that established a new lens to study associations of biological factors in cancer outcomes as related to genetic ancestry. Specifically, she has discovered links between African ancestry and tumor burdens that have a disproportionate burden in people across the African diaspora. Dr. Davis is a pioneer in the field of "disparities genomics," with specific focus in breast cancer expanding into prostate and gynecological cancers in recent years. Her current findings involve utilizing quantified ancestry to unravel genetic vs environmental influences in tumor biology among race/ethnic groups, including epigenetic cell signaling and immunological responses in the tumor microenvironment and systemic immune regulation. These novel opportunities to develop precision medicine applications in minority populations, are part of a concerted effort to increase knowledge of genomic profiles of underrepresented minoritized and under-represented cancer patients. Her work is a prime example of how inclusion of diverse ethnic groups can empower research designs for discovery of novel or unique tumor biology.

Poster Presentations

1 Maya Anand, G2, University of Rochester MD/PhD Program

Living arrangement, close contacts and perceived instrumental support among older adults being treated for advanced cancer

Maya Anand, Christopher L. Seplaki, Supriya Mohile, Lee Kehoe, Sindhuja Kadambi, Rachael Tylock, Megan Wells, Jeffrey K. Giguere, Navin Anthony, Leah Jamieson, Allison Magnuson

2 Catherine Beamish, G3, University of Rochester MD/PhD Program

Arc1, a regulator of synaptic plasticity, rescues DOHaD effects of MeHg on the motor unit in Drosophila

Catherine R. Beamish, Jennifer Becker, Matthew D. Rand

3 Hannah Bell, , PhD, M3, University of Rochester MD/PhD Program

The Function of Type Three Secretion System Protein VopZZ

Hannah Bell, Katharine Tomberlin, Stacy Gregoire, and Michelle Dziejman

4 John Bennett, G4, University of Rochester MD/PhD Program

Skeletal editing of natural products enabled by cytochrome P450-catalyzed C—H functionalization

John M. Bennett, Andrew R. Bortz, and Rudi Fasan

5 Shreya Bhasin, Year-Out Fellow, University of Rochester SMD

Measuring Neurobehavioral Side-Effects of Steroids in Pediatric Acute Lymphoblastic Leukemia: A Scoping Review

Shreya Bhasin, Joshua Brown, Anna Dorste, Chase Samsel, Anna Muriel

6 Chris Bodurian, 4th Year Medical Student, University of Rochester SMD

Genetic Variant Annotation Scores in Congenital Long QT Syndrome

Arwa Younis, MD, Christopher Bodurian, Dan E. Arking, MD, Nicola Luigi Bragazzi, MD, PhD, MPH, Chadi Tabaja, MD, Wojciech Zareba, MD, PhD, Scott McNitt, MS, Mehmet K. Aktas, MD, MBA, Bronislava Polonsky, MS, Coeli M. Lopes, PhD, Nona Sotoodehnia, MD, Peter Kudenchuk, MD, Ilan Goldenberg, MD

7 Udaysankar Chockanathan, PhD, M3, University of Rochester MD/PhD Program

Alzheimer disease warps the neural code

Udaysankar Chockanathan, Krishnan Padmanabhan

Poster Presentations

- 8 Zachary Christensen, G5, University of Rochester MD/PhD Program

Autism is Associated with in vivo Changes in Gray Matter Neurite Architecture.

Zachary P. Christensen, B.S., Edward G. Freedman, Ph.D., and John J. Foxe*, Ph.D.

- 9 Ankit Dahal, G3, University of Rochester MD/PhD Program

The molecular mechanism of PMN-MDSC differentiation in the TME of Pancreatic Cancer Ductal Adenocarcinoma (PDAC)

Ankit Dahal, Yeonsun Hong, Raj Kumar Mongre, Minsoo Kim

- 10 Carol Deaton, G5, University of Rochester MD/PhD Program

Presenilin Modulates Vacuolar Function and Tau Degradation

Carol A. Deaton, Gail V.W. Johnson

- 11 Thomas Delgado, G2, University of Rochester MD/PhD Program

Astrocytic TG2 attenuates functional recovery after CNS injury primarily by limiting the ability of astrocytes to metabolically support neurons in injury contexts.

