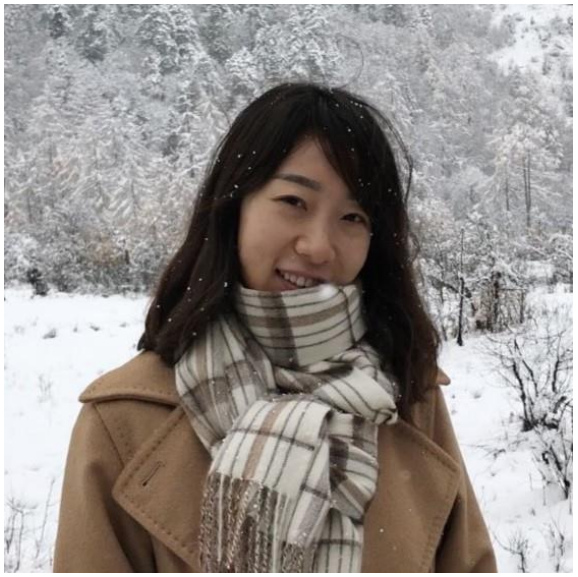
Project Abstracts for PhD Student Recruitment AY2026/27

Department of Computer Science

Research Clusters	**Data Analytics and Artificial Intelligence** **Humanities and Cultures**
Research Areas	Natural Language Processing; Social Media Analytics; Large Language Model
Project Title	Towards Factually Grounded LLMs: Integrating Fact-Checking and Factuality Awareness
Project abstract	In the post-truth era, the rapid spread of misinformation across social media poses serious societal risks. Although LLMs have shown remarkable performance across diverse tasks, they often produce inaccurate or misleading content. As LLMs are increasingly deployed in information retrieval and decision-support systems, ensuring their factual reliability has become essential. This project aims to enhance LLMs with factuality and fact-checking capabilities by integrating external knowledge sources, adaptive reasoning, and explicit fact-verification mechanisms. The goal is to bridge the gap between generative fluency and factual accuracy, resulting in fact-aware LLMs that can contribute to a safer information ecosystem.
Keywords	LLMs; Factuality; adaptive reasoning; explicit fact-verification



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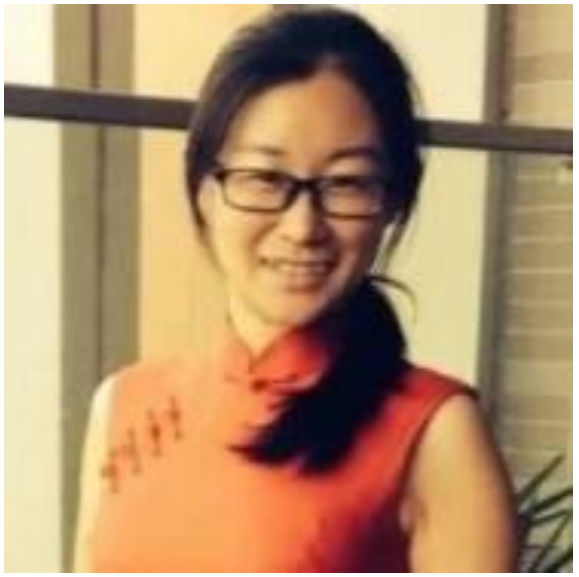
Project Abstracts for PhD Student Recruitment AY2026/27

Department of Social Work

Research Clusters	**Health and Drug Discovery** **Data Analytics and Artificial Intelligence**
Research Areas	Smart Society; GeoAI and mental health; Digital Health; Environment and wellbeing; Ecotherapy
Project Title	The real-time relationship between the built environment and mental health among older adults in Hong Kong: A geographic ecological momentary assessment (GEMA) study based on wearable technologies
Project abstract	This study investigates the dynamic link between the built environment and older adults' mental health in Hong Kong. Using wearable sensors and real-time surveys, it captures objective, moment-to-moment data to minimize recall bias. This novel Geographic Ecological Momentary Assessment (GEMA) approach will analyze both direct and indirect environmental effects. The findings aim to provide robust evidence for ecotherapy, urban planning and policies designed to improve mental wellbeing among the elderly.
Keywords	Environment; Wellbeing; Older Adults; GEMA; Hong Kong



