



Professor Mibel Aguilar

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Monash Biomedicine Discovery Institute
Cardiovascular Disease Program

OTHER PROGRAM AFFILIATIONS



Neuroscience

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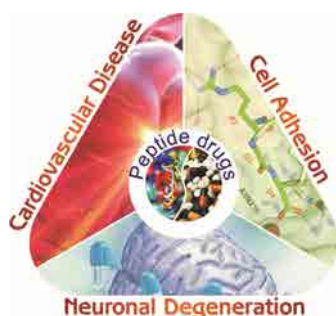
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WEB med.monash.edu/biochem/research/projects/peptide.html

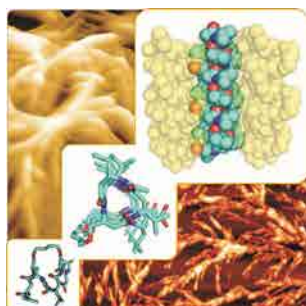
Our group focuses on peptide-based drug design and biomembrane nanotechnology. We are developing novel compounds that allow us to exploit the potential of peptides as drugs. We are currently applying our technology to the development of new compounds for treatments of cardiovascular disease and new bio- and nano-materials. Our membrane nanotechnology projects involve the development of new methods for membrane protein purification and analysis with application to Alzheimer's, G protein-coupled receptor function, apoptosis, antimicrobial peptide function and new biosensor devices. The long-term aim of these studies is to increase our understanding of the molecular basis of peptide and protein function and allow the rational design of peptide and protein based therapeutics.

Research Projects

1. Peptide-Based Nanomaterials
2. Role of the Mitochondrial Membrane in Apoptosis
3. New Ligands for Cardiovascular Disease



Peptide-Based Nanomaterials



Selected significant publications:

1. Hirst D, Lee TH, Pattenden LK, Thomas WG and **Aguilar MI**. 2015. Helix 8 of the angiotensin-1a receptor interacts with phosphatidylinositol phosphates and modulates membrane insertion". *Scientific Reports* 5:09972.
2. Andreu-Fernández V, Genoves A*, Lee TH, Stellato M, Lucantoni F, Orzáez, M, Mingarro, I, **Aguilar MI*** & Perez-Payá, E. 2014. Peptides derived from Transmembrane (TM) domains of diverse Bcl-2 proteins exert disruptive behavior in mitochondrial membranes. *ACS Chem Biol.* 9, 1799-1811.
3. Hall, K, Lee TH, Mechler A, Swann MJ and **Aguilar MI**. 2014. Real-time Measurement of Multiple Membrane Conformational States During Antimicrobial Peptide Binding: The Balance Between Recovery and Lysis. *Scientific Reports*, June 27 4:5479.
4. Lee TH, Heng C, Separovic F and **Aguilar MI**. 2014. Comparison of Reversible Membrane Destabilisation Induced by Antimicrobial Peptides Derived from Australian Frogs, *Biochim Biophys Acta (Biomembranes)*, 1838, 2205-15.
5. Del Borgo MP, Mechler AI, Traore D, Forsyth C, **Wilce JA**, Wilce MCJ, **Aguilar MI*** and Perlmutter* P. 2013. Supramolecular Self-Assembly of N-Acetyl capped β -Peptides Leads to Nano- to Macroscale Fibre Formation'. *Angewandte Chemie Int Ed.*, 52 8266-8270. Selected for Front Piece Highlights.