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Education and Training

B.Sc. (Hons), University of Otago, Dunedin, New Zealand

Ph.D., University of Otago, Dunedin, New Zealand

Biosketch

The overall theme of Dr Mooney's research is to understand normal brain development, how exposure to alcohol (and other drugs or experiences) disrupts this, what the behavioral outcomes are, and whether simple cost-effective interventions can improve outcomes. Developmental exposure to ethanol profoundly affects development of the nervous system. Indeed, fetal alcohol exposure is described as the primary known cause of mental retardation, and recent estimates suggest that 2-5% of US children can be diagnosed with a Fetal Alcohol Spectrum Disorder.

Dr Mooney's work has contributed to understanding that alcohol alters cell proliferation, migration, and death; all of which are critical for brain development. She has also examined the role of growth factors in these processes and shown that their expression and/or activity is altered by developmental exposure to alcohol. Ongoing work describes behavioral outcomes after acute or chronic exposure to alcohol.

The acute alcohol exposure model allows understanding of how changes in anatomy, protein expression, and gene and microRNA expression in the brain align with behavioral changes. Dr Mooney was the first to show that the timing of the alcohol exposure defines the social behavior deficit, and that outcomes were sex- and age-dependent. These findings help to explain the spectrum of outcomes seen in the human population.

The lab also explores potential rescue therapy to ameliorate the effects of alcohol. Importantly, the focus is on therapies that are used after birth and could be translated into treatments for humans with Fetal Alcohol Spectrum Disorders.

Research/Clinical Keywords

brain development, fetal alcohol syndrome, fetal alcohol spectrum disorder, neurotrophin, cognition, social behavior

Highlighted Publications

Bearer CF, Wellmann KA, Tang N, He M, Mooney SM. (2015) Choline Ameliorates Deficits in Balance Caused by Acute Neonatal Ethanol Exposure. Cerebellum. 14(4):413-20. PMID: 26085462

Cohen OS, Varlinskaya EI, Wilson CA, Glatt SJ, Mooney SM. (2013) Acute prenatal exposure to a moderate dose of valproic acid increases social behavior and alters gene expression in rats. Int J Dev Neurosci. 31(8):740-50. PMID: 24055786

Middleton FA, Varlinskaya EI, Mooney SM. (2012) Molecular substrates of social avoidance seen following prenatal ethanol exposure and its reversal by social enrichment. Dev Neurosci. 34(2-3):115-28. PMID: 22572756

Mooney SM, Miller MW. (2007) Postnatal generation of neurons in the ventrobasal nucleus of the rat thalamus. J Neurosci. 27(19):5023-32. PMID: 17494688

Mooney SM, Siegenthaler JA, Miller MW. Ethanol induces heterotopias in organotypic cultures of rat cerebral cortex. Cereb Cortex. 14(10):1071-80. PMID: 15166098

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