MONDAY, JUNE 7
Welcoming Remarks and Keynote Session (Joint) (7am Denver/Mountain Time Start)
*Eric J. Huang, University of California, San Francisco, USA
*Beth Stevens, Boston Children's Hospital, Harvard Medical School, USA

Akiko Iwasaki, Yale University School of Medicine, USA
Manipulating Immune Trafficking In and Out of the CNS
Christopher K. Glass, University of California, San Diego, USA
Exploiting Dynamic Enhancer Landscapes to Infer Pathogenic Mechanisms in Neurodegenerative Diseases

Disease Mechanisms and Therapeutic Targets (Joint) (8:10am Denver/Mountain Time Start)

Holly Kordasiewicz, Ionis Pharmaceuticals, USA
Antisense Oligonucleotides for the Treatment of Neurological Diseases
*Joseph W. Lewcock, Denali Therapeutics, USA
Therapeutic Strategies for the Treatment of Neurodegenerative Disease Based on Human Genetics
*Kate Monroe, Denali Therapeutics, USA
Enhancing Microglia Function with ATV:TREM2
Johan Luthman, Lundbeck, Denmark
Neuroimmunological Target Considerations - To Be or Not To Be in the Brain

Raz Dvir Szternfeld, Weizmann Institute of Science, Israel
Short Talk: TREM2-Independent Neuroprotection Mediated by Monocyte-Derived Macrophages in a Mouse Model of Alzheimer's Disease

Christiane D. Wrann, Massachusetts General Hospital, USA
Short Talk: Myokine Irisin Is a Critical Regulator of Cognitive Function
Elise Marsan, University of California, San Francisco, USA
Short Talk: Highly Conserved Glial Pathology and Human-Specific Neuronal Pathology Promote Neurodegeneration in FTLD-GRN

Mapping Immune Cell States in Health and Disease (11am Denver/Mountain Time Start) (EK49)

Francisco J. Quintana, Harvard Medical School and the Broad Institute of MIT and Harvard, USA
*Beth Stevens, Boston Children's Hospital, Harvard Medical School, USA

Mapping Microglia State to Function in Health and Disease
Burkhard Becher, University of Zürich, Switzerland
The T Cell-Myeloid Axis in Neuroinflammation
Shane Antony Liddelow, New York University Langone Medical Center, USA
Redefining Astrocytes States in Health and Disease

Kevin Guttenplan, Oregon Health & Science University, USA
Short Talk: Identification of a Novel Astrocyte Toxic Factor
Frederick Bennett, University of Pennsylvania, USA
Short Talk: Brain Macrophage Transplantation for Research and Therapy Development

From Therapeutic Targets to Clinic (11am Denver/Mountain Time Start) (EK48)

Joseph W. Lewcock, Denali Therapeutics, USA
*Charlotte J. Sumner, Johns Hopkins School of Medicine, USA
The Evolving Challenges of Gene Targeted Therapeutics for SMA
Lorenz Studer, Memorial Sloan Kettering Cancer Center, USA
IPSC-Derived Dopaminergic Neurons and Parkinson's Disease Therapy
Priyanka Narayan, National Institute of Health, USA
Short Talk: Discovering and Reversing the Metabolic Consequences of APOE4 in iPSC-Derived Glia

Poster Session 1 (Joint) (1pm Denver/Mountain Time Start)

TUESDAY, JUNE 8
Genetic Contributions to Neurodegeneration (7am Denver/Mountain Time Start) (EK48)

Valina L. Dawson, Johns Hopkins University School of Medicine, USA
*Alison Goate, Icahn School of Medicine at Mount Sinai, USA
Human Genetics Implicates Microglial Function in Alzheimer's Disease Risk

Jennifer Yokoyama, University of California, San Francisco, USA
Immune Contributions to Early-Onset Neurodegenerative Disease
Martine Therrien, Broad Institute, USA
Short Talk: Modeling the Impact of AD Genetic Risk on Microglia States and Function

