

# Michael J. Ferns, Ph.D.

**Clinical Interests** My clinical interest is in diseases of cholinergic neuromuscular and autonomic synapses, such as myasthenia gravis and congenital myasthenic syndrome. Our 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. My research interest is the cellular and molecular basis of synapse formation in the mammalian nervous system. Synapse formation is critical for the development, maintenance, and plasticity of the nervous system and perturbations in synaptic structure and function have been implicated in a range of neurological disorders. My research focuses on cholinergic neuromuscular and interneuronal synapses in the peripheral nervous system. Our main aims are (1) to define the extracellular synaptogenic factors that regulate the formation and maintenance of these synapses; (2) to define the intracellular protein interactions that regulate the localization and trafficking of nicotinic acetylcholine receptors (AChR) at these synapses; and (3) to establish how dysregulation of AChR localization contributes to diseases such as myasthenia gravis and congenital myasthenic syndrome.

**Title** Professor

**Department** Anesthesiology

**Division** Anesthesiology/Physiology

**Education** Ph.D., University of Western Australia, Perth, Crawley, 1988  
B.Sc., University of Otago, Dunedin, 1983

**Select Recent Publications** Lee Y, Rudell J, Ferns M. Rapsyn interacts with the muscle acetylcholine receptor via alpha-helical domains in the alpha, beta, and epsilon subunit intracellular loops. *Neuroscience*. 2009 Sep 29; 163(1):222-32. Epub 2009 May 29.

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