2017 Annual conference in multiple sclerosis
High-quality care for improved patient outcomes
3 March 2017 - Rome, Italy
Overview
Novel immunological insights into multiple sclerosis (MS) pathogenesis have revolutionized the traditional therapeutic approach. Numerous therapeutic options are available for individuals with MS, but the wide choice may present challenges for clinicians. Selecting the most appropriate treatment – one that targets specific disease manifestations and fulfils patient requirements - has created the need for individual biomarkers to be developed. There is also increasing demand for detailed information about MS to be widely available, particularly with regard to the risk/benefit profiles of specific treatments. Such information needs to be provided directly to patients, who are active players in the ‘therapeutic contract’.

The aim of this programme is to update each of these emerging issues in MS, offer practical suggestions for disease management and enhance communication with patients in daily practice.

Learning objectives
By attending this conference participants will be able to:

• Illustrate the main immunological abnormalities apparent in relapsing remitting and progressive MS forms
• Define the most important de-risking strategies in MS treatments to be applied in clinical practice
• Explain treatment algorithms for highly active MS, extending beyond first-line approaches
• Outline the importance of patient-reported outcomes in clinical practice and clinical trials

Target audience
Neurologists involved in MS management.

Chairs
David Bates
Department of Neurology
Royal Victoria Infirmary
Newcastle upon Tyne, UK

Giancarlo Comi
Department of Neurology
Institute of Experimental Neurology
Vita-Salute San Raffaele University
Milan, Italy
Cme Provider
EXCEMED is a non-profit foundation dedicated, since the last four decades, to the development of high-quality medical education programmes all over the world.

EXCEMED adheres to the guidelines and standards of the European Accreditation Council for Continuing Medical Education (EACCME®) which states that continuing medical education must be balanced, independent, objective, and scientifically rigorous.

Continuing Medical Education
EXCEMED (www.excemed.org) is accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) to provide the following CME activity for medical specialists. The EACCME® is an institution of the European Union of Medical Specialists (UEMS), www.uems.net

The CME conference “High-quality care for improved patient outcomes” held on 3 March 2017 in Rome, Italy is designated for a maximum of 6 (six) hours of European CME credits (ECMEC). Each medical specialist should claim only those credits that he/she actually spent in the educational activity. EACCME® credits are recognized by the American Medical Association (AMA) towards the Physician’s Recognition Award (PRA). To convert EACCME® credit to AMA PRA category 1 credit, please contact the AMA.

The CME conference has been designated for 2,1 Italian CME Credits. N. Event 178465 Ed. 1 - Provider Id n. 3255 from the Italian Ministry of Health.

EXCEMED adheres to the principles of the Good CME Practice group (gCMEp).

This conference is endorsed by EAN (European Academy of Neurology).
Venue
This educational conference takes place at the:

**Rome Marriott Park Hotel**
Via Colonnello Tommaso Masala, 54
Rome, Italy

Language
The official language of this conference is English.

CME Provider
**EXCEMED - Excellence in Medical Education**
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Our programme allows you to add your voice to the conversation. We wish you a unique learning experience.
Express your opinion, pose questions and engage with us. During this conference we offer feedback formats suited to all tastes: interactive workshops, panel discussions, question cards, real-time surveys, and a mobile application containing a voting system. Our objective is to help you get the most from your learning experience with us.

Learning: it’s also fun and games.
Join us in the media corner to complete the interactive clinical case on one of our iPads. Challenge yourself through gaming: make strategic decisions based on the clinical information provided and see if you can provide the best option. Understanding, treating and managing MS are brought together in this online learning approach. The three top scores will be awarded a gift by Professor David Bates during the closing plenary.

Blended, engaged learning? We have an app for that.
Your smart device is part of the educational experience at this conference. You are strongly encouraged to download the EXCEMED application accompanying the live programme. During and after the live programme, you will enjoy the following app features:

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• Ask a question section
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• Real-time voting system
• Learning effectiveness surveys
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Faculty

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University of Zurich  
Zurich, Switzerland

Alessandra Solari  
Unit of Neuroepidemiology  
Foundation IRCCS Neurological Institute C. Besta  
Milan, Italy
PROGRAMME
08.15 Welcome and opening
D. Bates (UK) - G. Comi (Italy)

Session I Understanding MS

Chairs: D. Bates (UK) - G. Comi (Italy)

