



Join Keystone Symposia  
for the 2016 conference on:

# Common Mechanisms of Neurodegeneration

June 12–16, 2016

Keystone Resort | Keystone, Colorado | USA

Scientific Organizers:

Bradley T. Hyman, Adriano M. Aguzzi and Ricardo E. Dolmetsch

*Joint with the conference on **Microglia in the Brain***

*Recent advances in understanding the genetics and underlying mechanisms of neurodegenerative diseases including prion diseases, Alzheimer's, Parkinson's, ALS and frontotemporal dementia have revealed overlaps of phenotypes, genetic risks and biological mechanisms across this spectrum of disorders. The "common mechanisms" include protein templating, glial and inflammatory mechanisms, new understanding of RNA-based toxicity and of toxicity associated with protein misfolding, and common downstream mechanisms affecting synaptic function. Moreover, because there appear to be common mechanisms at play, recent progress in therapeutic approaches targeting one of these disorders may have applicability across the whole range of disorders. This conference will enable the in-depth exploration of these various aspects of commonality across neurodegenerative disorders.*

*Session Topics:*

- Prions and "Prionoid" Molecules
  - Protein Templating and Spread of Neuropathology
  - New Treatment Modalities
  - Role of Glia
  - RNA and New Mechanisms of Toxicity
  - Inflammatory Mechanisms
  - Unfolded Proteins
  - Synaptic Dysfunction in AD, Neurodegenerative Disease, and Developmental Disorders
- plus a workshop*



Submitting an abstract is a great way of participating in the conference through poster presentation and possible selection for a short talk.

**Scholarship & Discounted Abstract Deadline: Feb 11, 2016**

**Abstract Deadline: Mar 10, 2016**

**Discounted Registration Deadline: Apr 12, 2016**

For additional details, visit [www.keystonesymposia.org/16Z3](http://www.keystonesymposia.org/16Z3).

**KEYSTONE SYMPOSIA™**  
on Molecular and Cellular Biology  
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# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Common Mechanisms of Neurodegeneration (Z3)

**Scientific Organizers:** Bradley T. Hyman, Adriano M. Aguzzi and Ricardo E. Dolmetsch

*Sponsored by BioLegend, Inc., Curemark LLC and Takeda Pharmaceutical Company Limited*

## Microglia in the Brain (Z4)

**Scientific Organizers:** Beth Stevens and Richard M. Ransohoff

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### SUNDAY, JUNE 12

#### Arrival and Registration

### MONDAY, JUNE 13

#### Welcome and Keynote Address (Z3)

##### Speaker to be Announced

#### Welcome and Keynote Address (Z4)

**Christopher K. Glass**, University of California, San Diego, USA  
*Genetic Control of Microglia Gene Expression in Health and Disease*

#### Prions and "Prionoid" Molecules (Z3)

**Beat H. Meier**, ETH Zürich, Switzerland  
*Atomic Resolution Structures of HET-s and Amyloid Beta: What Can We Learn?*

**Adriano M. Aguzzi**, University Hospital of Zürich, Switzerland  
*Prion Toxicity*

##### Speaker to be Announced

##### Short Talk(s) Chosen from Abstracts

#### Genetics to Pathogenesis (Z4)

**Zbigniew K. Wszolek**, Mayo Clinic College of Medicine, USA  
*Adult-Onset Leukoencephalopathy with Axonal Spheroids and Pigmented Glia due to CSF1R Gene Mutations: Clinical, Radiological, Pathological, and Genetic Correlations*

**Steven G. Younkin**, Mayo Clinic Jacksonville, USA  
*Association of Variants in Microglial Genes with Neurodegenerative Disease*

