

## Alzheimer's disease

Alzheimer's disease (AD) is the most common form of dementia in elderly people with huge healthcare and economic burden to the society. Our group focuses on the anti-AD effect and their molecular mechanisms of Chinese herbal medicine. We used several in vivo and in vitro models of AD to confirm the anti-AD effects of several Chinese medicines and their chemical principles. Our group has published more 40 SCI papers in medical journals such as Journal of Alzheimer's disease, Phytomedicine and Journal of Ethnopharmacology. We also partnered with the industry to put our scientific discoveries into practice. Starting from 2017, we successfully translated our research outputs into health products, some of them have been available in the market. Through this project, we have established research collaborations with overseas partners, with an aim to bring the research development to new heights.

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## Chinese Medicine

School of Chinese Medicine offers a comprehensive range of professional courses in Chinese medicine, with an aim for sustainable development of Chinese medicine and nurturing high-calibre Chinese medicine experts equipped with the necessary knowledge and sound ethics. Our School has since 2002 actively been participating in the development of worldwide recognised the Hong Kong Chinese Materia Medica Standards project. To unlock the scientific basis of Chinese medicine and facilitate its modernisation, our school is also devoted to the translational and clinical research of Chinese medicine for the treatment of a wide range of diseases including musculoskeletal diseases, central nervous system disorders and cancers. Through strengthening collaborations with mainland China and overseas partners, we are able to enhance our research capacity and achieve excellent research outputs. Entering our 20th year anniversary, the School is striving for excellence in Chinese medicine education and research in our new endeavours.

## SCHOOL OF CHINESE MEDICINE

## Quality Assurance and Quality Control of Herbal Medicines

Herbal medicines are naturally-occurring substances and their bioactive chemical contents can vary from batch to batch due to intrinsic and extrinsic factors. Quality assurance programme should be adopted to ensure the quality of final medicinal herbal products so as to deliver expected therapeutic effects or produce valid and reproducible results in pharmacological or clinical efficacy studies. Our group has participated in the Hong Kong Chinese Materia Medica Standards Project from its beginning in 2002 and has contributed significantly for the implementation of this project. We are constantly providing authentication and chemical analysis services for Hospital Authority which safeguards the quality and safety of herbal medicines used in Chinese medicine clinics of Hospital Authority. We have cooperated with clinical research teams in clinical studies by providing quality assurance programme covering the acquisition, botanical validation, chemical standardisation, and preclinical safety tests of the herbal medicines.

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“ While inheriting the essence of Chinese medicine, we strive to instill an evidence-based approach to this ancient art of healing, and to unveil the scientific mechanisms underlying their actions. ”

Ting Hung LEUNG  
Director

## Pancreatic cancer

Pancreatic cancer (PanCa), a highly aggressive malignant disease usually diagnosed at an advanced stage, is at present the fourth leading cause of cancer-related death in the Western world. Chemotherapeutic options for this deadly malignancy are current very limited and the situation highlights an urgent need for new and more effective therapeutic entities. Our research group has in the past 15 years focused on exploring the potential of Chinese medicines and their chemical principles on the treatment of PanCa and unraveling the underlying molecular mechanisms using in vivo and in vitro experimental models. Research findings of the project have been published in a number of high quality journals such as Cancer Letters, British Journal of Cancer, Phytotherapy Research and Frontiers in Pharmacology. Through this project, we have also been able to establish research collaborations with research groups in mainland China and the UK, with an aim to translate the promising preclinical findings into clinical use. The research interest of our group also covers R & D of Chinese medicines for Alzheimer's disease, atopic dermatitis, psoriasis, and clinical trials on acupuncture for overactive bladder and post-stroke dysphagia.

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## Musculoskeletal diseases

Musculoskeletal diseases seriously affect the health and movements of human, especially to the elderly and sports populations. Our team focuses our research on the molecular mechanisms and interventions exploration with genetic approaches and natural products on musculoskeletal diseases including sarcopenia, mechanical unloading-related skeletal muscle atrophy, stretch-induced muscle injury, osteoporosis, bone fracture and osteonecrosis. Our research also involves in the mechanism understanding and natural product exploration for pulmonary, cardiac and cancer diseases. The research outputs of the team leader ZHANG as first- or corresponding-author have been published on a series of distinguished academic journals, including Nature Medicine, Nature Communications, Journal of Cachexia, Sarcopenia and Muscle, Biomaterials, Aging Cell, Scientific Reports, Cell Discovery, Bone, Journal of Applied Physiology, etc.

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## Evaluation of traditional Chinese medicine in cancer treatments

Traditional Chinese medicine (TCM) has been used for cancer treatment among Chinese population in the primary care setting with a long history but evidence is lacking. In the patients' level, it complements with conventional Western medicine for alleviating treatment side effects and improving the health-related quality of life or survivorship. To enhance the quality and to ensure the safety on the role of TCM, my researches put a strong emphasis on evaluating the effectiveness, increasing chemotherapy compliance or reducing the side effects of TCM cancer treatment in the primary care setting of Hong Kong in breast or gastrointestinal cancer (e.g., colorectal, pancreatic, cholangio-carcinoma and gall-bladder cancer). With the use of cost-effectiveness analysis, patients-reported outcome instruments, we can inform better TCM specialty health services research and practice. Our goal is to develop a comprehensive cancer integrative model for cancer patients with an interdisciplinary approach in Chinese population.

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## Alzheimer's disease

Alzheimer's disease (AD) is the most common form of dementia in the elderly population worldwide. Apart from memory impairment and cognitive deficits, non-cognitive symptoms, especially motor deficits, such as gait disturbances, disturbed activity level and balance, are associated with incident AD. We focus on determining the factors that contribute to the motor deficits in AD. We pioneered the study on Abeta neuropathology in the spinal cord in a transgenic mouse model of AD and were the first to report that motor cortex and its projection in the spinal cord, corticospinal tract, is vulnerable to Abeta neuropathology. Our studies resulted in 6 papers in the Journal of Alzheimer's disease, Neurobiology of Aging and Oncotarget. Through our study, we have established research collaborations with research groups in mainland China, with an aim to explore the potential of Chinese medicines and their ingredients to delay the onset and progression of Alzheimer's disease.

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