Real-time survey

08.30 L1: Immunological signatures in relapsing remitting and progressive MS
D. Centonze (Italy)

08.50 L2: The compartmentalized immune response in MS
A. Bar-Or (USA)

09.10 L3: Neuro inflammation: role of genes and environment
J. Hillert (Sweden)

09.30 Q&A

10.00 Coffee break

Session II Treating MS

Chairs: D. Bates (UK) - C. Pozzilli (Italy)

10.30 L4: Selecting the appropriate immune system treatment target in MS
H.P. Hartung (Germany)

10.50 L5: Risk associated with MS treatment
L. Klotz (Germany)

11.10 L6: De-risking strategies in clinical practice
P. Rieckmann (Germany)

11.30 L7: DMDs: long-term studies
G. Comi (Italy)

11.50 Panel discussion: treatment goals
Moderator: C. Pozzilli (Italy)

Revisiting real-time survey

12.30 Lunch

Legend

L: Lecture 🧑‍🏫: Panel discussion ☑️: Q&A 📅: Real-time survey
13.30 Workshops

**Session III  Managing MS**

*This session includes two different parallel workshops, each lasting one hour. Participants will be divided into groups and will attend both workshops in rotation. By the end of the session each participant will have attended both workshops.*

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<td>Predicting treatment response in each patient: switching algorithms in the new landscape</td>
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<td>How to manage highly active MS patients in practice</td>
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<td>X. Montalban (Spain)</td>
<td>L. Klotz (Germany)</td>
<td>G. Comi (Italy)</td>
<td>G. Giovannoni (UK)</td>
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<td>How to manage highly active MS patients in practice</td>
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15.30 Coffee break
Back to plenary
Session IV  Patient–doctor communication about MS

Chairs: D. Bates (UK) - G. Comi (Italy)

Real-time survey

16.00 L8: The therapeutic contract - the doctor’s perspective
G. Giovannoni (UK)

16.20 L9: The therapeutic contract - the patient’s perspective
R. de Boer (The Netherlands)

16.40 L10: Patient-centered outcomes and clinical trials
A. Solari (Italy)

17.00 Q&A

17.20 Panel discussion: unmet needs in MS
Moderator: D. Bates (UK)

Revisiting real-time survey

17.50 Awarding prizes
The best social media engager
The highest scorers on the interactive clinical case

18.00 Scientific highlights and wrap-up

End of the conference
EXCEMED adheres to guidelines of the European Accreditation Council for Continuing Medical Education (EACCME®) and all other professional organizations, as applicable, which state that programmes awarding continuing education credits must be balanced, independent, objective and scientifically rigorous. Investigative and other uses for pharmaceutical agents, medical devices, and other products (other than those uses indicated in approved product labeling/package insert for the product) may be presented in the programme (which may reflect clinical experience, the professional literature or other clinical sources known to the presenter). We ask all presenters to provide participants with information about relationships with pharmaceutical or medical equipment companies that may have relevance to their lectures. This policy is not intended to exclude faculty who

Amit Bar-Or  Declared receipt of grants and contracts from Sanofi, Genzyme, Roche, Biogen, Genetech and receipt of honoraria or consultation fees from Sanofi, Genzyme, Roche, Biogen, Novartis, Genetech, Merck and Teva.

David Bates  Declared receipt of honoraria or consultation fees from Merck, Roche and Biogen.

Diego Centonze  Declared receipt of grants and contracts from Bayer, Biogen, Merck, Novartis, Teva. He declared also receipt of honoraria or consultation fees from Almirall, Biogen, Bayer, Genzyme, Gin Pharm, Merck, Novartis, Sanofi, Teva. He is member of a company advisory board, board of directors or other similar groups: Almirall, Bayer, Biogen, Genzyme, Gin Pharma, Merck, Novartis, Teva.

Giancarlo Comi  Declared receipt of honoraria or consultation fees from Merck, Novartis, Teva, Sanofi, Genzyme, Roche, Biogen, Almirall, Chugai, Receptos, Forward Pharma.

Reni de Boer  Declared no potential conflict of interests.

Gavin Giovannoni  Declared receipt of compensation for participating on Advisory Boards in relation to clinical trial design, trial steering committees and data and safety monitoring committees from: Abbvie, Bayer-Schering Healthcare, Biogen-Idec, Eisai, Elan, Fiveprime, Genzyme, Genentech, GSK, GW Pharma, Ironwood, Merck, Novartis, Pfizer, Roche, Sanofi-Aventis, Synthon BV, Teva, UCB Pharma and Vertex Pharmaceuticals.
Hans Peter Hartung  Declared receipt of honoraria or consultation fees from Biogen, Geneuro, Genzyme, Merck, Novartis, Roche, Receptos, Teva.

