DEPARTMENT OF PATHOLOGY 2019
The University of Hong Kong
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOREWORD</td>
<td>1</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>MISSION</td>
<td>3</td>
</tr>
<tr>
<td>HISTORY</td>
<td>4-5</td>
</tr>
<tr>
<td>TEACHING AND RESEARCH</td>
<td>6-7</td>
</tr>
<tr>
<td>PROFESSORS</td>
<td></td>
</tr>
<tr>
<td>Professor CHEUNG Nga-Yin Annie</td>
<td>8</td>
</tr>
<tr>
<td>Professor KHOO Ui-Soon</td>
<td>9</td>
</tr>
<tr>
<td>Professor LAM Ching-Wan</td>
<td>10</td>
</tr>
<tr>
<td>Professor LEUNG Suet-Yi</td>
<td>11</td>
</tr>
<tr>
<td>Professor LU Liwei</td>
<td>12</td>
</tr>
<tr>
<td>Professor NG Lui Oi-Lin Irene</td>
<td>13</td>
</tr>
<tr>
<td>Professor NICHOLLS John Malcolm</td>
<td>14</td>
</tr>
<tr>
<td>ASSOCIATE PROFESSORS</td>
<td></td>
</tr>
<tr>
<td>Dr BEH Swan-Lip Philip</td>
<td>15</td>
</tr>
<tr>
<td>Dr CHAN Kwok-Wah</td>
<td>16</td>
</tr>
<tr>
<td>Dr IP Pun-Ching Philip</td>
<td>17</td>
</tr>
<tr>
<td>Dr LO Cheuk-Lam Regina</td>
<td>18</td>
</tr>
<tr>
<td>Dr WONG Chun-Ming Jack</td>
<td>19</td>
</tr>
<tr>
<td>Dr WONG Pik Maria</td>
<td>20</td>
</tr>
<tr>
<td>Dr YAM Wai-Ping Judy</td>
<td>21</td>
</tr>
<tr>
<td>ASSISTANT PROFESSORS</td>
<td></td>
</tr>
<tr>
<td>Dr AU YEUNG Kwok-Him Rex</td>
<td>22</td>
</tr>
<tr>
<td>Dr SIN Chun-Fung Albert</td>
<td>23</td>
</tr>
<tr>
<td>Dr TANG Hin-Ning Alexander</td>
<td>23</td>
</tr>
<tr>
<td>Dr WONG Chak-Lui Carmen</td>
<td>24</td>
</tr>
</tbody>
</table>
RESEARCH ASSISTANT PROFESSORS
Dr CHAN Lo-Kong 25
Dr HO Wai-Hung Daniel 26
Dr YAN Hoi-Ning Helen 27

TEACHING
Innovations in curriculum design and delivery 28-31
Postgraduate diploma and certificate courses 32

HONORARY TEACHERS
33

TECHNICAL AND ADMINISTRATIVE SUPPORT
34

RESEARCH
Research themes and directions 35
Awards and honours 36
Research postgraduates 37-38
Research infrastructure and core facilities 39
State Key Laboratory of Liver Research (HKU) 40
The Hong Kong Pathology Forum 41

CLINICAL SERVICES
Consultation and expertise 42-45
Clinical services to the community 46-49
Partnership with the Department of Pathology, Queen Mary Hospital 50-53
Sustainable excellence

The Department of Pathology continues to excel in many aspects as a result of the concerted efforts of every departmental stakeholder.

We are in a new era of medical science. Scientific discoveries and technological innovations have opened up novel pathways for the prevention, diagnosis and treatment of disease. Competitive research grants have continued to be awarded to our staff in the past 3 years by the Hong Kong Research Grants Council (RGC), the Hong Kong Health and Medical Research Fund, and the Innovation and Technology Fund, among other funding schemes. Two of our professors, Professor SY Leung and I, obtained prestigious RGC Theme-based Research Scheme grants in 2016. In addition, distinguished colleagues in the department have been recipients of Croucher Senior Research Fellowships every year from 2011 to 2015.