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Project Abstracts for PhD Student Recruitment AY2026/27

Academy of Chinese, History, Religion and Philosophy

Research Clusters	**Humanities and Cultures**
Research Areas	Artificial Intelligence and Human Sciences; Logic, Language, and Information; Cognitive Science; Philosophy of Science and Technology; Pragmatism; Clinical Reasoning; Human Mind and Its History; Semiotics; Critical Thinking.
Project Title	Diverse Intelligences: Minds, Meanings, and Machines
Project abstract	Transdisciplinary artificial vs. human intelligences. What is the difference, if any, between human and artificial minds? New competencies emerge from hybrid forms of life and technologies, blurring the line between manifestations of intelligence observed in familiar human contexts vs. those in unfamiliar technological and imaginative contexts. In this project, we explore the full range of meanings of novel and emerging competencies, prospects, and defects as they appear in problematic situations ranging from minimal minds/brains to the fabric of universe.
Keywords	Philosophy, Natural Intelligence, Artificial Intelligence, Life, Mind

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Project Abstracts for PhD Student Recruitment AY2026/27

Academy of Chinese, History, Religion and Philosophy

Research Clusters	Humanities and Cultures
Research Areas	Anthropology of Religion, Philosophy of Religion, Psychology of Religion, Religious Studies, Sociology of Religion
Project Title	Left-Behind Elderly Parents: The Theology and Social Role of Christian Organisations in Supporting Older Adults in Hong Kong whose Adult Children Migrated through the British National (Overseas) Visa Scheme
Project abstract	Hong Kong recently had a migration wave to Britain (from 2020 onwards). This project aims to determine how Christian social services and churches can facilitate the flourishing of older adults in the midst of the loss they face in the migration of their adult children and grandchildren. The project activities include archival study, field observation, and semi-structured interviews. This project provides a timely and in-depth analysis to facilitate the construction of an original framework for understanding the loss of social identity that elderly parents of Hong Kong BNO visa migrants face in the midst of their adult children's migration.
Keywords	Gerontology, Migration Studies, Psychology of Religion, Trauma Theology, Sociology of Religion

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Computer Science

Research Clusters	**Creative Media/Practice** **Data Analytics and Artificial Intelligence**
Research Areas	Conversational AI, Explainable AI, Recommender Systems, Human-Computer Interaction
Project Title	Generative AI Meets Art Therapy: Inspiring Musical Creativity for Healing and Well-being
Project abstract	This project explores the integration of generative AI and art therapy to stimulate human creativity—such as music creation—for mental well-being. Leveraging advanced technologies including conversational AI, large language models (LLMs), multi-agent systems, and personalized recommender systems, we aim to provide adaptive, user-centric experiences that inspire creative expression. By tailoring interactions and recommendations to individual needs, the system fosters trust, engagement, and therapeutic outcomes. Ultimately, this interdisciplinary approach promotes mental health while enhancing creative potential through innovative, trustworthy AI-driven solutions.
Keywords	Generative AI, personalized recommender systems, human-computer interaction, art therapy, music creation

