

Keystone Symposia is pleased to present

Multiple Sclerosis

Sponsored by the National Multiple Sclerosis Society

Scientific Organizers: **Trevor J. Kilpatrick, Brenda Banwell and Hartmut Wekerle**

January 11-16, 2013 | Big Sky Resort | Big Sky, Montana, USA



Multiple sclerosis (MS) is a complex disease in which genetic, environmental and stochastic factors all play a part to induce aberrant interactions between the immune system and neural cells, ultimately transforming into progressive neurological disability. Our understanding of MS is rapidly evolving and multiple areas of research are showing great promise of future treatment or cure. However, further progress will depend on establishing a deep understanding of the underlying disease mechanisms. With this in mind, this conference aims to:

- > Define integrated approaches by which to study disease pathogenesis, which represents a critical barrier to progress in the field;
- > Provide an up-to-date perspective on molecular pathogenesis and how this might be used to optimize patient management;
- > Define state-of-the-art technologies with which to quantify disease burden;
- > Discuss key elements concerning the concept of disease heterogeneity and how emergent approaches to disease stratification can optimize management strategies; and
- > Provide perspectives concerning the potential therapeutic applications of neuroprotective, regenerative and bioengineering-based strategies, and how these might complement immunotherapy.

Participants should gain an understanding of how a systems biology-based approach can accelerate our knowledge base of MS and how that knowledge base can be successfully applied to novel clinical research and development, as well as potentiated patient care.

Session Topics:

- > Nature and Nurture: Insights Beyond GWAS and Epidemiological Studies
- > Cellular and Molecular Profiling: The Road to an Integrated Approach
- > Paraclinical Measures of Structural and Functional Change
- > Immunopathogenesis
- > Clinical Controversies
- > Clinical Developments
- > Neurobiology
- > Repair

Abstract & Scholarship Deadline: September 12, 2012

Late-Breaking Abstract Deadline: October 11, 2012

Early Registration Deadline: November 12, 2012

Note: Scholarships are available to students and postdoctoral fellows and require a brief application and submission of an abstract. Short talk speakers will also be selected from abstracts. Early registration saves US\$150 on later fee. Information shown is subject to possible change. Please visit meeting website for the most up-to-date program information.

KEYSTONE SYMPOSIA™
on Molecular and Cellular Biology
Accelerating Life Science Discovery

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Keystone Symposia on Molecular and Cellular Biology is a nonprofit organization headquartered in Colorado, USA directed and supported by the scientific community.

www.keystonesymposia.org/13A1

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Multiple Sclerosis (A1)

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FRIDAY, JANUARY 11

Arrival and Registration

SATURDAY, JANUARY 12

Welcome and Keynote Address

*Trevor J. Kilpatrick, University of Melbourne, Australia

Lawrence Steinman, Stanford University, USA

When Bad is Good: Amyloid Molecules as Guardians Against Neuroinflammation

Nature and Nurture: Insights Beyond GWAS and Epidemiological Studies

Patrizia Casaccia, Mount Sinai School of Medicine, USA
Genome-Wide Study of DNA Methylation Reveals Epigenetic Alterations in Brains of Multiple Sclerosis Patients

Justin P. Rubio, GlaxoSmithKline R&D, UK
Realizing the Promise of Pharmacogenomics

Tomas Olsson, Karolinska Institutet, Sweden
Genes and Lifestyle/Environmental Factors in Multiple Sclerosis and their Interactions

Judith Field, University of Melbourne, Australia
Short Talk: Gene Expression in Immune Cell Subsets: A Risk Gene Study for Multiple Sclerosis

Cellular and Molecular Profiling: The Road to an Integrated Approach

*Hartmut Wekerle, Max Planck Institut, Germany
From Gut to Brain: The Complex Build-Up of Experimental Autoimmune Encephalomyelitis

William H. Robinson, Stanford University School of Medicine, USA
From Tissue to Proteomics and Lipidomics

Ronald N. Germain, NIAID, National Institutes of Health, USA
Using Highly Multiplexed Data Collection and Computational Biology to Probe the Human Immune System

Simone C. Wuest, NINDS, National Institutes of Health, USA
Short Talk: Investigation of Cellular Intrathecal and Peripheral Immune Responses in Patients with Multiple Sclerosis

Peter Kosa, NINDS, National Institutes of Health, USA
Short Talk: Exosomes – A Potential Source of Biomarkers in Multiple Sclerosis

Poster Session 1

SUNDAY, JANUARY 13

Paraclinical Measures of Structural and Functional Change

*Catherine Lubetzki, INSERM and University Pierre et Marie Curie (UPMC), France

Elliot M. Frohman, University of Texas Southwestern Medical Center, USA

Eye-ing a Window of Neuroprotection in the Visual System for MS

John C. Gore, Vanderbilt University, USA
Recent Developments in MRI

Adrienne N. Dula, Vanderbilt University, USA

Short Talk: Molecular MRI of Multiple Sclerosis Using 7 Tesla Chemical Exchange Saturation Transfer (CEST)

Paul M. Matthews, GSK/Imperial College London, UK

Short Talk: Interpreting Molecular Imaging Measures of Inflammation in MS

Frauke Zipp, Johannes-Gutenberg-Universität Mainz, Germany
Crosstalk of the Immune and Nervous Systems

Martin Kerschensteiner, Ludwig Maximilians University Munich, Germany

Harnessing the Potential of Cellular and Molecular in vivo Imaging Techniques

Immunopathogenesis

*Lawrence Steinman, Stanford University, USA

Stephen M. Anderton, University of Edinburgh, UK
Immune-Mediated Auto-Aggression and Regulation

