

Axonal response of mitochondria to demyelination and complex IV activity within demyelinated axons in experimental models of multiple sclerosis

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Abstract

Aims: Axonal injury in multiple sclerosis (MS) and experimental models is most frequently detected in acutely demyelinating lesions. We recently reported a compensatory neuronal response, where mitochondria move to the acutely demyelinated axon and increase the mitochondrial content following lyssolecithin-induced demyelination. We termed this homeostatic phenomenon, which is also evident in MS, the axonal response of mitochondria to demyelination (ARMD). The aim of this study is to determine whether ARMD is consistently evident in experimental demyelination and how its perturbation relates to axonal injury.

Simon Licht-Mayer and Graham R. Campbell are joint first authors.

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Experimental Models Of Multiple Sclerosis

Tsuneya Ikezu, Howard E. Gendelman



Experimental Models Of Multiple Sclerosis:

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Immune-mediated Mechanisms of Demyelination in Experimental Models of Multiple Sclerosis Margaret Mary Morris, King's College London. Guy's, King's and St. Thomas's School of Medicine, 1998

Oxidative Tissue Injury in Experimental Models of Multiple Sclerosis Cornelia Schuh, 2015-02-12 Multiple sclerosis MS is a chronic disease of the central nervous system A number of different animal models of MS contributed to a better understanding of MS pathology Additionally experimental models enabled the development of immune modulatory therapies for MS patients In recent years growing evidence for a major role of oxidative injury in demyelination and neurodegeneration in MS has been emerging Hence we aimed to characterise the nature and the extent of oxidative damage in different experimental models in comparison to MS For this purpose we emphasised the expression of enzymes involved in reactive species production and the accumulation of oxidised phospholipids and iron which is a potential amplifier of oxidative damage The different animal models were triggered by diverse inflammatory mechanisms each representing distinct aspects of MS pathology The presented study reports a diverging extent of oxidative injury and underlying mechanisms in different models for inflammatory demyelination

Animal Models of Disease Part B, 2024-06-14 Animal Models of Disease Part B Volume 188 in the Methods in Cell Biology series highlights advances in the field with this new volume presenting interesting chapters on a variety of timely topics including Using C Elegans as a model for Neurodegenerative disease Methodology and Evaluation Modelo Animal de Esclerosis Multiple Encefalomiелitis Autoimmune Experimental EAE New mouse model to study aneurysm development Spinal Nerve Ligation An Experimental Neuropathic Pain Model in Rats and Mice Identifying therapeutic compounds for Autosomal Dominant Optic Atrophy ADOA through screening in the nematode C elegans E TCL1 adoptive transfer mouse model of chronic lymphocytic leukemia and much more Other chapters cover Purification and characterization of kidney infiltrating leukocytes in a mouse model of lupus nephritis Differences in intratumor innate lymphoid cell composition between orthotopic and spontaneous pancreatic mouse models Assessing motor development and function in mouse models of neurodevelopmental disorders Analysis of Gut Microbiota profile targeted to multi hypervariable

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Experimental Autoimmune Encephalomyelitis Models Disease Biology and Experimental Therapy is totally focused on the model of multiple sclerosis experimental autoimmune encephalomyelitis EAE The book chapters give a very good and in depth overview about the currently existing and most used EAE models In addition chapters dealing with novel experimental therapeutic approaches demonstrate the usefulness of the EAE model for MS research With an international perspective this book features contributions from authors throughout the world Australia Germany Japan Spain Taiwan and USA There is an impressive international Faculty that provides insight into current research themes This further demonstrates the importance of EAE in research all over the world The book will provide established researchers and students with novel insights and guidance for their research and will help to push the field forward **McAlpine's Multiple Sclerosis** Alastair

Compston,Douglas McAlpine,1998 This is the latest edition of the classic book on the subject of multiple sclerosis An international group of authors has been involved in updating this edition which features more information on imaging and investigations and a new chapter on neurobiology and glial development Neuroimmune Pharmacology Tsuneya