Thanks to the tremendous efforts of our teachers, great strides have been made in online teaching. The new pedagogy has been enthusiastically received, gaining a specific commendation from the Hong Kong Medical Council in its Bachelor of Medicine and Bachelor of Surgery, The University of Hong Kong (HKU) 2013 accreditation report. We have also continued our mission to extend our pathology teaching. The Postgraduate Diploma/Certificate in Molecular and Diagnostic Pathology has begun its fifth teaching cycle, attracting the enrolment of medical professionals from not only Hong Kong but also Australia, Canada, Russia, Saudi Arabia, the Philippines, Mainland China and Macau.

My January 2017 appointment to the role of Pathology Chief of Service (COS) at Queen Mary Hospital (QMH), our flagship teaching hospital, has been hugely significant in reestablishing the link between clinical practice and academic work, which is extremely important in a teaching hospital. My dual role as COS and department head has promoted synergies between HKU and QMH in delivering a modern, high quality clinical service and in enhancing research opportunities. We have witnessed exciting developments and the launch of new tests. We are also proud to have Professor Annie Cheung providing leadership in clinical pathology at HKU-Shenzhen Hospital through her role there as COS in pathology.

Since 2013, the Hong Kong Pathology Forum hosted annually by our department has played a key role in delivering updates in pathology and uniting pathologists in the city, attracting unprecedented participation. We have also hosted a number of courses attended by high caliber participants from around the globe and internationally renowned speakers, including the Croucher Summer Course in Cancer Biology (2013, 2015 and 2017), and the State Key Laboratory of Liver Research Symposium (yearly from 2011 to 2018).

Succession planning and mentoring of young pathologists and basic scientists has continued to be one of our foremost priorities over the past 3 years. With the commitment of our colleagues, we have also made solid progress and achieved encouraging results in academic research, medical education and other areas.

We pledge to continue building the ideal environment for our colleagues to develop and excel, and to work together to move forward.

Individually we excel and together we move forward

Irene OL Ng
Chair Professor and Head
Flourishing under the leadership of Professor Irene OL Ng, the Department of Pathology is renowned for fostering excellence in basic, translational and clinical research studies. The success of its robust, highly competitive programs is evidenced by the many awards conferred on its faculty, including prestigious Croucher Senior Research Fellowships won by Professors Annie NY Cheung, John Nicholls, LW Leung, Irene OL Ng and US Khoo, and the Croucher Innovation Award won by Dr Carmen CL Wong. In addition, endowed professorships in pathology, natural sciences, anatomical molecular pathology and oncolgical pathology are held by Irene OL Ng, SY Leung, Annie NY Cheung and US Khoo, respectively. Topping even these accomplishments are the World Academy of Sciences Prize in Medical Sciences awarded to Professor Ng in 2014 and the Beijing Science and Technology Award won by Professor LW Lu in 2015. Professor Ng also heads up the cutting-edge State Key Laboratory of Liver Research, singled out for national recognition in 2010. On the basic research side, the department continues to produce stellar results from the pioneering work of Professor SY Leung on the derivation of 3D gastric cancer organoids from patient samples. This work has paved the way for major advances in understanding the genomics of these malignancies as well as serving as a platform for drug sensitivity assays and cell biological studies. Similarly, Professor Ng has conducted groundbreaking studies of cancer cell stemness and its regulation in liver cancer and is now exploring translational applications of this work. The leadership of both these faculty members has been recognized with Outstanding Research Output Awards from the HKU Faculty of Medicine. Professor LW Lu, Dr Judy WP Yam and Dr Carmen CL Wong have also won HKU Outstanding Researcher Awards. On the clinical research side, the department is proud to support Dr Regina CL Lo in her Clinical Research Fellowship Scheme research on liver cancer. With respect to scientific outreach, the department’s annual Hong Kong Pathology Forum continues to draw local pathologists and other clinical specialists to meet, share and update their knowledge. In 2013, 2015 and 2017, the department organized the Croucher Summer Course in Cancer Biology, co-sponsored by the American Association for Cancer Research. Promising graduate students, postdoctoral fellows and early career researchers have attended this course to expand their research horizons and network with world-renowned scientists and international participants.

