Understanding molecular and cellular mechanisms in the brain underpinning stress resilience.

HDR/ Honours Project Description

Project Title	Understanding molecular and cellular mechanisms in the brain underpinning stress resilience.
Project duration:	12 months (Hons) or 3 years (PhD)
Availability	HDR/Honours projects available in 2021/2022
Description:	Chronic and uncontrollable stress such as that experienced during the current COVID-19 pandemic is a major risk factor for many neuropsychiatric disorders, including anxiety and depression, for which treatment remains a challenge. Therefore, the search for neurobiological mechanisms, specifically those involving defined cell subtype(s) or circuit(s) that confer resilience i.e. the ability to avoid deleterious behavioural changes in response to chronic stress, represents a novel strategy for discovering antidepressant therapeutics. The discovery of neurogenesis (i.e. the production and integration of new neurons) in the adult mammalian brain has emerged as an unparalleled mechanism to understand how life experiences shape cellular plasticity, and in turn alter behavioural outcomes. A major focus of our lab is to understand how adult-born neurons contribute to the development of, and recovery from, stress-induced affective behaviour. Using mouse models, our lab has uncovered an important role for adult-born neurons in the regulation of anxiety-like behaviour. Recently, advanced transcriptomics approaches have identified new molecular candidates that may play critical role(s) in this mechanism of stress resilience. The primary aim of the project is to establish whether and how these candidate genes contribute to stress-induced anxiety-like behaviour.
Expected outcomes and deliverables:	The outcomes of this study will provide a new framework for understanding the role of adult-born neurons in mood regulation and identify potentially new molecular targets for promoting stress resilience. You will work alongside current lab members and may use a range of techniques including neuronal cell culture, mouse brain dissection, histology, advanced microscopy, animal behaviour. Students will participate in the lab meetings, journal clubs, seminars and present their data in a lab meeting. They will also communicate

	their results via a written final report that may contribute towards research publications.
Suitable for:	This project is open to applications from students with an interest in neuroscience, cell biology, molecular biology, regenerative medicine. Applications from students who may be interested in undertaking Honours or Masters research units in our lab in 2022, or future higher degree research (MPhil/PhD), will be viewed favourably.
Primary Supervisor:	Dr Dhanisha Jhaveri
Further info:	Please send expressions of interest to Dr Dhanisha Jhaveri (dhanisha@uq.edu.au) and include copies of your CV and academic transcripts. Shortlisted candidates will be invited to meet and discuss project details prior to final application submission.