Ikezu,Howard E. Gendelman,2008-03-21 Neuroimmune pharmacology seeks to harness the immune system to provide pharmacological intervention to combat neurodegenerative diseases This book provides a comprehensive overview of topics that embrace the link between the immune system and the pathogenesis of neurodegenerative disorders Results from recent studies strongly suggest that a major part of the process in diseases including Alzheimer s and Parkinson s as well as Prion diseases comes from changes in the innate and adaptive arms of the brain and peripheral immune systems Thus the book provides an in depth study of numerous fields including immunology pharmacology neuroscience and neurovirology It is accompanied by a CD ROM that includes access to lectures slide presentations and question and answers on neuroimmune pharmacology **Sourcebook of Models for Biomedical Research** P. Michael Conn,2008 The collection of systems

represented in Sourcebook of genomic programs although this work is certainly well Models for Biomedical Research is an effort to reflect the represented and indexed diversity and utility of models that are used in biomedicine Some models have been omitted due to page limitations That utility is based on the consideration that observations and we have encouraged the authors to use tables and made in particular organisms will provide insight into the figures to make comparisons of models so that observations workings of other more complex systems Even the cell not available in primary publications can become useful to cycle in the simple yeast cell has similarities to that in the reader humans and regulation with similar proteins occurs We thank Richard Lansing and the staff at Humana for Some models have the advantage that the reproductive guidance through the publication process mitotic development or aging cycles are rapid compared As this book was entering

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Experimental Autoimmune Encephalomyelitis Roy McClen, 2015-01-05 The book highlights experimental autoimmune encephalomyelitis which is the most commonly used experimental model It is entirely based on the model of multiple sclerosis MS and experimental autoimmune encephalomyelitis EAE The book incorporates a ver

Immune-mediated Mechanisms of Demyelination in Experimental Models of Multiple Sclerosis, 1999

Immunological and Inflammatory Disorders of the Central Nervous System Neil Scolding, 1999 A variety of diseases which are driven by immunological and inflammatory disturbances can affect the central nervous system some are primary neurological conditions e g multiple sclerosis whilst other CNS diseases reflect an inflammatory disorder e g vasculitis The clinical features immunological background and treatment of these primary and secondary disorders of the CNS are the subject of this book Gene Regulation and Immune Mechanisms in Multiple Sclerosis Experimental Models

Mónica Sofia Calado Marta, 2007 *Exploring the Immunosuppressive Properties of Various Agents in the Experimental Autoimmune Encephalomyelitis Models of Multiple Sclerosis* James Matthew Nichols, 2020 One of the major focuses for our lab involves examining the immunosuppressive properties of various agents and receptors in the experimental autoimmune encephalomyelitis EAE model of multiple sclerosis MS This dissertation encompasses an investigation of cannabidiol in the EAE model the endocannabinoid CB1 receptor in the EAE model staphylococcal superantigens SAg as immunosuppressive agents and various aspects of the EAE model The first chapter covers the existing literature pertinent to these studies the second and third chapters cover the material methods and results from the studies and the fourth chapter is a discussion of how those results fit into the existing body of literature A fifth chapter has also been included which covers two additional studies designed to develop alternative EAE models for our lab however both studies turned out differently than expected One of the most interesting developments from this final chapter was the discovery of an age dependent difference in the memory T cell response of older mice which allows for more robust disease to be induced when cells from 6 month old mice are used in the passive EAE P EAE model as opposed to mice 10 weeks of age **Annals of the New York Academy of Sciences**

Thomas Lincoln Casey, Gilbert Van Ingen, Charles Lane Poor, Edmund Otis Hovey, Ralph Winfred Tower, 1988 Records of meetings 1808 1916 in v 11 27 **The Journal of Immunology**, 2006 Critical Reviews in Neurobiology, 1987

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