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Biology

Research Clusters	**Health and Drug Discovery** **Data Analytics and Artificial Intelligence**
Research Areas	Genetics, genomics and developmental biology
Project Title	Gene regulatory networks underlying cell fate determination during embryogenesis
Project abstract	Understanding how cells change shape is crucial for the development of tissues, organs, and embryos. However, studying shape dynamics in real time with single-cell resolution presents significant technical challenges. Through time-lapse three-dimensional imaging and AI-based image processing algorithms, we have established a suite of technologies that enable the automated generation of embryonic cell lineages, cell shapes, and cellular gene expression throughout Caenorhabditis elegans embryogenesis. Utilizing these technologies, we have created a comprehensive real-time cellular map that encompasses over 95% of the cells formed during C. elegans embryogenesis, featuring nearly 400,000 three-dimensional cell regions. This map provides detailed information on each cell's identity, lineage, fate, shape, volume, surface area, contact area, and gene expression profiles. All this data is accessible via our user-friendly software and website, facilitating in-depth analysis of key developmental processes regulated by various pathways, including Notch and Wnt signaling. In collaboration with computer scientists, we are developing new tools for the automated delineation of asymmetries in gene expression within the nucleus, cell surface, and cytoplasm. By combining these technologies with live-cell imaging, genetic manipulation, and single-cell genomic analysis, we aim to elucidate the gene regulatory networks that govern cell fate determination during embryogenesis with single-cell resolution at one-minute intervals.
Keywords	Embryogenesis, AI, image segmentation, genetics, genomics

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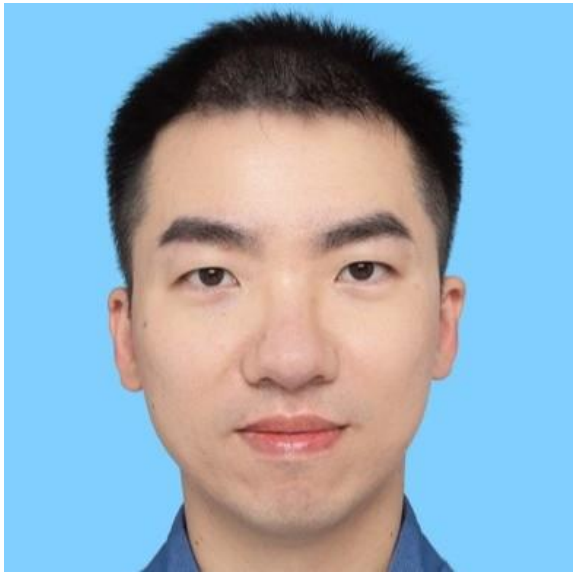
Project Abstracts for PhD Student Recruitment AY2026/27

Department of Geography

Research Clusters	**Data Analytics and Artificial Intelligence** **Humanities and Cultures**
Research Areas	Weather and Climate Extremes; Climate Change Attribution; Land-Atmosphere Coupling
Project Title	A Transdisciplinary Framework for Understanding Climate-Driven Drought Mechanisms Across the Yangtze-Yellow River Basin
Project abstract	The mid-lower Yangtze-Yellow River Basin, a core region for China's development, faces severe drought risks under climate change. This project provides a holistic and integrated understanding by investigating the evolution and underlying mechanisms of drought response to temperature and precipitation changes. The study quantitatively assesses how climate anomalies influence drought intensity and spatial variability, analyzing atmospheric circulation to identify key drivers using statistical and machine learning approaches. Findings are leveraged with climate model outputs to project future risk trends, offering the scientific foundation for enhanced forecasting and socio-ecological adaptation capacity across the basin.
Keywords	Drought; Climate Change; Atmospheric Circulation; Machine Learning; Integrated Assessment



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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Education and Psychology

Research Clusters	**Health and Drug Discovery**
Research Areas	Cognitive Neuroscience, Brain Stimulation, Brain Imaging
Project Title	Precision Neuromodulation for the Enhancement of Episodic Memory
Project abstract	In a world facing rising rates of age-related memory decline, from mild forgetfulness to Alzheimer's disease, strengthening the brain's memory circuits is a critical public health goal. This project proposes a non-invasive approach in which we use personalized EEG/MRI scans in healthy adults to identify unique neural rhythms that support episodic memory processing. We then test whether targeted brain stimulation can reliably enhance these rhythms and boost memory performance. The goal is to establish a foundational scientific blueprint for non-pharmacological memory enhancement in both healthy and vulnerable populations.
Keywords	Episodic Memory, Brain Stimulation, Neuroimaging, Cognition