Andy P. Tsai, Indiana University School of Medicine, USA
Short Talk: Impact of PLCG2 Alzheimer's Disease Risk Variants on Microglia Biology and Disease Pathogenesis

Neuroimmune Regulation of Sleep and Brain States (7am Denver/Mountain Time Start) (EK49)

Jonathan Kipnis, Washington University School of Medicine, USA
*Maria Lehtinen, Harvard Medical School, USA
Maiken Nedergaard, University of Rochester, USA
Sleep Regulation and Disease Roles of the Glymphatic System

David M. Holtzman, Washington University, USA
APOE, Innate Immunity, and Neurodegeneration

Marco Colonna, Washington University School of Medicine, USA
ILCs and Sleep

* Session Chair † Invited but not yet accepted  Program current as of November 21, 2021.
For the most up-to-date details, visit https://www.keystonesymposia.org.
**KEYSTONE SYMPOSIA**
on Molecular and Cellular Biology

**Neurodegenerative Diseases: Genes, Mechanisms and Therapeutics (EK48)**

* Scientific Organizers: Eric J. Huang, Alison Goate and Richard M. Ransohoff
  * Sponsored by BlueRock Therapeutics, Cell Research, Genentech, Ionis Pharmaceuticals, Inc. and Ultragenyx Pharmaceutical Inc.

**NeuroImmune Interactions in Health and Disease (EK49)**

* Scientific Organizers: Beth Stevens, Jonathan Kipnis and Kate Monroe
  * June 7-9, 2021 • Virtual at your computer
  * Sponsored by Cell Research, Synthego, and Ultragenyx Pharmaceutical Inc.

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**Constanze Martha Depp**, Max Planck Institute for Experimental Medicine, Germany

NOT AVAILABLE ON DEMAND Short Talk: Aging-Associated Myelin Dysfunction Drives Amyloid Deposition in Alzheimer’s Disease

**Cellular Pathways Targeted by Neurodegeneration (8:20am Denver/Mountain Time Start) (EK48)**

* Alison Goate, Icahn School of Medicine at Mount Sinai, USA
  * Valina L. Dawson, Johns Hopkins University School of Medicine, USA
  * Mechanism of A-Synuclein-Mediated Neurodegeneration
  * Christian Hoffmann, German Center for Neurodegenerative Diseases - DZNE, Germany
  * Short Talk: Synapsin and Synaptic Vesicle Condensates Recruit alpha-Synuclein

**Kathryn M. Hixson**, UNC Chapel Hill, USA

Short Talk: Cerebellar Degeneration in ARSACS Disease Linked to Tau Hyperphosphorylation and Membrane-Protein Disruption

**Noah Johnson**, University of Colorado Anschutz Medical Campus, USA

Short Talk: Identification of Small Molecule Drugs that Target Apolipoprotein E4-Catalyzed Amyloid-β Fibrillization: A New Therapeutic Approach to Alzheimer's Disease

**NeuroImmune Crosstalk at Brain Borders (8:30am Denver/Mountain Time Start) (EK48)**

* Jonathan Kipnis, Washington University School of Medicine, USA
  * Lymphatic System Function and Dysfunction
  * Michal Schwartz, Weizmann Institute of Science, Israel
  * Boosting Immunity to Combat Alzheimer’s Disease
  * Maria Lehtinen, Harvard Medical School, USA
  * Imaging and Probing Choroid Plexus Influence on Brain Development and Function
  * Richard Daneman, University of California, San Diego, USA
  * Control of Blood Brain Barrier Development, Function and Dysfunction
  * Alec Walker, Boston Children's Hospital, USA
  * Short Talk: The Meninges Function as a Niche for B Lymphopoiesis in Early Life
  * Justin Rustenhoven, Washington University in St Louis, USA
  * Short Talk: Skull and Vertebral Bone Marrow Are Myeloid Cell Reservoirs for the Meninges and CNS Parenchyma