Jan Hillert  Declared receipt of grants and contracts from Biogen, Genzyme, Novartis, and of honoraria or consultation fees from Teva, Novartis, Genzyme, Biogen. He is member of a company advisory board, board of directors or other similar groups: Biogen, Genzyme.

Xavier Montalban  Declared the receipt of honoraria and consultation fees from: Almirall, Bayer, Biogen, Genzyme, Merck, Novartis, Receptos, Roche, Sanofi Genzyme, Teva.

Carlo Pozzilli  Declared receipt of grants and contracts from Merck, Novartis, Teva and Roche. He declared also receipt of honoraria or consultation fees from Teva, Roche, Novartis, Merck.

Peter Rieckmann  Declared receipt of honoraria or consultation fees from Bayer, Boehringer, Merck, Biogen, Sanofi, Teva and Roche.

Sven Schippling  Declared receipt of grants and contracts from from Bayer Healthcare, Biogen, Novartis, Sanofi Genzyme. He declared receipt of consultation fees from Bayer Healthcare, Biogen, Merck, Novartis, Sanofi, Genzyme and Teva.

Alessandra Solari  Declared receipt of honoraria or consultation fees from Almirall, Merck, Genzyme, Teva and Novartis. She is member of a company advisory board, board of directors or other similar groups: Biogen, Merck, Novartis.

The following faculty have provided no information regarding significant relationship with commercial supporters and/or discussion of investigational or non-EMEA/FDA approved (off-label) uses of drugs as of 17 February 2017.