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Project Abstracts for PhD Student Recruitment AY2026/27

School of Chinese Medicine

Research Clusters	**Health and Drug Discovery** **Data Analytics and Artificial Intelligence**
Research Areas	Drug discovery, obesity, exosomes
(a)	
Project Title	AI-driven Exosome–Cell Communication–Metabolic Network to Guide Novel Chinese Herbal Combination Therapy for Obesity-Associated MAFLD
Project abstract	This project aims to construct AI-driven EXOSOME–CELL COMMUNICATION-METABOLIC NETWORK to decode exosome-mediated signaling in MAFLD among overweight/obese individuals and translate these findings into novel herbal combination therapies. Human/mouse circulating exosomes are collected for multi-omics for cargo analysis, and PBA to resolve surface proteins at single-exosome level. Deep learning pipelines, transformer-based multimodal integrator, differential network analysis with disease-specific membrane protein features identify the critical exosomal components and signaling pathways involved in disease. Top-ranked candidates are validated in animal/cell models. Network pharmacology optimizes herbal combination that targets the exosome factor/signaling pathways for treatment, validated by animal and clinical polit study.
Keywords	MAFLD, obesity, exosome, AI, metabolic network

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Project Abstracts for PhD Student Recruitment AY2026/27

School of Chinese Medicine

(b)	
Project Title	To Identify a Circulating Exosomal Biomarker Panel for Early Detection of Obese Individuals at Risk of T2D and to Investigate Their Contributions to Insulin Resistance to Inform the Design of Herbal-based Therapeutic Strategies
Project abstract	Obesity and T2D need glucose-independent biomarkers for early risk and novel druggable targets. We will recruit Hong Kong cohorts, isolate circulating exosomes, and perform small RNA sequencing, proteomics and functional studies to identify/validate differentially expressed cargo candidates in relations to hepatic insulin resistance. Using proximity-dependent barcoding and integration with T2D hepatic bulk/single-cell transcriptomes, we will identify critical exosome-hepatocyte receptor-ligand pairs that mediate exosome uptake. Accordingly, we will test therapeutic engineered exosomes loaded with herbal compound targeting the expression/function of the cargo candidate, and neutralizing antibody that interrupts the exosome-hepatocyte interaction, to improve hepatic insulin sensitivity in obesity.
Keywords	Type 2 diabetes, obesity, exosomes, herbal compound, biomarkers

Project Abstracts for PhD Student Recruitment AY2026/27

Department of Geography

Research Clusters	**Data Analytics and Artificial Intelligence** **Humanities and Cultures**
Research Areas	Geo-AI; AI for Environment; AI for Transport
Project Title	AI-Driven Geo-Social Sensing: Modeling the Spatio-Temporal Dynamics of Vaccine-Related Misinformation in Hong Kong's Digital Public Sphere
Project abstract	This project develops an AI-driven geo-social sensing framework to model the spatio-temporal dynamics of vaccine-related misinformation in Hong Kong's multilingual digital public sphere. By integrating natural language processing, GIS, and network analysis with communication theories—emotional contagion and the spiral of silence—it seeks to explain why certain misinformation narratives persist in specific urban communities. The study moves beyond detection to explanation, offering insights for targeted public health communication and platform governance in dense, multilingual cities.
Keywords	Misinformation; Geo-social sensing;Vaccine hesitancy; Emotional contagion; Multilingual digital publics

