

## Haematology and Oncology

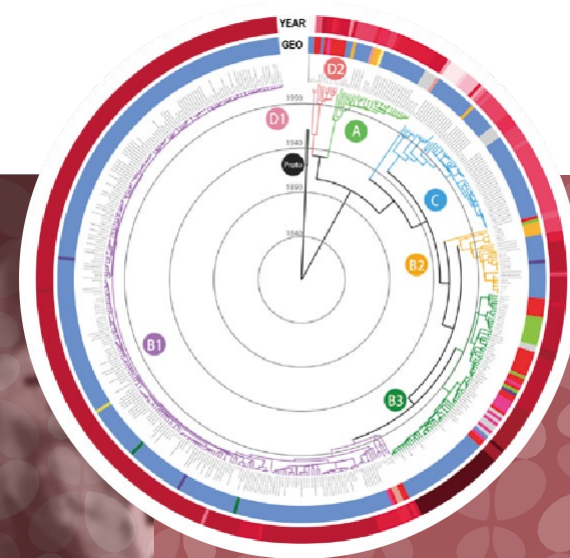
In Mar 2019, the clinical service of paediatric oncology unit at Prince of Wales Hospital has been entirely relocated to the Hong Kong Children's Hospital. Our team conducts cutting-edge basic, translational and clinical research focusing on childhood leukaemia and has built a unique area of research excellence in Hong Kong. We have been the coordinating center for major international childhood leukemia consortium and as the leading unit for running multiple multicenter collaborative studies in a nationwide scale with partner paediatric oncology centers in mainland China. Ongoing research includes (i) precision medicine and functional genomics; (ii) molecular basis of leukaemogenesis; (iii) leukemia immunology and metabolism; (iv) antibody- and cell-based immunotherapies; and (v) interventional clinical trials.

*Clinical haematology and oncology*

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香港中文大學醫學院  
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## Paediatrics

Our Department has nine clinical and three non-clinical academic staff with research interests in paediatric and child health topics, ranging from the basic science of stem cells, microbiome and respiratory viruses to clinical research on oncology, neonatology, nephrology, allergic diseases and sleep-disordered breathing. Our flagship research programmes regularly attract substantial research funding from the Research Grants Council, Food and Health Bureau, Innovative and Technology Commission, non-governmental organisations as well as pharmaceutical and nutritional companies. The Department is a core member of the Hong Kong Hub of Paediatric Excellence (HK HOPE), which is the university-level, multi-faculty and interdisciplinary research institute for coordinating paediatric and child health research. Key basic, translational and clinical research activities of the Department take place at the Hong Kong Children's Hospital, Prince of Wales Hospital and the CUHK main campus.

## DEPARTMENT OF PAEDIATRICS

## Virology and Respiratory Epithelial Cell Biology

Our team is dedicated to the advancement of respiratory resilience hoping for further fortification and protection against a broad range of respiratory threats. These aforementioned threats include common viral infections such as rhinovirus, influenza, respiratory syncytial virus (RSV), and chronic respiratory conditions including asthma and chronic obstructive pulmonary disease (COPD). To address these challenges, we harness and research the advancements in diagnostics, immunology, and therapeutic developments; our team works to equip the overall community with the tools and knowledge to strengthen our respiratory resilience in both the present and the future. On-going research projects under this theme include the development and application of human primary respiratory epithelial cell models, including the air-liquid interface and the organoid cultures, to perform risk assessment and therapeutic screening for emerging infectious airway pathogens and research on the disease pathogenesis.

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“ Our clinical, teaching and research facilities are located within the Prince of Wales Hospital, the main teaching hospital affiliated with the Chinese University of Hong Kong, and the Hong Kong Children's Hospital. As a department, we strive to improve the health and well-being of infants, children and adolescents by providing comprehensive health care, educating health professionals at both the undergraduate & postgraduate levels, and advancing knowledge through innovative research. Our Department is an internationally recognised centre for research in Allergy, Haematology & Oncology, Neonatology, Sleep Disorders, Virology and Nephrology. We are committed to participating in the growth of world-class research through interdisciplinary & international collaboration, aimed at translating knowledge into better health outcomes & quality of life. ”

**Albert Martin LI Man Chim**  
Chairman





## Neonatology

Our neonatal research programme is based at the neonatal unit of the Prince of Wales Hospital, which includes the largest level III neonatal intensive care unit in Hong Kong. We have clinical and research collaborations with overseas units, and are a member of the Australian New Zealand Neonatal Network. Our clinical and basic science researchers collaborate closely on several important areas in neonatology. The main areas of research include (i) neonatal sepsis and necrotising enterocolitis diagnostics and pathogenesis, (ii) microbiome of the preterm infant, (iii) data-driven neonatal clinical research, and (iv) prenatal and early-life heavy metal exposure and clinical outcomes.