Luisa Klotz
Amit Bar-Or is a neurologist and neuroimmunologist, Professor of Neuroimmunology and Associate Director Translational Research, at the Montreal Neurological Institute, McGill University, where he also serves as Director of the Experimental Therapeutics Program which integrates “mode of action” studies of novel therapies, with studies of human disease mechanism. Prof. Bar-Or’s clinical focus is in the area of multiple sclerosis and related CNS inflammatory disorders, and he currently serves as President of the Canadian Consortium of MS Clinics (CNMSC). His lab examines basic principles of immune regulation and immune-neural interaction in the context of CNS inflammation, injury and repair. Immune system studies include elucidation of effector and regulatory properties of distinct immune cell (principally B cell, myeloid cell and T cell) subsets; their interactions; and how these may contribute to inflammatory neurological diseases such as multiple sclerosis, in both children and adults. Studies of immune-neural interaction consider both relapsing and progressive disease biology, including mechanisms by which neural cells respond to, as well as contribute to, CNS inflammation and degeneration. An overarching theme is translation of basic lab discoveries towards understanding and development of novel experimental therapies. This includes human in vivo biological proof-of-principle studies of therapeutic mode-of-action and immune reconstitution; development and application of biological assays to monitor disease activity and evaluate response to treatments; and the development of clinically meaningful biomarkers for patients with autoimmune and neurological disease supported.
David Bates trained in Medicine at Downing College, Cambridge and the Middlesex Hospital, London and in Neurology at the University of Newcastle upon Tyne, UK, and the Mayo Clinic, Rochester, Minnesota, USA. He is Emeritus Professor of Clinical Neurology at the University of Newcastle upon Tyne, Former Editor of the International MS Journal and past Chairman of both the MS Forum and the Medical Research Advisory Committee of the MS Society of Great Britain and Northern Ireland. He is Chairman of the Joint Colleges Working Party on the Vegetative State and Criteria for Brain Stem Death and Chairman of the Consensus Conference on the Epilepsies for the Royal College of Physicians, Edinburgh. His research interests are in vascular disease, coma and the unconscious patient, and in MS. Professor Bates has published more than 150 peer-reviewed papers, edited three textbooks and contributed chapters to more than 20. His current research involvement is predominantly in clinical trials of novel therapy in MS and in the role of mitochondria in protecting and repairing axons in the more chronic phases of that disease.
Diego Centonze is Full Professor of Neurology at the University of Rome Tor Vergata and Director of the Neurology and of the Neurorehabilitation Units at the IRCCS Neuromed, Pozzilli (IS). His major clinical interest involves the evaluation of new drugs for the treatment of MS. His research interests are related to the role of synaptic transmission and plasticity in the pathophysiology of Multiple Sclerosis and of its experimental model, and to the mechanisms of the neurodegenerative damage in neurological diseases. Prof. Centonze graduated in Medicine at the University of Rome La Sapienza in 1994, specialised in Neurology in 1999 and in Psychiatry in 2006 at the University of Rome Tor Vergata and obtained his PhD in Rehabilitation Medicine in 2012. He is Principal Investigator of national and international trials with new therapeutic agents for MS and member of advisory boards of Pharmaceutical Industries for treatment optimization in MS. He is Member of the Society for Neuroscience, the Italian Neurological Society, the Italian Neuroscience Society, the European Committee for Treatment and Research in Multiple Sclerosis Council and of the Italian Neuroimmunonology Association Council. Prof. Centonze is author of around 300 peer-reviewed papers published in international journals of Neuroscience, Neurology and Psychiatry.
Giancarlo Comi is Professor of Neurology, Chairman of the Department of Neurology and Director of the Institute of Experimental Neurology at the Vita-Salute San Raffaele University, Milan. He is also the President of the European Charcot Foundation (ECF), member of the Board of Administration of the Italian Multiple Sclerosis (MS) Foundation and the Scientific Committee of Associazione Italiana Sclerosi Multipla and Co-chair of the Scientific Steering Committee of the Progressive MS Alliance. He joined the Department of Neurology, Scientific Institute San Raffaele, Vita-Salute San Raffaele University, Milan, as a Clinical Assistant in 1974 and was appointed Assistant Professor in Clinical Neurophysiology in 1988. Professor Comi has served as President of the European Neurology Society, the Italian Society of Clinical Neurophysiology and the Italian Society of Neurology. In 2015 Prof. Comi has obtained, as the first Italian, the “Charcot Award for MS research” by the MS International Federation (MSIF) and also granted both with honorary membership of the European Neurological Society (ENS) and fellow of the European Academy of Neurology (FEAN). Recently he has been awarded the Gold medal of Benemeranza Civica from the City of Milan.
Reni de Boer after being a patient for almost 20 years, thinks it is safe to say that you can call her an expert of MS. Because of problems related to her condition, she could not finalise her studies in Systems Engineering, Policy Analysis and Management at the Technical University of Delft nor her studies in Art History at the University of Leiden. In 2007, she won the contest Mis(s) Holland for people with a handicap in a nation wide television show. This contest was connected to a one year job as Dutch Ambassador for people with a handicap. In the following years, she became ambassador for Dutch MS-Research and vice chair for the MSIF through the international committee for people with MS. Nowadays she is member of the Board of Trustees of the Liliane Foundation, that supports children with a handicap in developing countries. As an advocate of MS, one of her greatest achievements was to write a book based on her personal experiences of living with MS: “Stuk”. Currently, she works as a model and speaker on issues related to equal rights. This is alongside writing columns and participate in promotional activities for the MSIF, MS Research and the MS Vereniging Nederland.
Gavin Giovannoni was appointed Chair of Neurology, Blizard Institute, Barts and The London School of Medicine and Dentistry, Queen Mary University of London and the Department of Neurology, Barts Health NHS Trust in November 2006. He did his undergraduate medical training at the University of the Witwatersrand, South Africa, where he graduated in 1987. He did his PhD at Institute of Neurology, University College, Queen Square. His clinical interests are multiple sclerosis and other inflammatory disorders of the central nervous system. He is particularly interested in clinical issues related to optimising MS disease modifying therapies. His current research is focused on Epstein Barr virus as a possible cause of multiple sclerosis and multiple sclerosis related neurodegeneration and related biomarkers. His team focuses on translational research and has an active MS clinical trial programme.
Hans Peter Hartung started his career in neurology at the University of Düsseldorf, where he became assistant professor in 1987. He was appointed professor and head of the MS clinical research group at the University of Würzburg in 1990 and moved in 1997 to Graz, Austria, to become chairman of the University Department of Neurology. He is currently chair of the Department of Neurology at Heinrich Heine University Düsseldorf, a position he has held since 2001, and since 2013 director of the Center for Neuropsychiatry. He is in charge of two busy inpatient departments with a total of 100 beds including stroke unit. Professor Hartung’s clinical and translational research interests are in the field of basic and clinical neuroimmunology and in particular multiple sclerosis and immune neuropathies. He has authored or co-authored more than 900 articles in peer-reviewed journals, one hundred book chapters and edited nine books. He oversees the various research activities (clinical and preclinical) in his department that relate to Parkinson’s and movement disorders incl deep brain stimulation, stroke, neuromuscular disorders, neuro-HIV and infectious diseases, spinal cord injury, repair strategies in CNS and PNS. He has been involved as member of the Steering Committee in numerous international multi-centre therapeutic phase 2 and 3 trials in multiple sclerosis, Guillain-Barré Syndrome and CIDP. He was President of ECTRIMS and serves amongst others on the executive boards of the European Charcot Foundation (treasurer), the International Society of Neuroimmunology, Peripheral Nerve Society, WHO Working Group on Multiple Sclerosis, GBS CIDP Foundation International, the Medical Advisory Board of the International (MSIF) and the German MS Society, and the US NMS Society and ECTRIMS clinical trials committee.