**Karel Otero Gutierrez**, Biogen Idec, USA  
*Investigating the Functions of TREM2 in Neurodegeneration*

**Richard M. Ransohoff**, Biogen Idec, USA  
*The Fractalkine Story: An Update*

##### Short Talk(s) Chosen from Abstracts

#### Protein Templating and Spread of Neuropathology (Z3)

**Mathias Jucker**, Hertie Institute for Clinical Brain Research, University of Tübingen, Germany  
*Amyloid beta as a Prion*

**Bradley T. Hyman**, Massachusetts General Hospital, USA  
*Neuroanatomy and Consequences of Pathological Propagation in Neurodegeneration*

**Virginia M.-Y. Lee**, University of Pennsylvania School of Medicine, USA  
*Synuclein Propagation*

##### Short Talk Chosen from Abstracts

#### Microglia Surveillance in Real Time: Lessons from in vivo Imaging (Z4)

**David Attwell**, University College London, UK  
*An Ion Channel Regulating Microglial Surveillance of the Brain Parenchyma*

**Dimitrios Davalos**, University of California, San Francisco, USA  
*Microglia Response to BBB Breakdown*

**Francesca Peri**, European Molecular Biology Laboratory, Germany  
*Microglia Go Live: How They Find and Remove Dying Neurons*

##### Short Talk Chosen from Abstracts

#### Poster Session 1

### TUESDAY, JUNE 14

#### New Treatment Modalities (Z3)

**Christer Nordstedt**, Eli Lilly and Company, USA  
*Future Alzheimer's Therapeutics*

**Beverly L. Davidson**, Children's Hospital of Philadelphia and Spark Therapeutics, USA  
*Using Gene Therapy to Treat Neurological Diseases*

**Nathalie Isabelle Cartier-Lacave**, CEA MIRCen, France  
*Peripheral Gene Therapy to Treat CNS Disease*

**Fyodor D. Urnov**, University of California, Berkeley / Sangamo Biosciences, USA  
*Targeted Genome Regulation and Control for Neurodegenerative Disease Therapy*

##### Short Talk(s) Chosen from Abstracts

#### Synaptic Pruning and Plasticity (Z4)

**Dorothy Schafer**, University of Massachusetts Medical School, USA  
*Microglia: Dynamic Sensors of Neural Activity and Regulators of Brain Plasticity*

**Rosa C. Paolicelli**, University of Zurich, Switzerland  
*Microglia Control of Synaptic Maturation in Hippocampus*

**Brian MacVicar**, University of British Columbia, Canada  
*Synaptic Sensing and Modulation by Microglia*

##### Short Talk(s) Chosen from Abstracts

#### Poster Session 2

#### Workshop (Z3)

##### Short Talks Chosen from Abstracts

#### Role of Glia (Z3)

**Don W. Cleveland**, University of California, San Diego, USA  
*Mechanism and Therapy in ALS and Beyond*

**Ben A. Barres**, Stanford University, USA  
*A Novel Allele-Dependent Role for ApoE*

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**Serge Przedborski**, Columbia University, USA  
*Parkinson's Disease and Glia*