Thomas Delgado, Jacen Emerson, Peter Girardi, Gail V.W. Johnson

- 12 Dali Edwards, DO, Hematology/Oncology Fellow, PGY5 University of Rochester SMD

A Retrospective Review of Neoadjuvant Therapy for Breast cancer - A Single Institution Experience

Dali Edwards DO, Manasa Lanka, Ananya Shah, Diego Andres Villamarin, Baiju Sharda, Mackenzie Hall Hulme, Gloria Zhang, Myla Strawderman MS, Carla Falkson MD

- 13 Gary Ge, G5, University of Rochester MD/PhD Program

Gabor-domain optical coherence microscopy for evaluating corneal cross-linking

Matthew T. Sipple, Lily A. Gary R. Ge, Fernando Zvietcovich, Cristina Canavesi, Wei Wei, Behrouz Tavakol, David B. Usher, Desmond C. Adler, Jannick P. Rolland, and Kevin J. Parker

- 14 Adam Geber, G3, University of Rochester MD/PhD Program

Characterizing tissue resident memory T cell phenotype and function in human respiratory tract samples

Adam Geber, Mike Sportiello, Heidie Hyuck, Cory Poole, Gloria Pryhuber, David Topham

Poster Presentations

15 Johnathan Gigas, G5, University of Rochester MD/PhD Program

Longevity-associated regulation of SIRT6 by AMPK tilts the balance of growth vs. stress response

Jonathan Gigas, Michael Meadow, Jane Wu, Greg Tomblin, Eric Hillpot, Andrei Seluanov, Vera Gorbunova

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Diamond Guy, Second Year Medical Student, University of Rochester SMD

School-based Pediatric Vision Screening and Eye Exams: An Effective Method of Improving Access to Eye Care in Under Resourced Communities

Diamond Guy, BS; Brian Grover, BS; Talia Gearinger, MPH; Matthew Gearinger, MD; Louise Moore; James Dill; Cheryl Fennessy; Susana Rubio; Carmella Bertolone; Rajeev Ramchandran, MD, MBA

17

Carley Haft, Year-Out Fellow, University of Rochester SMD

Provider and nurse recommendations for Influenza and COVID-19 vaccination in obstetric practices: a qualitative analysis

Carley Haft BA, Robin Bender LMSW, Ann Schrader MS, Christina Albertin MPH BSN, Sitaram Vangala MS, Amy Parker Fiebelkorn MSN MPH, Peter G. Szilagyi MD MPH, Cynthia M. Rand MD MPH

18

Sarah Hoffman, First Year Medical Student, University of Rochester SMD

Alpha:Delta Electroencephalogram Patterns Detect Cerebral Ischemia during Infant Extracorporeal Membrane Oxygenation

Sarah A. Hoffman BA (1), Michael F. Swartz PhD (2), Jill M Cholette MD (3), Aubrey Duncan MD (4), Nathan Darrow CCP (2), Shuichi Yoshitake MD (2), George M. Alfieris MD (2)

19

Andrew Hong, G1, University of Rochester MD/PhD Program

Targeting the SARS-CoV-2 Programmed Ribosomal Frameshifting RNA with Macrocyclic Peptides Derived from a Genetically-Encoded Phage Display Library

Jacob A. Iannuzzelli†, Rachel Bonn†, Andrew S. Hong, Joseph E. Wedekind*, and Rudi Fasan*

20

Tricia Jacobson, Year-Out Fellow, University of Rochester SMD

Delivering Therapy to the Olfactory Cleft: Nasal Spray vs. Exhalation Delivery System vs. Nasal Drops in Kaiteki Position