Jan Hillert has been Professor of Neurology at the Karolinska Institute, Stockholm, Sweden, since 2001, and in 2010 was appointed Chairman of the Department of Clinical Neuroscience. Professor Hillert has led a multiple sclerosis (MS) clinic for over 10 years and is founding chair of the Swedish Multiple Sclerosis Registry, which contains information on 15,000 MS patients. He is actively engaged in several MS clinical trials and has published 240 peer-reviewed papers. Professor Hillert’s research primarily focuses on the genetic aspects of MS and has contributed to the discovery of several MS genes. Additional research interests include immunology and treatment aspects of MS, including treatment-induced antibodies. Current research efforts focus on translational epidemiology, integrating clinical, genetic, environmental, and public registry data both nationally and internationally.
Luisa Klotz is head of a scientific research group on neuroimmunology and immune modulation at Muenster University and senior physician at the Department of neurology, Muenster. Her research is focusing on the role of nuclear receptors for CNS autoimmunity, the role of cellular components of the blood brain barrier for CNS autoimmunity and the role of classical immune-inhibitory molecules in the pathogenesis of CNS autoimmunity. Professor Klotz received the Sobek young scientist award for MS research (2012). She is principal investigator in the Muenster-based excellence cluster “cells in motion” (founded by the German Research Council, DFG) and PI in the transregional collaborative research Centre 128 “multiple sclerosis” (also funded by the DFB, 2nd funding period 2016-2020).
Xavier Montalban is Chairman of the Department of Neurology - Neuroimmunology and Director of the Multiple Sclerosis Centre of Catalonia at the Vall d’Hebron University Hospital in Barcelona, where he is former director of the Department of Neuroscience, and is also the chief of the Neuroimmunology Research Group at the Vall d’Hebron Research Institute. He is Professor of Neurology at the Universitat Autònoma de Barcelona. Professor Montalban is Vice president of Fundació Esclerosi Múltiple (MS Foundation), Former President of the Executive Committee of the European Committee for the Treatment and Research in Multiple Sclerosis (ECTRIMS), and Vice-president for Institutional Relations of the Spanish Neurological Society (SEN). He is a member of the US National Multiple Sclerosis Society Clinical Trials Committee and chairs the Medical & Scientific Board of the Multiple Sclerosis International Federation (MSIF), the Board of the European Charcot Foundation, and is a member of the European Magnetic Resonance Research Group, MAGNIMS. In the past twenty years, Prof. Montalban has been in the inception phases and on steering committees of many clinical trials related to multiple sclerosis. He has authored over 200 original and revision publications in international peer-reviewed journals as well as several book chapters. Recently, he has directed the development of the first Spanish (second worldwide) Multiple Sclerosis Clinical Practice Guidelines. He is the Director of the Neuroimmunology section of Revista de Neurología, and an editorial board member for several specialist neurology-related journals as well as Co-editor and Editor of the Clinical Cases Section of the Multiple Sclerosis Journal. In 2012 Prof. Montalban saw the culmination of over twenty years of constant strive to make MS management in Spain truly a continuous care process through the MS Centre of Catalonia: a newly built, 2000sq meter building for diagnosis, treatment, rehabilitation, research and teaching. The center is powered by 60+ healthcare, research and other professionals. Together they cater for the needs of over 5,000 persons with MS and their families. His research interests include clinical trials, clinical aspects of MS, MR imaging and biological prognostic factors of disease evolution and treatment response, immunological mechanisms of the disease and other aspects of clinical management of MS.
Carlo Pozzilli is Full Professor of Clinical Neurology and Chief at the Multiple Sclerosis Center of Ospedale S. Andrea, at the University of Rome “La Sapienza”. He gained his MD at the University of Rome “La Sapienza” in 1979 and in 2000 became an Associate Professor, then Professor Clinical Neurology in 2006. He is a member of the European Committee for Treatment and Research in Multiple Sclerosis, the Italian Neurological Society and the International Federation of Multiple Sclerosis (International Medical Advisory Board). He has participated as first investigator in around 120 multicentre clinical trials on patients with MS. Carlo Pozzilli is author of 310 papers and editor of several books on MS.
Peter Rieckmann received his medical degree from the University of Göttingen in 1989. After a postdoctoral fellowship in molecular immunology at the NIH, Bethesda, USA he completed his training in Neurology at the National Institute for Nervous Disease, London, UK and the University of Göttingen, Germany. Professor Rieckmann received Board certification in Neurology in 1995. His academic and clinical positions have included Senior [staff] Neurologist and Professor for Neurology, Dept. of Neurology, as well as head of the Clinical Research Group for Multiple Sclerosis and Neuroimmunology, at the Julius-Maximilians University of Würzburg. He holds several positions as visiting professor across the globe. In 2007 Professor Rieckmann became the MS Society of Canada Research Chair and Director of the MS Program at the University of British Columbia and Vancouver Hospital, Canada. Under his leadership the Vancouver program was awarded Western-Pacific Research and Training Center by the MS Society of Canada. He is founding member of the EndMS campaign in Canada. His major research interests are disease modifying factors and regeneration in multiple sclerosis as well as functional aspects of the blood brain barrier in neuroimmunological diseases. Professor Rieckmann’s clinical goals include enhancing awareness and education about MS, developing effective and properly resourced services for MS outpatient care, and providing more customized treatments for patients. As a clinician scientist he has been actively involved in different efforts to transfer bench results to clinical developments and serves on steering committees of various international multi-centre MS trials (Phase II and III). In September 2009 he started a new position as Director of the Neurological Clinic at the Academic Hospital in Bamberg, and Professor of Neurology at the University of Erlangen, Germany. Professor Rieckmann is a Fellow of the Royal College of Physicians and Surgeons, Canada. He has received numerous awards and research grants and has over 200 papers to his credit in peer-reviewed medical journals.
Sven Schippling is currently Deputy Head of the Department of Neuroimmunology and Clinical Multiple Sclerosis Research (nims) at the University Hospital Zürich, Switzerland. He is also the Co-Director of the Clinical Research Priority Program MS (CRPPMS) and Consultant Neurologist at the Department of Neurology at University Hospital Zürich. He is a Senior Group Leader at the Neuroscience Center Zurich of the Federal Technical Highschool Zurich and the University of Zurich. Prior to this, he was Head of the first MS Day Clinic in Germany at the University Medical Center of Hamburg University, Germany. From 2005 to 2006 he was a Postdoctoral Research Fellow at the Institute of Neurology, University College London, UK and the National Hospital for Neurology and Neurosurgery, London.