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Biology

Research Clusters	**Health and Drug Discovery**
Research Areas	Plant and food Biotechnology, Plant biochemistry and metabolism, plant natural products, synthetic biology
Project Title	Mining of bioactive compounds from medicinal and edible plants, biosynthetic pathways discovery, and heterologous biosynthesis
Project abstract	Medicinal and edible plants are valuable sources of specialized metabolites with pharmaceutical and economic importance, such as anticancer paclitaxel and antimalarial artemisinin. With growing demand for bioactive compounds, traditional production methods face limitations. This study employs plant biotechnology and synthetic biology to discover new bioactive compounds, elucidate their biosynthetic pathways using multi-omics and biochemical approaches, and reconstruct these pathways in heterologous systems. The research aims to provide a sustainable and eco-friendly production platform while validating bioactivity through cellular and animal models when necessary.
Keywords	Medicinal plants, Bioactive compounds, Biosynthetic pathways, Synthetic biology, Heterologous production

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Computer Science

Research Clusters	**Creative Media/Practice** **Data Analytics and Artificial Intelligence**
Research Areas	AI Goverance, Computation Photography, Image Processing
Project Title	Advancing Sustainable Interior Practices to Support Environmental Conservation
Project abstract	Hong Kong faces a critical waste management challenge, with the construction sector generating approximately 30% of the city's total waste. In 2020, construction and demolition (C&D) waste reached nearly 15 million tonnes, overwhelming landfill capacity and threatening environmental sustainability. Traditional recycling methods have proven insufficient, particularly for interior design materials that are difficult to sort and reuse. This project proposes an innovative, AI-driven solution to address the issue at its source by promoting circular design in the interior construction industry. By integrating technologies such as Building Information Management (BIM), 3D scanning, and generative design, the proposed platform empowers designers to minimize waste during the design phase. The initiative not only conserves resources and reduces emissions but also fosters a circular economy, creates green jobs, and enhances Hong Kong's global standing in sustainable development and AI innovation.
Keywords	1. AI 2. Circular design 3. Sustainable interiors 4. Construction waste 5. Environmental conservation

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Chemistry

Research Clusters	**Health and Drug Discovery**
Research Areas	Asymmetric Catalysis; Green Chemistry; Medicinal Chemistry; Cosmetics Chemistry
Project Title	Late-Stage Diversification of Flavonoids for Anti-Inflammatory Drug Discovery
Project abstract	This project aims to develop a novel asymmetric hydrophosphination reaction for late-stage modification of flavonoids, introduce phosphorus-containing functional groups, achieve highly yield and highly selective asymmetric hydrophosphination reactions of target substrates, construct a library of flavonoid derivatives, and screen out anti-inflammation small molecules with high activity and good bioavailability. Carry out in vivo activity evaluation through inflammation disease animal model, providing lead compounds for preclinical studies of anti-inflammation and providing new ideas for the exploration and application of asymmetric hydrophosphination reactions.
Keywords	Asymmetric hydrophosphination; Flavonoids; Late-stage modification; Anti-inflammation.

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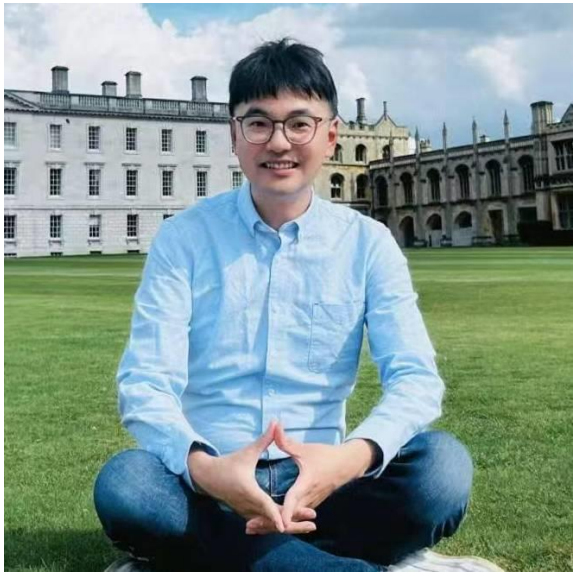
Project Abstracts for PhD Student Recruitment AY2026/27