Patricia T. Jacobson, Lucas G. Axiotakis Jr., Brandon J. Vilarello, David A. Gudis, Daniel B. Spielman, Nathan Yang, Alexandria L. Irace, Carol H. Yan, Zach M. Soler, Joshua M Levy, Nicholas R. Rowan, Jonathan B. Overdevest

Poster Presentations

21 **Mark Kenney, PhD, M3, University of Rochester MD/PhD Program**

The Cuboid Bone is a Sex-Dependent Biomarker of Erosive Arthritis in TNF-Tg Mice

H. Mark Kenney, Kiana L. Chen, Lindsay Schnur, Jeffrey I Fox, Ronald W Wood, Lianping Xing, Christopher T Ritchlin, Homaira Rahimi, Edward M. Schwarz, and Hani A. Awad

22 **Anna Kolstad, M2, University of Rochester MD/PhD Program**

An experimental paradigm for understanding active vision in a natural context

Anna Kolstad, Tingan Zhu, Silei Zhu, Abdelrahman Sharafeldin, Adwiteya Misra, Marc Mancarella, Farran Briggs

23 **Marlene Lawston, G1, University of Rochester MD/PhD Program**

Impairment of Neuronal Network Activity in iPSC-Derived Neurons Carrying the Chromosome 16p11.2 Duplication is Rescued by Co-Culture with Non-Carrier Astrocytes

Marlene R. Lawston, Xueying Jiang, and Francis J. McMahon

24 **Daniel Lee, Year-Out Fellow, University of Rochester SMD**

Perception of Medication Management in Caretakers of Patients with Dementia: An Initial Report

Daniel Lee, PharmD Grace S. Ro, MD Emily D. Clark, DO Anton P. Porsteinsson, MD

25 **Alison Livada, G3, University of Rochester MD/PhD Program**

Lung megakaryocytes are tissue resident, arise independent of HSCs, and contribute to recovery in low platelet states.

Alison C. Livada, Sara Blick-Nitko, Sara Ture, Kathleen McGrath, Jim Palis, Craig Morrell

26 **Michael Meadow, G2, University of Rochester MD/PhD Program**

Targeted proteomics to elucidate conserved mechanisms of SIRT6 regulation

Michael E. Meadow, Joseph Irvin, J. Yuyang Lu, Kevin Welle, Kyle Swovick, Jonathan Gigas, Ruiyue Tan, Greg Tomblin, Eric Hillpot, Ali Biashad, Jennifer Hryhorenko, Yuliya Ablava, Nimish Mohile, Andrei Seluanov, Sina Ghaemmaghami, and Vera Gorbunova

27 **Cole Miller, Third Year Medical Student, University of Rochester SMD**

One Health Evidence and Gap mapping of the zoonotic Neglected Tropical Diseases

Cole Miller, Gabrielle Laing, Katie Greenland

Poster Presentations

28

Briaunna Minor, G5, University of Rochester MD/PhD Program

Estradiol and Tumor-Derived Factors Synergistically Promote Pro-Tumor Neutrophil Accumulation in Lymphangi leiomyomatosis

Briaunna M N Minor, Dana LeMoine, Christina Seger, Erin Gibbons, Jules Koudouovoh, Manisha Taya, Daniel Kurtz, Yan Xu, Stephen R Hammes

29

Duy Nguyen, G1, University of Rochester MD/PhD Program

Pre-Zygotic Genome Activation Heterochromatin Formation on Repetitive Elements is Essential for Precise Developmental Timing

Duy Nguyen, Patrick Murphy

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Ching-Wei Pan, Year-Out Fellow, University of Rochester SMD

Altered Genomic Target of GATA1s Mutation in Transient Abnormal Myelopoiesis

Ching-Wei Pan MD Candidate, Kristin Murphy Ph.D., Kathleen McGrath Ph.D., Michael Getman M.S., Anne Koniski M.S., Xiurui Lv M.S., James Palis M.D., Laurie Steiner M.D.