Schippling’s areas of special interest are clinical neuroimmunology, mainly within the fields of multiple sclerosis (MS) and neuromyelitis optica. His research focuses include multimodal imaging methods in MS, such as magnetic resonance imaging and optical coherence tomography, transcranial magnetic stimulation and clinical trials including stem cell therapies in MS (haematopoietic and mesenchymal). He is also a member of the steering group for the “MS in the 21st Century” initiative, the multinational OCTIMS and BENEFIT11 trials and has authored numerous peer-reviewed publications.
Alessandra Solari is Head of the Unit of Neuroepidemiology, Foundation IRCCS Neurological Institute C. Besta of Milan, Italy. Dr. Solari’s main area of research is the validation of instruments and outcome measures (chiefly patient-reported outcome measures) for clinical, epidemiologic, and quality of care studies in neurological diseases, particularly multiple sclerosis. Her other main interest is the design, conduction and analysis of randomised controlled trials on rare diseases and on complex interventions. She has published in leading medical journals, including Lancet Neurology, Neurology, Brain, and Multiple Sclerosis Journal.
Learning objectives:

- Debate the role of the innate and acquired immune systems in MS development and progression
- Explain the roles of B and T cells in sustaining and amplifying peripheral inflammation in relapsing remitting and progressive MS
- Describe the deregulation of serum pro- and anti-inflammatory cytokines in relapsing remitting and progressive MS
The compartmentalized immune response in MS

