Michael John Ferns, B.Sc.(Hons), Ph.D.

Clinical Interests

Dr. Ferns interest is in disorders of neuromuscular synapses such as myasthenia gravis and congenital myasthenic syndrome. His aim is to understand the pathological basis for these diseases at a molecular level and to define new therapeutic targets for the treatment of these disorders.

Research/Academic Interests

Dr. Fern's interest is in understanding the molecular basis of synapse formation, maintenance and disease in the peripheral nervous system. His research focuses on cholinergic neuromuscular and autonomic synapses and his main objectives are (1) to define the synaptogenic factors that regulate synapse formation and maintenance; (2) to define the intracellular mechanisms that localize nicotinic acetylcholine receptors at these synapses; and (3) to establish how defects in synapse formation or receptor localization contribute to neurological diseases such as myasthenia gravis and congenital myasthenic syndromes. This includes collaborative studies with clinician-scientists at UC Davis.

Title

Professor

Specialty

Anesthesiology, Neuromuscular Disorders

Department

Anesthesiology and Pain Medicine

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Education

Ph.D., Physiology, University of Western Australia, Perth, Western Australia, Australia 1988
B.Sc., University of Otago, Dunedin, New Zealand 1983

Fellowships

Postdoctoral Fellowship, Department of Physiology, UC San Francisco, San Francisco CA 1991-1994

Professional Memberships

American Association for the Advancement of Science
American Society for Biochemistry and Molecular Biology
Society for Neuroscience

Honors and Awards

Canadian Institute Health Research Scholarship, 2002
Adler Foundation Postdoctoral Fellowship, 1994
University Postgraduate Research Scholarship for Foreign Student, 1987

Select Recent Publications

Ferns M. An inside job: molecular determinants for postsynaptic localization of nicotinic

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acetylcholine receptors. Journal Molecules. 2021; 26(11): 3065. doi: 10.3390/molecules26113065

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Maselli RA, van der Linden H Jr, Ferns M. Recessive congenital myasthenic syndrome caused by a homozygous mutation in SYT2 altering a highly conserved C-terminal amino acid sequence. Am J Med Genet A. 2020 Jul;182(7):1744-1749. doi:10.1002/ajmg.a.61579. Epub 2020 Apr 6. PMID: 32250532.

Rudell JC, Borges LS, Yarov-Yarovoy V, Ferns M. The MX-Helix of Muscle nAChR Subunits Regulates Receptor Assembly and Surface Trafficking. Front Mol Neurosci. 2020 Mar 24;13:48. doi:10.3389/fnmol.2020.00048. PMID:32265653.

Rudell JB, Maselli RA, Yarov-Yarovoy V, Ferns MJ. Pathogenic effects of agrin V1727F mutation are isoform specific and decrease its expression and affinity for HSPGs and LRP4. Hum Mol Genet. 2019 Aug 15;28(16):2648-2658. doi:10.1093/hmg/ddz081. PMID:30994901.

Maselli RA, Vázquez J, Schrumpf L, Arredondo J, Lara M, Strober JB, Pytel P, Wollmann RL, Ferns M. Presynaptic congenital myasthenic syndrome with altered synaptic vesicle homeostasis linked to compound heterozygous sequence variants in RPH3A. Mol Genet Genomic Med. 2018 May;6(3): 434-440. doi:10.1002/mgg3.370. Epub 2018 Feb 14. PMID:29441694.

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Maselli RA, Arredondo J, Ferns MJ, Wollmann RL. Synaptic basal lamina-associated congenital myasthenic syndromes. Ann N Y Acad Sci. 2012 Dec;1275:36-48. doi:10.1111/j.1749-6632.2012.06807.x. PMID:23278576.

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