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Gavin Piester, G2, University of Rochester MD/PhD Program

Sigma-1 Receptor as a Modulator of Pathogenic Astrocyte Activities in Parkinson's Disease

Gavin Piester, Ania Majewska, Francisco Quintana

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Catherine Pizzarello, PhD, G5, University of Rochester MD/PhD Program

Recently activated CD25+ Th2 cells are elevated in urban lifestyle infants and are associated with atopy

Catherine Pizzarello, Antti Seppo, Jonathan Rebhahn, Tyler Scherzi, M. Cecilia Berin, R. John Looney, Tim Mosmann, and Kirsi Jarvinen-Seppo

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Emily Przysinda, G4, University of Rochester MD/PhD Program

Impaired neural tracking of continuous speech in schizophrenia.

Emily Przysinda, Jillian O'Malley, Aaron Nidiffer, Bridget Shovestul, Abhishek Saxena, Stephanie Reda, Emily Dudek, David Dodell-Feder, Edmund Lalor

Poster Presentations

34

Shuyang Qin, PhD, M3, University of Rochester MD/PhD Program

Intertumoral heterogeneity leads to systemic T cell immunosuppression and PD-1 immunotherapy resistance in synchronous metastatic melanoma

Shuyang S. Qin, Booyeon J. Han, Alexander C. Chacon, Alexa D. Melucci, Rachel Jewell, Minsoo Kim, David C. Linehan, Scott A. Gerber, Peter A. Prieto

35

Bryan Redmond, G3, University of Rochester MD/PhD Program

Inner retinal integrity correlates with preservation of fine direction discrimination in the blind-field early after V1 damage

Bryan V. Redmond, Matthew R. Cavanaugh, Berkeley K. Fahrenthold, Jingyi Yang, and Krystel R. Huxlin

36

David Richardson, G6, University of Rochester MD/PhD Program

Reduced Proactive and Reactive Cognitive Flexibility in Older Adults Underlies Performance Costs During Dual-Task Walking: A Mobile Brain and Body Imaging (MoBI) Study

David Richardson, John J. Foxe, Edward G. Freedman

37

Anna Roy, Undergraduate Researcher, University of Rochester

Impact of Paxillin Knockout on Androgen Actions in the Ovary

Anna Roy, Adelaide Weidner, Kenji Vann, Olga Astapova

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Noah Salama, G4, University of Rochester MD/PhD Program

Isocitrate Dehydrogenase 2 Mutation Drives Bone Marrow Macrophage Dysfunction without a Complete Block in Hematopoietic Differentiation

Noah Salama, Olivia Lynch, Emily R. Quarato, Yuko Kawano, Kate Ho, Ben Rodems, Eric Cefaloni, Kathleen E. McGrath, James Palis, Michael W. Becker, Paula M. Vertino, Jeevisha Bajaj, Laura M. Calvi

39

Sarah Sandkuhler, G1, University of Rochester MD/PhD Program

*Heme processing in a novel *Caenorhabditis elegans* model of TANGO2-deficiency disorder*

Sarah E. Sandkuhler, Laura D. Owlett, Kayla Youngs, Andrew P. Wojtovich, Keith W. Nehrke, Samuel Mackenzie

40

Jerry Saunders, PhD, M4, University of Rochester MD/PhD Program

Long-acting PGE2 and lisinopril mitigate H-ARS

Saunders II, J., Niswander, L. M., McGrath, K. E., Koniski, A., Catherman, S. C., Ture, S. K., Medhora, M., Kingsley, P. D., Calvi, L. M., Williams, J. P., Morrell, C. N., Palis, J

Poster Presentations

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Ananya Shah, First Year Medical Student, University of Rochester SMD

Dali Edwards DO, Manasa Lanka, Ananya Shah, Diego Andres Villamarin, Baiju Sharda, Mackenzie Hall Hulme, Gloria Zhang, Myla Strawderman MS, Carla Falkson MD