**Glial Contributions to Neurodegeneration (10:05am Denver/Mountain Time Start) (EK48)**

* Mathew M. Blurton-Jones, University of California, Irvine, USA
  * Marco Prinz, University of Freiburg, Germany
  * Novel Genetic Tools for Studying Myeloid Cells in the CNS

**Ádám Dénes**, Hungarian Academy of Sciences, Hungary

Microglia Shape Neuronal and Vascular Responses via Compartment-Specific Purinergic Mechanisms

**Anne Schaefer**, Icahn School of Medicine at Mount Sinai, USA

Control of Neuron Activity by Microglia

* Michael T. Heneka, German Center for Neurodegenerative Diseases, Germany
  * Inflammasome Activation in Alzheimer's Disease

**Swati Mishra**, University of Washington, USA

Short Talk: Depletion of AD Risk Gene Sortilin-Related Receptor (SORL1) Causes Cell-Type Specific Dysfunction of the Endo-Lysosomal Pathway in Human Neurons and Microglia – Implications in Alzheimer’s Disease (AD)

**Patrick W. Sheehan**, Washington University in St. Louis, USA

Short Talk: Astrocytic BMAL1 Regulates Protein Aggregation in Mouse Models of Alpha-Synuclein and Tau Pathology

**Sabina Tahirovic**, Deutsches Zentrum für Neurodegenerative Erkrankungen e. V. - DZNE, Germany

Short Talk: Loss of NPC1 Enhances Phagocytic Uptake and Impairs Lipid Trafficking in Microglia

**Immune Mechanisms of Synapse Function and Dysfunction (11:10am Denver/Mountain Time Start) (EK49)**

* Beth Stevens, Boston Children's Hospital, Harvard Medical School, USA
  * Jonathan Kipnis, Washington University School of Medicine, USA
  * Dorothy Schafer, University of Massachusetts Chan Medical School, USA
  * Neural-Immune Crosstalk at the Synapse

**Betty Diamond**, Feinstein Institute for Medical Research, USA

Autoimmune Mechanisms of Cognitive Dysfunction

**Borislav Dejanovic**, Broad Institute, USA

Short Talk: Synaptic Proteomics in an AD Mouse Model Reveals Complement-Dependent Synapse Elimination by Astrocytes

**Susanna Rosi**, University of California, San Francisco, USA

Short Talk: Novel Microglia-Mediated Mechanisms Underlying Synaptic Loss and Cognitive Impairment after Traumatic Brain Injury

**Meet the Editors (Joint) (1:30pm Denver/Mountain Time Start)**

**Swapnika Ramu**, Cell Press, USA

**Gabriel A. Gasque**, PLOS Biology, USA

**Sophie Morgan**, Nature Communications, UK

**Tim Spencer**, Journal of Cell Biology, USA

**Networking Lounge (Joint) (2:30pm Denver/Mountain Time Start)**

**WEDNESDAY, JUNE 9**

**Phase Separation, Protein Aggregation and Transmission (7am Denver/Mountain Time Start) (EK48)**

* Session Chair † Invited but not yet accepted Program current as of November 21, 2021.

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Immune Regulation of Brain Development and Behavior (7am Denver/Mountain Time Start) (EK48)

Session Chair † Invited but not yet accepted
Program current as of November 21, 2021

Gloria Choi, Massachusetts Institute of Technology, USA
Neuroimmune Interactions in Health and Disease (EK49)

Scientific Organizers: Beth Stevens, Jonathan Kipnis and Kate Monroe

June 7-9, 2021 • Virtual at your computer

Sponsored by Cell Research, Synthego, and Ultragenyx Pharmaceutical Inc.

Neurodegenerative Diseases: Genes, Mechanisms and Therapeutics (EK48)

Scientific Organizers: Eric J. Huang, Alison Goate and Richard M. Ransohoff
Sponsored by BlueRock Therapeutics, Cell Research, Genentech, Ionis Pharmaceuticals, Inc. and Ultragenyx Pharmaceutical Inc.

