

Research Theme: Molecular immunology
Research Project Title: Molecular and functional characterization of UBR7-regulated cell adhesion and migration
Principal Investigator/Supervisor: I-hsin Su
Co-supervisor/ Collaborator(s) (if any):
Project Description
<p>a) Background:</p> <p>The methylation of proteins has emerged recently as one of the major mechanisms by which protein function is regulated in health and disease. It occurs predominately on the side chains of constituent arginine and lysine residues. While arginine methylation is linked to several key cytosolic processes, the functional implications of the methylation of lysine residues in cytosolic proteins remain largely unclear. Recently we have demonstrated the critical role of EZH2-mediated talin1 methylation at lysine residue 2454 in regulating adhesion dynamics and leukocyte migration (Gunwan et al., <i>Nature Immunology</i>, 2015, 16:505–516). Our also demonstrate that this novel regulatory mechanism contributes to EZH2-promoted cellular transformation (Venkatesan et al., <i>Oncogene</i>, 2018 25;37(4):461-477).</p>
<p>b) Proposed work:</p> <p>Our preliminary study has identified UBR7 as a novel protein that preferentially binds to Ezh2-mediated methylation and is likely to interpret this methylation signal. Interestingly, when we overexpressed UBR7 in mammary epithelial cells, it promoted the formation of stable adhesion structures, cell spreading and inhibited cell migration. Since UBR7 is a novel protein that has not been well studied, we will further characterize UBR7 and determine the functional link between UBR7 and EZH2.</p>
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