

**PhD in Biomedical Sciences**  
**List of Potential Supervisors and Research Topic(s)**

<b>Supervisor</b>	<b>Research Topic(s)</b>
Prof. Chuxia DENG	Oncogenes and tumor suppressor genes Stem cells, Cancer metastasis and Drug development
Prof. Wei GE	Genetic analysis of growth and reproduction in the zebrafish model Impacts of environmental endocrine-disrupting chemicals (EDCs) on reproduction and public health Zebrafish as a model for aging, human diseases and drug discovery
Prof. Han-Ming SHEN	Autophagy: Regulatory mechanisms and biological functions in cancer Mitophagy: Novel regulatory mechanisms Cancer metabolism: Targeting glucose metabolism in lung cancer
Prof. Ren-He XU	Mesenchymal stem cells: the development, heterogeneity, functions, and therapeutic application
Prof. Guokai CHEN	Metabolic regulation in stem cell maintenance and differentiation Novel mechanisms involved in cardiomyocyte differentiation and maturation Skin cell differentiation for regenerative medicine Endoderm differentiation for disease model
Prof. Edwin CHEUNG	Mechanism of gene regulation in cancer Single cell analysis
Prof. Elaine Lai Han LEUNG	Application of culturomic to investigate the anti-cancer treatment mechanism of TCM Investigation of cancer drug resistance mechanism and response predictive markers Role of gut microbiota in immunomodulation
Prof. Kathy Qian LUO	Circulating tumor cells and cancer metastasis Drug resistant and anti-cancer drug discovery
Prof. Garry WONG	Bioinformatics and Computational Biology of Aging related neurodegenerative diseases
Prof. Yutao XIANG	Psychiatric epidemiology Nursing research in psychiatry Evidence-based medicine COVID-19 related research in psychiatry
Prof. Zhen YUAN	Neuroscience and neuroimaging Biomedical Optics Optical Molecular Imaging and Cancer Nanomedicine
Prof. Wenhua ZHENG	Foxo and neuronal differentiation or new drugs development like artemisinin and metformin Drug development Neurodegenerative diseases The effect of Chinese medicine on tumor growth/metastasis and their underlying mechanisms
Prof. Gyeong Hun BAEG	Ageing Stem cell self-renewal and differentiation Nanomedicine
Prof. William Chong Hang CHAO	Structure and Function of Epigenetic Regulators
Prof. Yunlu DAI	Cancer nanomedicine Molecular imaging Drug delivery
Prof. Lijun DI	Mechanism study of cancer development and novel therapeutic strategy development Mechanism study of obesity, adipose tissue inflammation and insulin resistance



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Prof. Henry Hang Fai KWOK	Antibody / Venom-based peptide targeted therapy for anti-cancer prototype drug discovery & development (Novel multi-specific antibody platforms for immunotherapy; Novel protein expression system for large scale production of hard-to-express venom-based protein drugs)
	Biomarkers identification and validation based on the hallmarks of cancer
	Tackling cancer metastasis and drug resistance: from mechanism to therapy (Glyco-engineering to improve antibody quality attributes for cancer therapy)
Prof. Leo Tsz On LEE	Explore the role of GPCR signaling in cancer tumor microenvironment
	The using of RNA-dendrimer drugs in modulating cellular signaling cancer cells
Prof. Gang LI	Cancer epigenetics: from mechanism to therapy
	Signal transduction pathways in Epigenetics
Prof. Tzu-Ming LIU	In vivo microscopy and spectroscopy of tumor microenvironment
	Develop serum fluoroscope for the diagnosis of organ function
Prof. Terence C.W. POON	Proteomics/Protein/Biomarker-based research in precision medicine
	Bioinformatics-based research in precision medicine
Prof. Joong Sup SHIM	Exploiting synthetic lethality for cancer target discovery
Prof. Kin Yip TAM	Development of small molecule inhibitors targeting cancer metabolism or Alzheimer's disease
	Combined use of metabolic inhibitors in lung cancer models
Prof. Peng WANG	Systems biology of cancer
	Algorithms for bio-medical big data
Prof. Vivien Ya-Fan WANG	Mechanism of gene regulation by NFkappaB and co-factors
Prof. Chris Koon Ho WONG	Transcription regulation of fungal metabolism and infection
	Identification of novel fungal secondary metabolites with anti-cancer and antibiotic properties
	Understanding the regulation of fungal spore dormancy and germination
Prof. Ruiyu XIE	Develop transplantable platform for stem-cell based diabetic therapy
	Molecular switches in endodermal lineage specification
	Epigenetic regulation shaping tumor immune microenvironment in pancreas
Prof. Hongjie ZHANG	Deciphering the mRNP code in epithelial morphogenesis
	Post-translational modification in tubular organ formation
	Sphingosine 1-phosphate signaling in luminal membrane integrity
Prof. Xuanjun ZHANG	Molecular Probes and Nanosensors
	Development of Phototheranostic Probes
Prof. Qi ZHAO	Nanomedicine and target drug delivery
	Antibody-based therapeutics against tumors
Prof. Wa Kam CHANG	How cells polarize during cell migration, with a focus on the cytoskeleton and nuclear envelope proteins
	How aging affects cell polarization and how cell polarization contributes to aging defects
	Deciphering the acting mechanism of aging factors on the cellular and whole genome levels
Prof. Qiang CHEN	Molecular mechanisms of cancer development
	Regulation of metabolic homeostasis
	Mechanisms of drug resistance in cancer
Prof. Qihan CHEN	Epigenetics: Novel DNA/RNA epigenetic modifications detection methods and applications
	Microbiology: Novel detection tools and therapy of bacteria and virus
	Molecular biology: Other novel molecular technologies for basic research and translational medicine
Prof. Aifang CHENG	Pathogenesis of neurodegenerative diseases
	Neuroprotective lead compounds discovery and drug repurposing
Prof. Xiaofan DING	Tumor heterogeneity, evolution and immunity
	Multimic data analysis and single-cell analysis



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Prof. Jiajie HOU	Anti-cancer therapy and T cell signaling
	Liver-specific cancer immunoediting and combinatorial immunotherapy
Prof. Chon Lok LEI	Mathematical and computational modelling for cardiac electrophysiology
	Bridging experimental electrophysiology and systems biology under Bayesian statistics
	Systems and computational biology for precision and translation medicine
Prof. Kai MIAO	Drivers and markers for tumor metastasis
	Gene therapy for cancer
	Applications of single cell related technology in cancer research
Prof. Chen MING	Detection of genetic variants affecting neurodegenerative diseases, especially Alzheimer's disease
	Multi-omics integration of neurodegenerative diseases.
	Genetic differences of neurodegenerative diseases in multiple human populations.
	Novel mechanisms of neurodegenerative diseases in the single cell and spatial transcriptomic levels
Prof. Ningyi SHAO	Study of lncRNA regulation in gender-biased diseases
	Integrated multi-omics analysis of tumor microevolution at the single cell level
Prof. Robert David SMITH	Mental health research
	Analysis of large clinical datasets for applied health sciences
	Health inequalities research
Supervisor C (TBC) *Please contact the general office (fhs.student@um.edu.mo) if you would like to approach this supervisor, thank you.	Mechanistic understanding of immune checkpoints for cancer immunotherapy
	Identify novel immune checkpoints by CRISPR screening for cancer therapy
	Development of CAR macrophages against cancer