TW Mak

**Professor Tak Mak**

Director
The Campbell Family Institute for Breast Cancer Research
Ontario Cancer Institute, Princess Margaret Cancer Centre,
Toronto, Canada

Senior Scientist
Division of Stem Cell and Developmental Biology
Advanced Medical Discovery Institute / Ontario Cancer Institute,
Toronto, Canada

Honorary Professor
Department of Pathology
The University of Hong Kong

Honorary Fellow
Hong Kong College of Pathologists

_The only constant in Tak Mak’s career has been change. After jumping from a Jesuit seminary to engineering, to immunology and genetics, the scientific vagabond says he has finally found his true passion._ – Nature Medicine, 2003

In 1984, Tak Mak published a groundbreaking scientific paper on the cloning of the T-cell receptor gene, a key component of the human immune system, and shaped the direction of research in immunology and genetics. His pioneering work in designing and advancing the use of genetically altered mice has provided key insights into molecular pathways of cancer at the cellular level.

He has won international recognition in the forms of the Emil von Behring Prize, the King Faisal Prize for Medicine, the Gairdner Foundation International Award, the General Motors Cancer Foundation Sloan Prize, the Paul Ehrlich Prize and the Novartis Prize in Immunology.

He is an Officer of the Order of Canada, a foreign associate of the National Academy of Sciences (USA) and a fellow of the Royal Society of London.
To instill in students and healthcare professionals the importance of pathology as a scientific foundation for understanding diseases and all applied aspects of medicine.

To foster excellence in research into the pathogenesis of human diseases through harnessing the frontiers of scientific knowledge and technology.

To develop and provide the highest quality diagnostic pathology and screening services in Hong Kong, Mainland China and the Asia-Pacific Region.

To provide the highest quality patient care and management through synergistic partnership and collaboration with clinicians.
The Department of Pathology owes a great debt of gratitude to the universities of Scotland for its growth and development. Professor CY Wang, appointed in 1920 as the first Professor of Pathology, obtained his MD at the University of Edinburgh after graduating from the Hong Kong College of Medicine. At the time, tropical diseases, mainly infections and parasites, were predominant causes of mortality, and while at the University of Edinburgh he also gained a Diploma in Tropical Medicine and Health. Professor Wang’s research concentrated on tuberculosis, the disease that claimed his life in 1930. He was succeeded by Professor LJ Davis, who had previously worked at the Wellcome Tropical Research Laboratories in Khartoum, Sudan. Professor Davis occupied the role until 1939, when he left to become a director of medical laboratories in Bulawayo, Zimbabwe (formerly Southern Rhodesia).

Professor RC Robertson, successor of Professor Davis, was a University of Glasgow graduate who had headed the Lester Institute of Research in Shanghai before coming to Hong Kong. Soon after his appointment, he began the task of setting up a diploma course in tropical medicine and hygiene. Professor Robertson was regarded as a man of boundless physical and moral courage, a keen humanitarian, and a champion of the cause of the Chinese population whose health and hygiene he strove zealously to improve. His efforts were curtailed upon Japanese invasion in 1941, during which he was held under house arrest. Professor Robertson died in 1942.

Professor Hou Pao-Chang held the position of Chair Professor from 1948 to 1960. He had previously been a professor at Cheloo University and West China University and was well-respected within China and internationally. His main research area was hepatobiliary disease and the relationship between the liver fluke Clonorchis sinensis and bile duct carcinoma. During his tenure, Professor Hou oversaw construction of a new pathology building in the grounds of Queen Mary Hospital. This building, completed in 1958, facilitated the integration of pathology teaching, research and the hospital’s clinical pathology service.

Professor Hou was succeeded by Professor Robert Kirk, a Glaswegian, in 1960. Prior to this, Professor Kirk worked at the Stack Medical Research Laboratories in Khartoum and since 1955 had been a professor of pathology in Singapore. Professor Kirk made numerous contributions to medicine in the tropics and is remembered for his work on leishmaniasis.