A. Bar-Or (USA)

Learning objectives:

• Illustrate the anatomical localization of immune cell infiltrates in the CNS, the main route of CNS infiltration and histopathological findings
• Describe the molecular mechanisms by which the compartmentalized immune response contributes to MS progression
• Enlighten the role of microglia with respect to inflammation and neurodegeneration
Neuro inflammation: role of genes and environment

J. Hillert (Sweden)

Learning objectives:
• List the main environmental risk factors associated with MS
• Illustrate the genetic variants and alleles associated with heightened risk of developing MS and/or specific MS clinical phenotypes
• Describe mechanisms linking genetic and environmental risk factors with the development of neuroinflammation
Selecting the appropriate immune system treatment target in MS

H.P. Hartung (Germany)

*Learning objectives:*

- Describe how to define the ‘immunological profile’ of individuals with MS
- List the most promising immunological biomarkers for predicting treatment response at individual level in MS
- List the immunological biomarkers that contraindicate the use of specific MS treatments
- List the immunological biomarkers that prompt the use of specific treatments in demyelinating disorders (e.g. anti-neuromyelitis optica antibodies)
Risk associated with MS treatment

L. Klotz (Germany)

**Learning objectives:**

- Describe the on- and off-target effects of different immunosuppressant agents used for MS treatment
- Define the main mechanisms linking immunosuppression and oncogenesis
- Illustrate the main mechanisms linking immunosuppression and specific opportunistic infections (e.g. tuberculosis, progressive multifocal leukoencephalopathy)
- Illustrate the main mechanisms linking immunomodulation with other autoimmune disorders (e.g. thyroiditis)
De-risking strategies in clinical practice
P. Rieckmann (Germany)

Learning objectives:
• Illustrate the pre-treatment screening methods required to choose, and minimize, risks in MS patients
• Illustrate the evaluation tests that are needed in order to monitor risks during MS treatment
• Define the long-term follow-up that is required in MS patients after treatment discontinuation or switching to another treatment
• Provide clues on how to manage MS treatment-associated complications (e.g. infections)
DMDs: long-term studies

G. Comi (Italy)

Learning objectives:

• Describe the main results of long-term studies with injectable treatments in MS, in terms of efficacy and safety
• Describe the main results of long-term studies with oral treatments and monoclonal antibodies in MS, in terms of efficacy and safety
Predicting treatment response in each patient: switching algorithms in the new landscape

X. Montalban (Spain) - L. Klotz (Germany)

Learning objectives:
- Describe the clinical and radiological biomarkers that have prognostic value
- Illustrate how to evaluate treatment response in MS patients
- Discuss the prognostic factors that should be taken into account when considering MS treatment options
- Discuss the scores and markers of progression suitable for defining non-responders who should be switched to second-line treatments
- Discuss the scores and markers of progression suitable for defining non-responders who should be switched to third-line treatments
How to manage highly active MS patients in practice
G. Comi (Italy) - G. Giovannoni (UK)

Learning objectives:
• Describe the mechanisms of action of induction therapy for MS
• Define the long-term benefit of induction therapy for MS, based on current evidence
• Discuss the prognostic factors that should be taken into account when considering induction therapy for MS
• Discuss treatment options available for highly active patients (e.g. induction therapy)
• Discuss the long-term benefits of induction therapy for MS
The therapeutic contract - the doctor’s perspective

G. Giovannoni (UK)

*Learning objectives:*

- Explain the key elements of a therapeutic contract and how it differs from informed consent
- Illustrate how to propose a ‘therapeutic contract’, from the doctor’s perspective
- Describe the therapeutic contract in the framework of clinical trial participation
The therapeutic contract - the patient’s perspective
R. de Boer (The Netherlands)

Learning objectives:
• Define unmet needs in terms of the doctor-patient relationship
• Outline what the patient has in mind when they want to switch treatments
• Describe the difference between ‘therapeutic contract’ and ‘therapeutic alliance’
• Define the current and future role of patients’ association representatives in MS centre governance and in the research process
• Illustrate proposals for improving the current scenario
Learning objectives:
• Why we should incorporate PROs in clinical trials
• Illustrate the use of PROs in multiple sclerosis randomized controlled trials
• Move forward
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