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:	**Molecular biology tools to study RunX2 in breast cancer**
Project duration, hours of engagement & delivery mode	*6 weeks at 20 hours/week and applicant will be required on-site for the project.*
Description:	*Mutations in RUNX2 transcription factor cause a rare genetic disorder known as cleidocranial dysplasia. In addition to its role in skeleton formation, RunX2 is also implicated in mammary gland development while aberrant expression has been linked to breast cancer and breast cancer bone metastasis. Interestingly RunX2 can be regulated by calcium signalling pathways but how calcium regulates RunX2 in the context of breast cancer progression and breast cancer bone metastasis is still unknown.* *To study these questions, we first need to generate molecular tools that will enable us to perform CRISPR/Cas9 knock out of RunX2 in breast cancer cells as well as RunX2/RunX2 mutants rescue cell lines. The task of the student will be to generate the CRISPR/Cas9 gRNA plasmids as well as the RunX2 cDNA expression plasmid using standard molecular cloning techniques such as PCR, restriction enzyme digestion, ligation, and bacteria transformation.*
Expected outcomes and deliverables:	*The student will gain basic skills in molecular cloning and good laboratory practice. The student is expected to participate to weekly lab meetings and to present their progression during these meetings.*
Suitable for:	*This project is open to applications from motivated students with a background in biology, biomedical sciences, pharmacy or similar.*
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