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## Sleep and Respiratory Medicine

Our research in Sleep Medicine began in 2003 with the establishment of a cohort of children along the sleep-disordered breathing (SDB) spectrum. In the years since then, we have investigated the epidemiology, basic mechanisms, complications and treatment outcomes of SDB. Utilising the sleep cohort, we have obtained important data regarding natural history and long-term outcomes from childhood SDB. We aim to develop new diagnostics, phenotyping and personalized treatment for childhood and adolescent sleep disorders, with a special focus on childhood SDB and cardiometabolic complications. Our scope also expands into chronobiology and molecular pathophysiology of childhood obstructive SDB, to explore the potential disruptions to circadian rhythms, and the interrelationships among inflammation, metabolic dysregulation, and alterations in the airway and gut microbiome. Recently, we have also started to focus on the importance of adequate sleep in pre-schoolers, adolescents and children with special needs. Having received world-wide recognition for our work, our team continues to attract funding support from major grant agencies.

*Sleep medicine*

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## Allergy

Our asthma and allergy team has established one of the largest biobanks for archiving human DNA, serum, plasma, urine, stool, exhaled breath and environmental dust samples collected from thousands of subjects in the Chinese population. The team carries out laboratory and analytical work to unravel genetic and environmental determinants for allergic diseases in children. Our team has been collaborating with other disciplines within the Faculty and with other universities to conduct several birth cohorts to unravel maternal factors and early-life exposome that modulate the evolution of microbiotas at various body sites and their interaction with host factors for modulating allergy susceptibility in the children. Our team is also active in researching biomarkers, improved diagnosis, immunotherapy and novel treatments for food allergies. We discovered new seafood allergens and innovated about the application of functional specific IgE-based assays and the concept of component-resolved diagnosis for shrimp and fish allergy. Besides, the team is conducting cutting-edge randomised controlled trials on immunotherapy for peanut, fish, wheat and tree nut (cashew) allergies. Based on our patented works on modified shrimp allergens, we pioneer the design of different types of allergy vaccines and investigate their efficacy and safety in animal models and early-phase clinical trials. The team is also developing animal models of different allergic diseases and studying the neuro-immune interactions in allergy. The team has also identified a number of early-life stool and skin microbiotas, seromarkers, biophysical and psychological assessment tools and therapeutic options for childhood eczema. In addition, we are studying biotherapy as an emerging precision medicine treatment for childhood eczema. Our team has led investigations in more than 20 centers across Asia to study the epidemiology of allergic diseases in the Asia-Pacific Research Network for Anaphylaxis (APRA). Beyond this, we are lead collaborators in several large international research consortia, such as The International Study of Asthma and Allergies in Childhood (ISAAC), EuroPrevall study group and Asia Allergy Birth Cohort (A2BC) Network, with the goal of uncovering the environmental, genetic and microbial determinants of asthma, food allergies and related atopic conditions.

*General allergy, microbiome, biobank and genetics/genomics*

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## Nephrology

The Paediatric Nephrology Centre of Hong Kong Children's Hospital, formerly located at the Princess Margaret Hospital, has been the designated referral centre in Hong Kong for complicated childhood kidney conditions and kidney replacement therapy over the last two decades. Our team conducts clinical and translational research focusing on immune-mediated glomerular diseases, such as childhood nephrotic syndrome and lupus nephritis, as well as kidney failure. In the past few years, we have established a close international collaborative research network on childhood nephrotic syndrome with more than 30 paediatric nephrology centres in Asia, Europe, North America and Oceania. This collaboration has led to very influential multi-centre studies in the field that have impacted disease management. Ongoing research includes (i) international prospective clinical and translational studies on the use of anti-CD20 therapy in nephrotic syndrome, (ii) immunology of nephrotic syndrome and lupus nephritis, (iii) multi-omics investigations in understanding paediatric glomerular disease and (iv) onco-nephrology.

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