

## Appendix

### List of funded CUHK researchers and projects

1. **Professor Qin Ling**, Choh-Ming Li Professor of Orthopaedics and Traumatology and Assistant Dean (Mainland Affairs), CU Medicine  
Project title: **Magnesium-Based Biodegradable Implants as Innovative Class III Medical Devices: From Implant Design, Biosafety, Efficacy to Clinical Translation**

The ageing population is a serious challenge locally and internationally, which is accompanied by a sharp increase in the incidence of musculoskeletal disorders such as fractures and osteonecrosis. It is common for elderly people to have difficulty healing after fractures. In the most serious cases, non-union bone fractures can lead to permanent disability. Thus, there is an urgent need to develop novel treatment strategies that can enhance and accelerate fracture healing.

The research team will focus on developing novel bioactive degradable magnesium (Mg) and Mg-based orthopedic implants, which will help promote the coupling of osteogenesis and angiogenesis, bone regeneration and fracture healing. The team will engage in product design, including screw and plate hybrid systems for cruciate ligament and fracture fixation, and will conduct safety and efficacy tests in animal models to acquire Class-III medical product registration and certification. The team expects the new implant to effectively achieve functional bone regeneration in challenging bone diseases, in turn benefiting patients with a better curative effect that will significantly reduce the healthcare burden.

2. **Dr Wang Xin**, Associate Professor, Department of Surgery, CU Medicine  
Project title: **Development of Liquid Biopsy Assays Based on Exosomal Small Non-coding RNAs for Non-invasive Early Detection of Pancreatic Cancer**

Pancreatic cancer, one of the top ten cancers in Hong Kong, is highly invasive and has no obvious early symptoms. Many patients are not aware of the disease until its late stage, delaying treatment and affecting survival rates. However, current diagnostic imaging and conventional serological examinations often fail to detect early pancreatic lesions, resulting in false negative results.

Since pancreatic tumour-derived exosomes enter the circulatory system, small non-coding RNAs of exosomes are abundant and stable within it. The research team will work on using those exosomal small non-coding RNAs to develop novel biomarkers for non-invasive, accurate, fast blood detection of early pancreatic cancer, in order to identify patients with the disease as early as possible, allowing them to receive early treatment and increasing survival rates.

3. **Professor Xi Chao**, Professor and Associate Dean (Research), Faculty of Law  
Project title: **Harmonization of Business and Commercial Laws in the Greater Bay Area: Concepts, Approaches, and Policy Options**

Due to its unique historical circumstances, the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) includes three different legal jurisdictions, Guangdong province (specifically, the nine cities in the GBA), the Hong Kong SAR and the Macau SAR. Each has developed an idiosyncratic body of doctrines, principles, institutions, rules and practices that characterize and frame the ways in which business and commerce are conducted. It is believed that harmonization of laws governing businesses and commercial transactions in the GBA within the constitutional framework of “one country, two systems” helps lower transaction actions and facilitate market integration. However, few studies have critically examined the concept of harmonization in the academic and policy discourse, and relatively little is known empirically about the current approaches to harmonization.

The research team will examine how the key state and non-state actors perceive legal harmonization, the effectiveness of current harmonization efforts, and the factors that drive or constrain harmonization. It seeks to generate evidence-based, actionable policy options and recommendations on legal harmonization that can help to enrich the GBA policy-making processes. The ultimate goal of the project is to promote and strengthen the rule of law in GBA.

4. **Professor Zhou Renjie**, Associate Professor, Department of Biomedical Engineering, Faculty of Engineering  
Project title: **Quantitative Phase Imaging Promoting Cell Biology, Biomedicine, New Materials and Beyond**

Quantitative phase microscopy (QPM) is an emerging optical imaging technique for label-free, high-resolution imaging of living cells and other tiny substances. In QPM, the wavefront or phase delay of a specimen is mapped so that it can be used to infer the specimen's shape, internal structures, material composition and so on. This novel microscopy technology allows for monitoring of intracellular dynamics and their responses to different treatments without harming the cells. Other advantages of QPM include high-precision, high throughput measurement capabilities that can potentially facilitate quality control during advanced manufacturing, especially chip manufacturing at the atomic scale. However, the precision of current QPM systems is limited, and they are difficult to operate and expensive, limiting access to them and their ability to make a profound impact.

The research team is committed to developing novel high-performance QPM systems and demonstrating their broad application. With the aim of commercializing QPM technologies, they will cooperate with industry to add custom functions to their QPM systems, making them easy to use and cost-effective for user-specific applications. The team will also disseminate knowledge to the scientific and industrial communities so the technologies can be more widely applied.