Systems Biology of Aging

*Hosts:* Duygu Ucar, Ph.D., Assistant Professor
Jacques Banchereau, Ph.D., Professor & Director of Immunological Sciences
The Jackson Laboratory for Genomic Medicine
George Kuchel, M.D., FRCP, AGSF, Director
University of Connecticut Center of Aging

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**Wednesday, September 4, 2019**

8:00 am – 9:00 am  
**Registration**

9:00 am – 9:15 am  
**Opening Remarks**

“*Are We Ready for Precision Gerontology?*”

George Kuchel, M.D., FRCP, AGSF, Director and Professor  
University of Connecticut Center on Aging

**Session 1: Genetically Diverse Mice to Study Aging and its Diseases**

9:15 am – 9:45 am  
“Using Collaborative Cross Mice to Interrogate the Response to Influenza Infection”

Laura Haynes, Ph.D., Professor of Immunology  
University of Connecticut Center on Aging

9:45 am – 10:15 am  
“Incorporating Genetic Diversity in Mouse Models and the Potential for Precision-Medicine for Alzheimer’s”

Catherine Kaczorowski, Ph.D., Associate Professor and Evnin Family Endowed Chair  
The Jackson Laboratory

10:15 am – 10:45 am  
**Break**

10:45 am – 11:45 am  
**Day 1 Keynote**

“Transcription Factor and miRNA Networks in T-Cell Aging”

Jorg Goronzy, M.D., Professor of Medicine (Immunology and Rheumatology)  
Stanford University
Session 2: Human Immune System Aging

12:30 pm – 1:00 pm  “How Age Impacts Human T Cells in Healthy and Chronic Diseases”
Derya Unutmaz, M.D., Professor
The Jackson Laboratory for Genomic Medicine

1:00 pm – 1:30 pm  “Effects of Aging on Innate Immune Cell Responses”
Ruth Montgomery, Ph.D., Professor, Director of Yale CyTOF Facility, Associate Dean for Scientific Affairs
Yale School of Medicine

1:30 pm – 1:45 pm  Short Talk
“Cell Subset Signatures of Inactivated Influenza Vaccination in Young and Older Adults”
Bram Gerritsen, Ph.D., Postdoctoral Associate
Yale University

1:45 pm – 2:15 pm  “Immunometabolic Checkpoints of Aging”
Vishwa Deep Dixit, DVM, Ph.D., Waldemar Von Zedwitz Professor of Comparative Medicine and of Immunology
Yale University

Session 3: Systems Immunology in Aging and Diseases

2:45 pm – 3:15 pm  “ScRNA Ses and IsoSeq of PBMCs of Young and Old Healthy Subjects”
Jacques Banchereau, Ph.D., Professor and Director of Immunological Sciences,
The Jackson Laboratory for Genomic Medicine

3:15 pm – 3:45 pm  “DNA Methylation in Human Aging”
Karen Conneely, Ph.D., Associate Professor
Emory University School of Medicine

3:45 pm – 4:15 pm  “Dissecting Macrophage Functionality with Single-Cell Transcription and Secretion Profiling”
Kathryn Miller-Jensen, Ph.D., Associate Professor of Biomedical Engineering & Molecular, Cellular & Developmental Biology
Yale School of Engineering and Applied Science

4:15 pm – 4:30 pm  Short Talk
“Insights from AI and Computational Systems Biology Keep our Skin Young”
Fabian Filipp, Ph.D., M.Sc., Cancer Systems Biology, Department of Machine Learning, Institute of Computational Biology
Technical University München
4:30 pm – 5:00 pm  “Human Aging: Insights from Genome Wide Association Studies”
David Melzer, MBBCh, M.Sc., Ph.D., Professor of Epidemiology and Public Health
University of Exeter; University of Connecticut Center on Aging

5:00 pm – 6:30 pm  Poster Session

Thursday, September 5, 2019

Session 4: T Cell Aging

8:45 am – 9:15 am  “Secondary Lymphoid Organ Changes Critically Contribute to Dysregulated Immunity in Aging”
Janko Nikolich-Zugich, M.D., Ph.D., Bowman Professor and Head, Department of Immunobiology
University of Arizona, College of Medicine

9:15 am – 9:45 am  “Interplay Between Age, Immunity, Cancer and CMV”
Graham Pawelec, Ph.D., Professor
The University of Tübingen

9:45 am – 10:15 am  “Blocking Inflammageing to Enhance Immunity in Humans”
Arne Akbar, Ph.D., Professor of Immunology
University College London

10:15 am – 10:30 am  Short Talk
“Age-related Tumor Growth in Mice is Related to Integrin α4 in CD8+ T Cells”
Juhyun Oh, Ph.D.
Massachusetts General Hospital

10:30 am – 11:00 am  Break

11:00 am – 11:45 am  Day 2 Keynote
“CZI Science’s Support of Single Cell Biology”
Jonah Cool, Ph.D., Science Program Officer
Chan Zuckerberg Initiative

11:45 am – 12:30 pm  Lunch

Session 5: Genomic and Computational Methods

12:30 pm – 1:00 pm  “Collecting Multiple Modalities of Information from High-Throughput Single Cell Assays”
Eleni Mimitou, Ph.D., Senior Research Scientist
New York Genome Center
1:00 pm – 1:30 pm  “Relative Risk: Metagenomes of Aging”  
Julia Oh, Ph.D., Assistant Professor  
The Jackson Laboratory for Genomic Medicine

1:30 pm – 2:00 pm  “Epigenomic Regulation Signatures of Aging in Vertebrates”  
Berenice Benayoun, Ph.D., Assistant Professor of Gerontology  
University of Southern California

2:00 pm – 2:30 pm  “Chromatin Accessibility Signatures of Immune System Aging”  
Duygu Ucar, Ph.D., Assistant Professor  
The Jackson Laboratory for Genomic Medicine

2:30 pm – 3:00 pm  “Gene Expression and Noise Dynamics During Single-Cell Aging”  
Murat Acar, Ph.D., Associate Professor of Molecular, Cellular and Developmental Biology  
Yale University

3:00 pm – 3:15 pm  Short Talk  
“Comprehensive Multiomics Dissection of Age Associated Changes in Cellular and Non-cellular Components of Human Blood”  
Maxim Artyomov, Ph.D., Associate Professor, Pathology & Immunology  
Washington University School of Medicine in St. Louis

3:15 pm – 3:45 pm  Break

Session 6: Role of Senescence in Geroscience-Guided Therapies

3:45 pm – 4:15 pm  “A New Generation of Epidemiological Studies of Aging: the GESTALT Experience”  
Luigi Ferrucci, M.D., Ph.D., Scientific Director  
National Institute on Aging

4:15 pm – 4:45 pm  “Targeting Cellular Senescence to Alleviate Age-Related Disease”  
Ming Xu, Ph.D., Assistant Professor  
University of Connecticut Center on Aging

4:45 pm – 5:00 pm  Short Talk  
“NAD Metabolism During Aging: Insight from Quantitative Flux Analysis”  
Karthikeyani Chellappa, Ph.D., Postdoc  
University of Pennsylvania

5:00 pm – 5:30 pm  “Senolytics: The Path to Translation”  
James Kirkland, M.D., Ph.D., Noaber Foundation Professor of Aging Research, Director, Robert & Arlene Kogod Center on Aging  
The Mayo Clinic

5:30 pm – 5:45 pm  Closing Remarks  
Jacques Banchereau, Ph.D./ Duygu Ucar, Ph.D.