Academy of Chinese, History, Religion and Philosophy

Research Clusters	**Creative Media/Practice, Health and Drug Discovery Data Analytics and Artificial Intelligence, Humanities and Cultures**
Research Areas	Human-Computer Interaction, Computational Neuroscience, Digital Humanities
Project Title	Micro-Dramas and Macro-Consequences: Multimodal Features, Neural Pathways, and AI Interventions for Digital Addiction
Project abstract	Short videos—micro-dramas—are taking over student screens, engineered to make us scroll, click, and crave more. But what if these bite-sized stories are quietly shaping our moods, focus, and mental health? This project dives into how micro-dramas capture our attention and why they're so hard to resist. By uncovering the hidden "behavioral hooks" behind addictive content, we aim to design smart, supportive digital tools that help students take back control of their time, focus, and wellbeing. Join us in reimagining healthier ways to enjoy media—without letting the algorithm write your story.
Keywords	1) Human-AI Interaction 2) Digital Behavioral Addiction 3) Affective Computing in Media 4) Digital Mental Health



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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Physics

Research Clusters	**Health and Drug Discovery** **Data Analytics and Artificial Intelligence**
Research Areas	AI for Science; System Biology; Complex Systems; Health and Disease; Biophysics; Network Science;
Project Title	AI for Complex Systems
Project abstract	Dr. Tian's group is dedicated to pioneering interdisciplinary research across a range of complex systems, where traditional analytic approaches falter due to a vast number of degrees of freedom with intricate interactions and structure involved. Our approach integrates principles and tools from statistical physics, network science, systems biology, and cutting-edge AI to develop a comprehensive understanding of these systems. At the core of our methodology is the identification and extraction of relevant statistics, dimensions, and features through advanced big-data mining and AI techniques. This allows us to construct statistical physics models and perform simulations that not only describe these systems accurately but also provide interpretative insights that are critical for further analysis and prediction. Our expertise uniquely positions us to reveal and understand the emergent properties and organizational principles of these systems, as well as the complex interplay between their structures and functions. Through this innovative research framework, Dr. Tian's group aims to generate transformative insights and applications that will advance our understanding of complex systems in nature and technology.
Keywords	(1) Human Microbiome and its Impact on Health and Disease (2) AI for Traditional Chinese Medicine and Drug Discovery

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Physics

Research Clusters	**Health and Drug Discovery** **Data Analytics and Artificial Intelligence**
Research Areas	Complex Systems and Brain Science
Project Title	Early detection and model-optimized multi-target intervention for Alzheimer's disease targeting sensitive functional network biomarkers based on sloppiness analysis
Project abstract	Alzheimer's disease lacks curative interventions; early detection is critical yet difficult. We propose an fMRI-based framework that uses sloppiness analysis of functional connectivity to identify stiff network dynamical markers (AD-SNDM), validated with PET biomarkers (amyloid-beta and phosphorylated tau). Individualized brain network models will test and optimize multi-target neuromodulation predicted by AD-SNDM to shift dynamics toward healthy aging. MRI and TMS experiments in aMCI participants at HKBU will validate that multi-target stimulation of sensitive networks outperforms single-site approaches, enabling non-invasive early detection and personalized intervention.
Keywords	1) Aging and Neurodegeneration 2) Neuroimaging 3) Brain Network 4) Sloppiness analysis 5) Multi-target Neuromodulation

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Mathematics

Research Clusters	**Health and Drug Discovery** **Data Analytics and Artificial Intelligence**
Research Areas	Meta-analysis and evidence-based medicine, Nonparametric regression, High-dimensional data analysis
Project Title	Developing Robust Meta-Regression and Dose-Response Techniques for Evidence Synthesis
Project abstract	Meta-analysis combines results from multiple studies to strengthen evidence, but effect sizes often vary due to differences in study design or exposure levels. Meta-regression explores how study characteristics influence results, while dose-response meta-analysis assesses how effects change with varying doses. This PhD project aims to develop robust and flexible methods to improve both approaches, addressing challenges like non-linear relationships and between-study heterogeneity. Methods will be tested through simulations and real data, and implemented in user-friendly software. These advances will provide more accurate tools for evidence synthesis, benefiting research in healthcare and related fields.
Keywords	Dose-response meta-analysis, Evidence-based medicine, Meta-regression, Statistical methods