A few months before his death in 1962, he was awarded the Gaspar Vianna Medal by the Brazilian government for his work on the disease, of which he said, “How could a Glasgow man help but work on leishmaniasis? You see, at the beginning there was Leishman.”

When Professor James Gibson succeeded Professor Kirk in 1963, one of his first achievements was the establishment in 1968 of a separate Department of Microbiology. The pathology department continued to focus on the disciplines of histopathology, cytology, haematology and clinical biochemistry, and later immunology, while part-time staff taught medical jurisprudence. In 1970, Professor Gibson helped negotiate an agreement between The University of Hong Kong (HKU) and the Hong Kong government resulting in a grant to run what became known as the Hospital Pathology Service at Queen Mary Hospital. This enabled the department to provide a high quality pathology service to a modern teaching hospital of international standing, enhancing the quality and scope of its clinical laboratory service.

Professor Gibson’s other achievements include setting up a central electron microscope unit at HKU and opening in 1972 a new Clinical Pathology Building adjacent to that constructed in Professor Hou’s era. He also oversaw the establishment of a territory-wide medical laboratory technician training programme, the development of a
cytology service, and the setting up of an immunology section in 1975 and a tissue typing service in 1981 which now serves the whole of Hong Kong. In addition, Professor Gibson oversaw the evolution of the clinical biochemistry unit into a separate entity in 1982. He meanwhile supervised the first cohort of students to obtain postgraduate research degrees in pathology at HKU. Further, during Professor Gibson’s tenure, the Department of Pathology was the organizational centre for a World Health Organization (WHO)-sponsored multicentre collaborative study on the classification of liver tumours, resulting in publication of a WHO Blue Book on the histological typing of tumours of the liver, biliary tract and pancreas. (The information about Professor Gibson is adapted from Constancy of Purpose by Dafydd Emrys Evans, Hong Kong University Press, 1987.)

Professor Faith Ho was department head from 1985 and chief of service at Queen Mary Hospital from 1994 until her retirement in 1996. She was a visionary in promoting excellence in research, clinical service and teaching. Professor Ho initiated and developed research employing molecular biology techniques and recognized the vital importance of a multidisciplinary approach to the diagnosis and management of diseases. She contributed new knowledge in the pathogenesis of lymphomas, particularly in nasal / NK lymphomas. She strengthened the five divisions of pathology — anatomical pathology, haematology, clinical biochemistry, immunology and tissue typing — by establishing new clinical posts in all divisions and academic posts in molecular biology, haematology, forensic pathology and clinical biochemistry. Professor Ho also promoted the recruitment of postgraduate students to the department and ensured a high standard of infrastructural support to enhance research and teaching.
## TEACHING AND RESEARCH

### Academic Staff

<table>
<thead>
<tr>
<th>Professors</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Professor CHEUNG Nga-Yin Annie</strong></td>
<td>Gynaecological pathology</td>
</tr>
<tr>
<td>MBBS HK, MD HK, PhD HK, FRCPath, FHKCPat, FHKAM (Pathology)</td>
<td></td>
</tr>
<tr>
<td><strong>Professor KHOO Ui-Soon</strong></td>
<td>Breast pathology</td>
</tr>
<tr>
<td>MBCh BAO Irel, MD HK, MMedSc (Path) Irel, FRCPath, FHKCPat, MIAC, FHKAM (Pathology)</td>
<td></td>
</tr>
<tr>
<td><strong>Professor LAM Ching-Wan</strong></td>
<td>Chemical pathology and genetics</td>
</tr>
<tr>
<td>MBChB CUHK, PhD CUHK, FRCP Glasgow, FRCPath, FHKCPat, FHKAM (Pathology), FFS RCPA</td>
<td></td>
</tr>
<tr>
<td><strong>Professor LEUNG Suet-Yi</strong></td>
<td>Gastrointestinal pathology</td>
</tr>
<tr>
<td>MBBS HK, MD, FHKAM (Pathology), FHKCPat, FRCPath UK, FRCPath</td>
<td></td>
</tr>
<tr>
<td><strong>Professor LU Liewei</strong></td>
<td>Immunology</td>
</tr>
<tr>
<td>MMed Norman Bethune, PhD McGill</td>
<td></td>
</tr>
<tr>
<td><strong>Professor NG Lui Oi-Lin Irene</strong></td>
<td>Hepatopathology</td>
</tr>
<tr>
<td>MBBS HK, MD HK, PhD HK, FRCPath, FHKCPat, FHKAM (Pathology)</td>
<td></td>
</tr>
<tr>
<td><strong>Professor NICHOLLS John Malcolm</strong></td>
<td>Paediatric pathology</td>
</tr>
<tr>
<td>MBBS Adel, FRCPath, FHKCPat, FHKAM (Pathology)</td>
<td></td>
</tr>
</tbody>
</table>

