

Research Theme:
Research Project Title: Molecular characterization of Cancer resistance in Atopic Dermatitis mice
Principal Investigator/Supervisor: Thirumaran s/o Thanabalu
Co-supervisor/ Collaborator(s) (if any): Navin Kumar Verma
Project Description
<p>N-WASP regulates actin cytoskeleton critical for cell-cell adhesion and maintenance of the skin barrier function. Conditional knockout of N-WASP in the skin using K14-Cre caused atopic dermatitis in mice as well as epidermal hyperplasia (pre-cancerous). The N-WASP knockout AD mice were found to be resistant to chemical carcinogenesis compared to control mice. This is not unique to N-WASP knockout mice as another research group have also reported resistance to chemical carcinogenesis in their AD mice generated by knocking out 3 genes (envoplakin, periplakin and involucrin). More than 80 years ago Dr. William Coley had some success in treating cancers by activating the immune system using heat killed <i>Streptococcus pyogenes</i> and <i>Serratia marcescens</i>, "Coley's toxin". Thus we propose to characterize the immune system of the AD mice raised in Specific Pathogen Free (SPF) and Germ Free (GF) environment, determine if the AD mice raised in GF environment are also resistant to chemical carcinogenesis. If AD mice in GF environment are resistant to chemical carcinogenesis then the research will focus on identifying the intrinsic factors (cytokine, immune cell) responsible for cancer resistance. If the mice raised in GF environment are not resistant to chemical carcinogenesis then the focus will be on identifying the bacteria which activate the immune system in the AD mice to confer resistance to chemical carcinogenesis and using the bacteria to induce resistance to skin cancer in normal mice by administering heat killed bacteria. We will also characterize the immune reaction elicited by Coley's toxin and also test whether Coley's toxin can be used to treat skin cancer.</p>
Supervisor contact: If you have questions regarding this project, please email the Principal Investigator - <u>Thirumaran@ntu.edu.sg</u>
For more information and application, please visit: <u>http://igs.ntu.edu.sg/Scholarships/Pages/SkinRSS.aspx</u>