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Project Abstracts for PhD Student Recruitment AY2026/27

School of Chinese Medicine

Research Clusters	**Health and Drug Discovery**
Research Areas	Cell Metabolism, Cell Biology, Gut Microbiome
Project Title	Development of a Cholestenone-Based Drug for Dual Inhibition of EGFR and Mutant KRAS in Colorectal Cancer Treatment
Project abstract	Colorectal cancer (CRC) treatment is challenged by resistance to EGFR-targeted therapies and the prevalence of diverse KRAS mutations, with no clinically approved pan-KRAS inhibitor available. In our recent study (Nature Metabolism, under revision; bioRxiv preprint DOI: 10.1101/2025.05.02.651972), we identified 4-cholesten-3-one (4C3), a cholesterol metabolite depleted in CRC, which selectively inhibits CRC growth by dual targeting of EGFR and mutant KRAS. Using AI-enabled in silico screening, we optimized the 4C3 scaffold and identified Leucosterol as a promising candidate. We now aim to assess its safety and antitumor efficacy in multiple CRC models.
Keywords	Gut Microbiome, Cholesterol, Colorectal Cancer, Kras mutation

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Chemistry

Research Clusters	**Health and Drug Discovery** **Data Analytics and Artificial Intelligence**
Research Areas	Materials chemistry, drug delivery, dental materials, supramolecular materials
Project Title	Development of Supramolecular Drug Carriers for Contemporary Medical Applications
Project abstract	Recent advances in drug carriers—hollow nanoparticles, supramolecular materials, dendrimers, and metal–organic frameworks—enable precise, controlled delivery for contemporary medical applications. Tunable architectures and surface functionalization support targeting tumors, penetrating dental biofilms, and treating fungal and bacterial infections, while stimuli-responsive designs release payloads at pathological microenvironments. Magnetic platforms offer image-guided theranostics; dendrimers provide multivalent binding and improved solubility; MOFs deliver high loading and programmable release; hollow nanostructures minimize density and maximize encapsulation. Key challenges include biocompatibility, long-term stability, immune interactions, scalable manufacturing, and regulatory validation. Integrating diagnostics, personalization, and environmentally sustainable synthesis can accelerate translation of safe, effective nanocarriers into standard care.
Keywords	Nanoparticle, hollow structure, dendrimer, drug interaction, drug modification

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Mathematics

Research Clusters	**Health and Drug Discovery**
Research Areas	Organic electronics; flexible and wearable healthcare sensors; soft electronics for health management
Project Title	Soft organic electronic circuits for wearable healthcare monitoring
Project abstract	Organic semiconductors have revolutionized the digital display industry with high quality portal display due to their cost effectiveness, excellent optoelectronic properties and ease of processing. Organic electrochemical transistors (OECT) are promising bioelectronic platform for amplification of physiological signals and detection of biomolecular species. This project will explore advanced manufacturing techniques and functionalization strategies to fabricate soft OECT circuits to enable reliable long-term bio-interfacing and realize high performance wearable/implantable biosensors for health management.
Keywords	Organic semiconductors; Organic electronics; Wearable sensors; Soft electronics; Healthcare sensors

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Project Abstracts for PhD Student Recruitment AY2026/27

Department of Humanities and Creative Writing

Research Clusters	Humanities and Cultures
Research Areas	Urban food systems, food waste, critical food practices, technology for social good, care practices, practice based research
Project Title	Food Futures – Urban Food Systems and Community Practices
Project abstract	"Food Futures – Urban Food Systems and Community Practices" is an ongoing research that explores innovative approaches and practices to foster inclusive, circular, and environmentally responsible food systems in the urban environment. The research broadly covers the integration of urban agriculture, local food networks, and community-led initiatives, and identifies strategies to enhance food security, resilience, and equity in cities. It emphasizes on ethical practices of care, which promotes social well-being and fosters community ties, and adopts a practical academic approach which combines academic inquiry with community engagement and emphasizes on critical solutions.
Keywords	Ethical food practices, care, urban, well-being