**Short Talk Chosen from Abstracts**

### Role in Neurodevelopmental and Neuropsychiatric Disorders (Z4)

**Staci Bilbo**, Duke Institute for Brain Sciences, USA  
*Modulation of Microglia by Early-Life Infection*

**Cornelius Gross**, EMBL, Italy  
*Role of Microglia in Functional Brain Connectivity and Social Behavior*

**Mario R. Capecchi**, University of Utah, USA  
*Hematopoietic Origin of Pathological Grooming and OCD Like Behaviors*

**Beth Stevens**, Children's Hospital Boston, USA  
*Microglia Function and Dysfunction During Brain Wiring*

**Short Talk Chosen from Abstracts**

### WEDNESDAY, JUNE 15

#### RNA and New Mechanisms of Toxicity (Z3)

**J. Paul Taylor**, St. Jude Children's Research Hospital, USA  
*RNA Granule Dynamics in Neurodegenerative Disease*

**Speaker to be Announced**

**Maurice S. Swanson**, University of Florida, USA  
*Noncoding RNA Induced Toxicity in Myotonic Dystrophy*

**Magdalini Polymenidou**, University of Zürich, Switzerland  
*Mechanisms and Targets in TDP43 Pathologies*

**Short Talk(s) Chosen from Abstracts**

#### Microglia in Aging and Neurodegenerative Disease (Z4)

**Adriano M. Aguzzi**, University Hospital of Zürich, Switzerland  
*Immunological Aspects of Prion Diseases*

**Marie-Ève Tremblay**, Laval University, Canada  
*Effects of Aging and Neurodegenerative Disease on Microglia-Synapse Interactions*

**Frank Heppner**, Charité - Universitätsmedizin Berlin, Germany  
*Microglia in Alzheimer's Disease*

**Gary E. Landreth**, Case Western Reserve University, USA  
*How Do Microglia Clear Abeta?*

**Short Talk(s) Chosen from Abstracts**

#### Inflammatory Mechanisms (Z3)

**Bernardo S. Franklin**, University of Bonn, Germany  
*Prionoid Behavior of Inflammasomes*

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

**Richard M. Ransohoff**, Biogen Idec, USA  
*Neuroinflammatory Mechanisms in Neurodegeneration*

**Short Talk Chosen from Abstracts**

### Profiling Resident Microglia in Health and Disease (Z4)

**Ben A. Barres**, Stanford University, USA  
*Identification of Novel Microglia-Specific Markers in Healthy Mouse Brain*

**Joseph El Khoury**, Massachusetts General Hospital, USA  
*Deep Sequencing Brain Microglia Reveals Unique Molecular Fingerprints*

**Erik H.W.G.M. Boddeke**, University of Groningen, Netherlands  
*Isolating and Profiling Microglia from Postmortem Human Brain*

**Short Talk Chosen from Abstracts**

### Poster Session 3

### THURSDAY, JUNE 16

#### Unfolded Proteins (Z3)

**Richard I. Morimoto**, Northwestern University, USA  
*Proteostasis Disruptions in Aging and Neurodegenerative Disease*

**Christopher M. Dobson**, University of Cambridge, UK  
*The Generic Nature of the Amyloid Phenomenon and its Significance for Understanding the Molecular Origins of Neurodegenerative Disease*

**David Eisenberg**, University of California, Los Angeles, USA  
*Toxic Protein Conformations*

**Speaker to be Announced**

**Short Talk(s) Chosen from Abstracts**

#### Microglial Regulation of Pain (Z4)

**Michael W. Salter**, Hospital for Sick Children and University of Toronto, Canada

*Microglia-Neuron Signaling in Pain Neuroplasticity*

**Makoto Tsuda**, Kyushu University, Japan  
*Spinal Microglia Activated by Purinergic Signaling and Neuropathic Pain*

**Speaker to be Announced**

**Marzia Malcangio**, King's College London, UK  
*Neural-Immune Interactions in Chronic Pain Mechanisms*

**Short Talk(s) Chosen from Abstracts**

#### Synaptic Dysfunction in AD, Neurodegenerative Disease, and Developmental Disorders (Z3)

**Tara L. Spires-Jones**, University of Edinburgh, UK  
*Dynamic Synaptic Alterations due to Amyloid beta and tau*

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**Ricardo E. Dolmetsch**, Novartis Institutes for BioMedical Research,  
USA

*Synaptic Alterations as a Drug Target*

### Special Lectures (Z4)

#### Speaker to be Announced

**Thomas Möller**, Lundbeck Research USA, USA

*Translating Microglial Biology: Promise and Problems*

### Closing Keynote Address (Z3)

**Susan Lindquist**, HHMI/Whitehead Institute for Biomedical Research,  
USA

*Therapeutics Across Neurodegenerative Diseases*

### Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Z3)

### Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Z4)

## FRIDAY, JUNE 17

### Departure