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### MAJOR RESEARCH INTERESTS

Research in my laboratory explores the pharmacology of neural plasticity. A major focus of our research is on stem cell neurobiology in the developing and adult brain. We are seeking to understand the mechanisms regulating proliferation, migration, and differentiation of stem cells in the brain environment. We are also interested in neural plasticity in relation to cognitive function, especially learning and memory. Current projects include:

1. Receptors and ion channels involved in proliferation of endogenous neural stem cells in response to antidepressant drugs.
2. TAG1-amyloid precursor protein (APP) signalling and mechanisms of regulation of stem cell differentiation and neurogenesis.
3. Investigations of fetomaternal microchimerism to understand the behaviour of exogenous fetal cells in the adult brain environment.
4. Effects of antipsychotic and antidepressant drugs on cognitive functions, particularly learning and memory.
5. Axonal localisation of amyloid precursor protein (APP) and interactions of APP with sodium channels.

### RECENT PUBLICATIONS

1. Ma, QH, T Futagawa, WL Yang, XD Jiang, L Zeng, D Takeda, RX Xu, D Bagnard, M Schachner, AJ Furley, D Karagogeos, K Watanabe, **GS Dawe\*** and ZC Xiao\* (2008) A TAG1-APP signalling pathway through Fe65 negatively modulates neurogenesis. *Nature Cell Biology*, 10(3):283-294.
2. **Dawe, GS\***, SP Han, J Bian and PK Moore (2008) Hydrogen sulphide in the hypothalamus causes an ATP-sensitive K<sup>+</sup> channel-dependent decrease in blood pressure in freely moving rats. *Neuroscience*, 152(1):169-177.
3. Verma, V, CH Tan, WY Ong, GA Grigoryan, CA Jones, D Stolzberg, R Salvi, KW Gross, AK Ratty and **GS Dawe\*** (2008) The chakragati mouse shows deficits in prepulse inhibition of acoustic startle and latent inhibition. *Neuroscience Research*, 60(3):281-288.
4. Gu, XS, L Lu, X Chen, CW Zhang, WL Tang, YJ Wu, L Sun, LM Bai, S Ahmed, **GS Dawe\*** and ZC Xiao\* (2008) Morphological and Functional Characterization of Predifferentiation of Myelinating Glia-like Cells from Human Bone Marrow Stromal Cells through Activation of F3/Notch Signaling in Mouse Retina. *Stem Cells*, 26(2):580-590.
5. Tan, CKF, KH Lee, SS Gouk, R Magalhaes, P Anuradha, MP Hande, **GS Dawe\*** and LL Kuleshova\* (2007) Optimization of cryopreservation of stem cells cultured as neurospheres: comparison between vitrification, slow-cooling and rapid cooling, "freezing" protocols. *Cryoletters*, 28(6):445-460.
6. **Dawe\***, **GS** and AK Ratty\* (2007) The chakragati mouse: A mouse model for rapid in vivo screening of antipsychotic drug candidates. *Biotechnology Journal*, 2(11):1344-1352.
7. Ma, QH, WL Yang, DY Nie, **GS Dawe\*** and ZC Xiao\* (2007) Physiological roles of neurite outgrowth inhibitors at myelinated axons in the central nervous system - implications for the therapeutic neutralization of neurite outgrowth inhibitors. *Current Pharmaceutical Design*, 13(24): 2529-2537.
8. Lim, E.P., V Verma, R Nagarajah and **GS Dawe\*** (2007) Propranolol blocks chronic risperidone treatment-induced enhancement of spatial working memory performance of rats in a delayed matching-to-place water maze task. *Psychopharmacology*, 19(2): 297-310.
9. Verma, V, K Rasmussen and **GS Dawe\*** (2006) Effects of short term and chronic olanzapine treatment on immediate early gene protein and tyrosine hydroxylase immunoreactivity in the rat medial prefrontal cortex and locus coeruleus. *Neuroscience*, 143(2):573-585.
10. Tan, XW, H Liao, L Sun, O Masaru, ZC Xiao\* and **GS Dawe\*** (2005) Fetal microchimerism in the maternal mouse brain: Identification of progenitor or stem cells capable of crossing the blood-brain barrier to repair the brain? *Stem Cells*, 23(10):1443-1452.

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