Takashi Yamamura, National Institute of Neuroscience, NCNP, Japan
Integrating Innate Immunity and Key Environmental Interactions

Bahareh Ajami, Stanford University School of Medicine, USA
Short Talk: Pathological Differences in Th1 and Th17 Mediated Experimental Autoimmune Encephalomyelitis (EAE)

Stephen D. Miller, Northwestern University Medical School, USA
Tolerance Induction Using Antigen-Coupled Apoptotic Cells and Biodegradable Nanoparticles for MS Therapy – Mechanisms and Clinical Prospects

Poster Session 2

MONDAY, JANUARY 14

Clinical Controversies

Helen Tremlett, University of British Columbia, Canada
Emerging Concepts of Disease Heterogeneity

Jun-ichi Kira, Kyushu University, Japan
Cutting Edges of Multiple Sclerosis and Neuromyelitis Optica

*Brenda Banwell, University of Pennsylvania, USA
Negotiating Between ADEM, CIS and MS: An Age-Specific Roadmap

Judith M. Greer, University of Queensland, Australia
Short Talk: HLA Alleles Carried by Patients with Multiple Sclerosis Play a Role in Determining the Disease Course and Distribution of Lesions

Timothy Coetzee, National Multiple Sclerosis Society, USA
CCSVI – Lessons for Funders and the Research Community

Clinical Developments

Richard K. Burt, Northwestern University, USA
Hematopoietic Stem Cell Transplantation for Multiple Sclerosis

Paul M. Matthews, GSK/Imperial College London, UK
Treatment Stratification for MS: Opportunities and Challenges

Zongqi Xia, Brigham and Women's Hospital and Harvard Medical School, USA
Short Talk: Leveraging Electronic Health Records for Research in Multiple Sclerosis

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Poster Session 3

TUESDAY, JANUARY 15

Neurobiology

Peter K. Stys, University of Calgary, Canada

Axon-Myelin Interactions

***Trevor J. Kilpatrick**, University of Melbourne, Australia

Targeting the Oligodendrocyte Lineage in Demyelinative Disease

Patrick Kuery, University of Duesseldorf, Germany

Short Talk: Nucleocytoplasmic Translocation of p57kip2 Promotes Oligodendroglial Differentiation

Hedwich F. Kuipers, Stanford University, USA

Short Talk: Differential Roles for the Small Heat Shock Protein Alpha B-Crystallin in Cuprizone-Induced De- and Remyelination

Catherine Lubetzki, INSERM and University Pierre et Marie Curie (UPMC), France

Translational Approaches to Remyelination

Peter I. Jukkola, Ohio State University, USA

Short Talk: K⁺ Channel Alterations in the Progression of Experimental Autoimmune Encephalomyelitis

Cellular Dynamics Underpinning Pathogenesis and Repair

***Amit Bar-Or**, Montreal Neurological Institute, Canada

Immune: Glial Interactions in MS: Implication during CNS Injury and Repair

Shannon Dunn, University of Toronto, Canada

Sex Differences in Multiple Sclerosis: Role for Male and Female Pubertal Factors

Gianvito Martino, San Raffaele Scientific Institute, Italy

The Role of Neural Stem Cells in Brain Regeneration

WEDNESDAY, JANUARY 16

Departure

Conference Program

FRIDAY, JANUARY 11

16:00–20:00 **Arrival and Registration**

SATURDAY, JANUARY 12

07:00–08:00 **Breakfast**

08:00–09:00 **Welcome and Keynote Address**

Registered attendees can view abstracts starting on 12/11/2012

* Trevor J. Kilpatrick, University of Melbourne, Australia

Lawrence Steinman, Stanford University, USA

When Bad is Good: Amyloid Molecules as Guardians Against Neuroinflammation

09:00–11:15 **Nature and Nurture: Insights Beyond GWAS and Epidemiological Studies**

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Short Talk: Genome-Wide Study of DNA Methylation Reveals Epigenetic Alterations in Brains of Multiple Sclerosis Patients

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Realizing the Promise of Pharmacogenomics

Tomas Olsson, Karolinska Institutet, Sweden
Genes and Lifestyle/Environmental Factors in Multiple Sclerosis and their Interactions

Judith Field, University of Melbourne, Australia
Short Talk: Gene Expression in Immune Cell Subsets: A Risk Gene Study for Multiple Sclerosis

09:40–10:00

Coffee Break

11:15–13:00

Poster Setup

13:00–22:00

Poster Viewing

On Own for Lunch and Recreation

16:30–17:00

Coffee Available

17:00–19:00

Cellular and Molecular Profiling: The Road to an Integrated Approach

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From Gut to Brain: The Complex Build-Up of Experimental Autoimmune Encephalomyelitis

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Ronald N. Germain, NIAID, National Institutes of Health, USA
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Short Talk: Investigation of Cellular Intrathecal and Peripheral Immune Responses in Patients with Multiple Sclerosis

19:00–20:00

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19:30–22:00

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Short Talk: Molecular MRI of Multiple Sclerosis Using 7 Tesla Chemical Exchange Saturation Transfer (CEST)

Laura Airas, Turku University Hospital (TYKS), Finland
Short Talk: Increased Microglial Activation in the Brain of Secondary Progressive Multiple Sclerosis Patients - A [11C] PK11195 PET Study

Frauke Zipp, Johannes-Gutenberg-Universität Mainz, Germany
Crosstalk of the Immune and Nervous Systems

Martin Kerschensteiner, Ludwig Maximilians University Munich, Germany
Harnessing the Potential of Cellular and Molecular in vivo Imaging Techniques

Peter Kosa, NINDS, National Institutes of Health, USA
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* **Richard A. Rudick**, Cleveland Clinic Foundation, USA
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