### Associate Professors

<table>
<thead>
<tr>
<th>Associate Professors</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dr BEH Swan-Lip Philip</strong></td>
<td>Forensic pathology</td>
</tr>
<tr>
<td>MBBS HK, DMJ (Clin et Path) Lond, CTLHE HK, FHKCPat, FHKAM (Pathology)</td>
<td></td>
</tr>
<tr>
<td><strong>Dr CHAN Kwok-Wah</strong></td>
<td>Renal pathology</td>
</tr>
<tr>
<td>MBBS HK, FRCPath, FHKCPat, FHKAM (Pathology)</td>
<td></td>
</tr>
<tr>
<td><strong>Dr IP Pun-Ching Philip</strong></td>
<td>Gynaecological pathology</td>
</tr>
<tr>
<td>MBChB Glasgow, FRCPath UK, FHKCPat, FHKAM (Pathology)</td>
<td></td>
</tr>
<tr>
<td><strong>Dr LO Cheuk-Lam Regina</strong></td>
<td>Liver pathology</td>
</tr>
<tr>
<td>MBChB, FRCPath, FHKCPat, FHKAM (Pathology)</td>
<td></td>
</tr>
<tr>
<td><strong>Dr WONG Chun-Ming Jack</strong></td>
<td>Cancer genetics and epigenetics</td>
</tr>
<tr>
<td>BSc HKPU, MMedSc HK, PhD HK</td>
<td></td>
</tr>
<tr>
<td><strong>Dr WONG Pik Maria</strong></td>
<td>Pulmonary pathology</td>
</tr>
<tr>
<td>MBBS HK, MD HK, FHKAM (Pathology), FHKCPat</td>
<td></td>
</tr>
<tr>
<td><strong>Dr YAM Wai-Ping Judy</strong></td>
<td>Liver cancer metastasis</td>
</tr>
<tr>
<td>BSc Wash, MSc HKUST, PhD HKUST</td>
<td></td>
</tr>
</tbody>
</table>
## Academic Staff

<table>
<thead>
<tr>
<th>Assistant Professors</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dr AU YEUNG Kwok-Him Rex</strong>&lt;br&gt;MBBS HK, FHKAM (Pathology), FRCPath</td>
<td>Malignant lymphoma</td>
</tr>
<tr>
<td><strong>Dr SIN Chun-Fung Albert</strong>&lt;br&gt;MBBS HK, MRes (Med), FHKCPath, FHKAM (Pathology)</td>
<td>Haematology</td>
</tr>
<tr>
<td><strong>Dr TANG Hin-Ning Alexander</strong>&lt;br&gt;MBBS HK, MRes (Med), FRCPA, FHKCPath, FHKAM (Pathology)</td>
<td>Renal pathology</td>
</tr>
<tr>
<td><strong>Dr WONG Chak-Lui Carmen</strong>&lt;br&gt;BSc Br Col, MSc HKUST, PhD HK</td>
<td>Cancer metabolism and tumour microenvironment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research Assistant Professors</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dr CHAN Lo-Kong</strong>&lt;br&gt;PhD HK</td>
<td>Molecular cancer biology</td>
</tr>
<tr>
<td><strong>Dr HO Wai-Hung Daniel</strong>&lt;br&gt;PhD HK</td>
<td>Bioinformatics and cancer genomics</td>
</tr>
<tr>
<td><strong>Dr YAN Hoi-Ning Helen</strong>&lt;br&gt;BSc HK, PhD HK</td>
<td>Molecular cancer biology</td>
</tr>
</tbody>
</table>
CHEUNG Nga-Yin Annie  
MBBS HK, MD HK, PhD HK, FRCPath, FHKCPath, FHKAM (Pathology)