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Project Abstracts for PhD Student Recruitment AY2026/27

School of Chinese Medicine

Research Clusters	**Health and Drug Discovery**
Research Areas	Natural Product Chemistry
Project Title	From Nature to Novel Therapeutics: Discovery and Pharmacological Evaluation of Bioactive Compounds from Southern Asian Plants as Next-Generation Agents Against Viruses and Virus-Related Cancers
Project abstract	Effective antiviral and anticancer treatments are desperately needed because viral infections, such as hepatitis B, human papillomavirus, and Epstein-Barr virus, play a major role in the incidence of increasing cancer. The goal of this project is to discover bioactive compounds from Southern Asian medicinal plants as next-generation antiviral and virus-related cancer treatments. Phytochemicals with antiviral and anti-oncogenic potential will be isolated using bioassay-guided separation. Advanced spectroscopic techniques, including NMR, HRESIMS, and quantum-chemical computations, will be used for structural elucidation. Using structure-activity relationship (SAR) analysis as a guide, synthetic derivatives will be produced to improve potency, selectivity, and pharmacokinetic characteristics.
Keywords	Medicinal plants; Bioactive compounds; Viral infections; Anticancer; Structure modification

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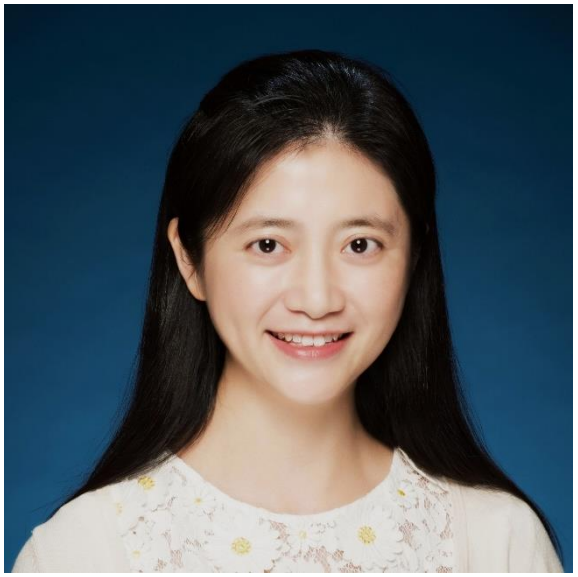
Project Abstracts for PhD Student Recruitment AY2026/27

Department of Chemistry

Research Clusters	**Health and Drug Discovery**
Research Areas	• Advanced Analytical Methods Development: Developing and optimizing novel, sensitive mass spectrometry-based targeted and non-targeted methods to characterize environmental organic pollutants and heavy metals. • Pollutant Characterization and Transforma
Project Title	Redox-Active Metal Speciation in PM2.5: Linking Oxidation States to Oxidative Potential and Health Risks
Project abstract	PM2.5 is a key air pollutant causing health effects via oxidative stress and ROS generation. Studying redox-active metals like Cu, Fe, and Mn in PM2.5 is crucial, as prior research suggests that their oxidation states impact OP, with seasonal variations necessitating advanced speciation techniques. This project develops LC-ICPMS methods to speciate these metals in Hong Kong PM2.5, profiles their sources and environmental influences, measures OP using acellular and cellular assays, and links speciation with OP mechanisms. Findings will refine toxicity assessments, guide urban emission controls, and mitigate health risks in Asia.
Keywords	PM2.5-induced oxidative potential, redox-active metals, toxicological mechanisms, PM toxicity



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Note: Project abstracts are listed in the order of their submission.