42

Keshov Sharma, PhD, M3, University of Rochester MD/PhD Program

Population Activity in the Primate Prefrontal Cortex During Audiovisual Expressions Reflects Conspecific Identity

K.K. Sharma, M. Diltz, T. Lincoln, L. M. Romanski

43

Michael Shen, First Year Medical Student, University of Rochester SMD

Barriers to Smoking Cessation for Rural Head and Neck Cancer Patients

Michael Shen

44

Aman Singh, First Year Medical Student, University of Rochester SMD

Comparing 30-day Outcomes After Emergent Spine Procedures Performed 'During Hours' versus 'After Hours'

Aman Singh (1), Gabrielle Santangelo, MD (2), Nathaniel Ellens, MD (2), Stephen Susa (1), Robert Molinari, MD (3), Thomas Mattingly, MD, MSc (2)

45

Matthew Sipple, G3, University of Rochester MD/PhD Program

Genetic elimination of myotonia from mouse models of myotonic dystrophy type 1

Matthew T. Sipple, Lily A. Cisco, Katie M. Edwards, Matthew K. Tanner, Charles A. Thornton and John D. Lueck

46

Mike Sportello, G4, University of Rochester MD/PhD Program

Nfil3 directs the CD8 T cell immune response in acute and memory settings

Noah Salama, Olivia Lynch, Emily R. Quarato, Yuko Kawano, Kate Ho, Ben Rodems, Eric Cefaloni, Kathleen E. Mike Sportiello, Allison Ryan, Cooper Sailer, Taylor Jones, Adam Geber, David Oleksyn, Jim Miller, Kris Lambert, Dave Topham

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Karol Szymula, G1, University of Rochester MD/PhD Program

The Multipurpose Headframe: A 3D-printed customizable mouse headframe system designed for functionality across a variety of behavioral, electrophysiological, and imaging frameworks.

Karol P. Szymula, Krishnan Padmanabhan

Poster Presentations

48 Arun Venkataraman, PhD, M4, University of Rochester MD/PhD Program

Utilization of diffusion MRI to identify the facial nerve and changes associated with long-standing Bell's Palsy

Arun Venkataraman, Scott R. Echternacht, David Milek, Jianhui Zhong, Jonathan I. Leckenby

49 Diego Villamarin, First Year Medical Student, University of Rochester SMD

A Retrospective Review of Neoadjuvant Therapy for Breast Cancer- A Single Institution Experience

Dali Edwards DO, Manasa Lanka, Ananya Shah, Diego Andres Villamarin, Baiju Sharda, Mackenzie Hall Hulme, Gloria Zhang, Myla Strawderman MS, Carla Falkson MD

50 Jesse Wang, PhD, M4, University of Rochester MD/PhD Program

A Patient-Centered Digital Scribe for Automatic Medical Documentation

Jesse Wang, Marc Lavender, Patrick Brophy, Ehsan Hoque, Henry Kautz

51 Samuel Weisenthal, G5, University of Rochester MD/PhD Program

Relative Sparsity

Samuel Weisenthal, Sally W. Thurston, Ashkan Ertefaie

52 Brendan Whitelaw, PhD, M4, University of Rochester MD/PhD Program

Mechanisms of ATP-dependent microglial process motility

Brendan Whitelaw, Evelyn Matei, Ania Majewska

53 Frances Zakusilo, PhD, M3, University of Rochester MD/PhD Program

Hyaluronan in Alzheimer's Disease

Frances Tolibzoda Zakusilo, Zhihui Zhang, Rachel Perry, Kerry M. O'Banion and Vera Gorbunova

54 Victor Zhang G2, University of Rochester MD/PhD Program

A patient-specific microphysiological model of tendon fibrosis for screening therapeutic candidates

Victor Z. Zhang, Raquel E. Ajalik, S. Danial Ahmad, James L. McGrath, Hani A. Awad



Save the Date!

The 12th Annual
Medical Scientist Research Symposium will be:



Friday, April 12, 2024