Epigenetics and Transcriptomics of the Aging Brain (8:45am Denver/Mountain Time Start) (EK48)

*Richard M. Ransohoff, Third Rock Ventures, USA
*Li-Huei Tsai, Massachusetts Institute of Technology, USA
Transcriptomic Dissection of Alzheimer’s Disease at the Single Cell Resolution

Philipp L. De Jager, Columbia University Medical Center, USA
Epigenetics and Systems Biology of Alzheimer’s Disease

Anne Brunet, Stanford University, USA
Neuro-Immune Interactions in the Aging Neurogenic Niche

Carlos Cruchaga, Washington University School of Medicine, USA
Short Talk: Multi-Tissue High-Throughput Proteomics Profiling for Neurodegenerative Disease

Carlos Cruchaga, Washington University School of Medicine, USA
Short Talk: Multi-Tissue High-Throughput Proteomics Profiling for Neurodegenerative Disease

Hyo Won Ahn, National Institute of Child Health and Human Development, USA
Short Talk: Transposable Element Insertions Associated with Risk of Neurologic and Psychiatric Diseases

Immune Regulation of Brain Development and Behavior (7am Denver/Mountain Time Start) (EK49)

*Dorothy Schafer, University of Massachusetts Chan Medical School, USA
*Dorothy Schafer, University of Massachusetts Chan Medical School, USA
Hereditary Leigh Syndrome: A Neurodegenerative Disease Caused by Peroxisomal Disorders

Burkhard Becher, University of Zürich, Switzerland
Impact of Social Stress on Immune Cell Trafficking and Neurobehavior

Jonathan P. Godbout, Ohio State University, USA
The Impact of Social Stress on Immune Cell Trafficking and Neurobehavior

Sonia Garel, INSERM, France
Microglia and the Crossroads of Cortical Wiring and Environmental Signals

Short Talk: Microglia Engulf Myelin during Immune-Mediated Cortical Demyelination

Impact of Peripheral Signals and the Gut Brain Axis (10:55am Denver/Mountain Time Start) (EK49)

*Burkhard Becher, University of Zürich, Switzerland
Short Talk: Role of RAB7A Mutations in Charcot-Marie-Tooth Type 2B Disease

Jitender S. Singh, University of Colorado Anschutz Medical Campus, USA
Short Talk: Targeting Microglial Phagocytosis to Reverse Inflammation in Neurodegeneration

Burkhard Becher, University of Zürich, Switzerland
Neurobehavior

Impact of Social Stress on Immune Cell Trafficking and Neurobehavior

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Daniel Mucida, Rockefeller University, USA
Neuronal Regulation of Innate Immune Cells

Elaine Y. Hsiao, University of California, Los Angeles, USA
The Microbiome as a Modifier of Environmental Risk for Cognitive Impairment

Henrique Veiga-Fernandes, Champalimaud Research, Portugal
Neuronal Regulation of Innate Lymphoid Cells

Brian Kim, Washington University School of Medicine, USA
Neuroimmune Regulation of Itch

Francisco J. Quintana, Harvard Medical School and the Broad Institute of MIT and Harvard, USA
Microbial Regulation of Astrocyte Responses

Charlotte R. Wayne, Columbia University Irving Medical Center, USA
Short Talk: Mechanisms of Th17 Cell-Mediated Microglial Activation and BBB Dysfunction in Post-Infectious Basal Ganglia Encephalitis

Malu G. Tansey, University of Florida, USA
Short Talk: Colitis Disrupts Inflammatory Gene Networks and Nigrostriatal Integrity in the Brain and LRRK2 G2019S Mutant Mice Display Enhanced Vulnerability

Poster Session 2 (Joint) (1:30pm Denver/Mountain Time Start)

Career Roundtable (Joint) (2:30pm Denver/Mountain Time Start)

Holly Kordasiewicz, Ionis Pharmaceuticals, USA
Philip L. De Jager, Columbia University Medical Center, USA
Lorenz Studer, Memorial Sloan Kettering Cancer Center, USA