

UQ Summer or Winter Research Project Description

Please use this template to create a description of each research project, eligibility requirements and expected deliverables. Project details can then be uploaded to each faculty, school, institute, and centre webpage prior to the launch of the program.

Project title:	The role of caveola-forming proteins in Glioblastoma aggressiveness
Project duration, hours of engagement & delivery mode	6 weeks <i>The applicant will be required on-site for the cell culture experiments of the project.</i>
Description:	Our laboratory has a long-standing interest in elucidating the role of plasma membrane subdomains termed caveolae in glioblastoma biology. Previous work has identified via a review of the literature that caveolae have the potential to mediate several aggressiveness features of GBM ¹ . We have explored in detail how caveola-forming proteins may contribute to the pro-invasive response of GBM to pressure ²⁻⁴ . The current project will expand on these finding and make use of GBM cell lines that have been engineered to lack caveola-forming proteins caveolin-1 or cavin-1.
Expected outcomes and deliverables:	The successful applicant will expand on their existing experimental skills using cell culture based assays, and contribute to scientific writing should their results be included in a report or publication. They will contribute to the laboratory activities (e.g. lab meeting, presentations etc...)
Suitable for:	This project is open to student who already master basic cell culture technique (for uncomplicated, fast growing cancer cell lines) and assays, as well as possess scientific writing and literature search skills.
Primary Supervisor:	A/Prof Marie-Odile Parat
Further info:	IF needed please email m.parat@uq.edu.au

1. Parat MO and Riggins GJ. Caveolin-1, caveolae, and glioblastoma. *Neuro Oncol.* 2012.
2. Pu W, Qiu J, Riggins GJ and Parat MO. Matrix protease production, epithelial-to-mesenchymal transition marker expression and invasion of glioblastoma cells in response to osmotic or hydrostatic pressure. *Sci Rep.* 2020;10:2634.
3. Pu W, Nassar ZD, Khabbazi S, Xie N, McMahan K-A, Parton RG, Riggins GJ, Harris JM and Parat M-OJJoN-O. Correlation of the invasive potential of glioblastoma and expression of caveola-forming proteins caveolin-1 and CAVIN1. 2019;143:207-220.
4. Pu W, Qiu J, Nassar ZD, Shaw PN, McMahan K-A, Ferguson C, Parton RG, Riggins GJ, Harris JM and Parat M-O. A role for caveola-forming proteins caveolin-1 and CAVIN1 in the pro-invasive response of glioblastoma to osmotic and hydrostatic pressure. *Journal of Cellular and Molecular Medicine.* 2020;24:3724-3738.