List of IC@N Research Projects and Supervisors

Lee Kong Chian School of Medicine	
Name of Supervisor	**Research Project Description**
Asst. Prof Navin Kumar Verma **nkverma@ntu.edu.sg**	**Development of novel antisense ssDNA-based skin lightening agent** Skin colour is determined by a brown pigment, called melanin, which is produced by melanocytes. The process of melanin synthesis or melanogenesis is catalysed by an enzyme tyrosinase. Therefore, currently used skin lightening formulations contain tyrosinase inhibitors (e.g. hydroquinone, kojic acid) to supress melanogenesis. However, these inhibitors cause several undesirable effects. With better understanding of the melanogenesis pathway, we propose to target a downstream regulator Tyrp1 using antisense ssDNA-based molecules as a safer alternative approach. The aim of this interdisciplinary project is to develop new-generation antisense ssDNA-based molecules specifically targeting Tyrp1 for suppressing melanogenesis in melanocytes that can be used for developing a topical formulation. The student will gain specialized training in cell culture, gene silencing technique, topical drug delivery, microscopy, and variety of molecular and biochemical assays.
	Targeting STAT3 In Drug Resistant Hematolymphoid Malignant Cells Drug Resistance Is A Major Problem With Current Therapies For Hematologic Malignancies. Specific Targeting Of STAT3 Is An Effective Approach To Cancer Treatment With Promising Outcomes In Clinical Trials. The Aim Of This Inter-Disciplinary Project Is To Target STAT3 Using New-Generation Antisense Oligonucleotide-Based Gene Silencers And Determine The Effect In Terms Of Anti-Cancer Drug Sensitivity In Hematolymphoid Cells. We Will Elucidate The Molecular Mechanism Of Action Of Such Combinatorial Approach In Inhibiting Tumour Cell Growth. The Student Will Gain Specialized Training In Cell Culture, Gene Silencing Technique, Apoptosis, Microscopy, And Variety Of Molecular And Biochemical Assays.