Laurence L T Hou Professor in Anatomical Molecular Pathology  
Email: anycheung@pathology.hku.hk

Studies on gynaecological cancers  
[cancers of ovary, endometrium and cervix; gestational trophoblastic disease]

- Genetic and epigenetic mechanisms in endometrial, ovarian and trophoblastic carcinogenesis
- Application of novel technical platforms including HPV assays in cervical cytology for cervical cancer screening
- PS3 related genes in gynaecological cancers
- Molecular signaling in gynaecological cancers

RESEARCH INTERESTS

SELECTED PUBLICATIONS


RESEARCH GRANTS

- Health and Medical Research Fund
- p21 activated kinase 4 and ovarian cancer chemoresistance (2016)
- Targeting human papillomavirus (HPV) negative cervical cancer (2017)

CLINICAL SERVICES

- Pathologist in charge, Cervical Cytology Screening Laboratory, The University of Hong Kong
- Director (Molecular Pathology), University Pathology Laboratory, The University of Hong Kong
- Honorary Consultant and Deputy Chief of Service (Pathology), Queen Mary Hospital
- Chief of Service (Pathology), HKU-Shenzhen Hospital

COMMUNITY SERVICES

- Standing member, WHO Classification of Tumours 5th Edition editorial board
- Commissioner, Lancet Commission on Diagnostics
- Immediate Ex-President, Hong Kong College of Pathologists

AWARDS AND HONOURS

- Best Teachers Award (Medical Society, HKUSU) (1996)
- Faculty Teaching Medal (2002)
- University Teaching Fellow (2005)
- Sir Patrick Manson Gold Medal 1998–1999 for outstanding MD thesis
- Award for Innovative Excellence in Teaching, Learning & Technology in 17th International Conference on College Teaching and Learning (2006)
- 2011–12 Outstanding Research Student Supervisor Award (2013)
- Croucher Senior Medical Research Fellowship (2014)
- Fellow of the Academy of Medicine of Malaysia (2014)
- Fellow of the Academy of Medicine of Singapore (2015)
Molecular oncology, pathology and genetics of breast cancer

KHOO Ui-Soon
MBCh BAO Irel, MD HK, MMedSc (Path)Irel, FRCPath, FHKPath, MIAC, FHKAM (Pathology)
Ada MF Chan Professor in Oncological Pathology
Email: uskhoo@pathology.hku.hk

My research interests focus on investigating the underlying molecular mechanisms contributing towards drug resistance in the treatment of breast cancer. This includes cancer genetics, biomarker identification and the development of novel targeted therapies. It is a multidisciplinary endeavour aimed at integrating basic science research with clinical and translational studies for the development of new therapeutics and involves the contribution of basic scientists and clinicians from various disciplines.

Our team identified a novel splice variant to the NCO2R gene associated with tamoxifen resistance and raised a monoclonal antibody targeting the epitope unique to this variant, which has been shown to be a robust biomarker to predict tamoxifen resistance. (Patent Cooperation Treaty filed). In this way more appropriate alternative therapy can be given early to save patients from the risks of inappropriate treatment with tamoxifen. Our ultimate plan is to develop its use as targeted therapy for tamoxifen resistant breast cancer patients.

We also developed a multidisciplinary platform making use of Ibrabradine, an FDA approved HCN (Hyperpolarization-activated cyclic nucleotide-gated channel) blocker used clinically to treat chronic angina, to effectively suppress breast cancer growth without the side effects of conventional chemotherapeutic agents. A provisional patent has been filed for the novel use of Ibrabradine particularly as treatment for triple negative breast cancer, as well as other types of cancer. Our long term goal is to translate these areas of research into clinical trials, thus bridging the gap between laboratory and clinic for the benefit of patients in Hong Kong and worldwide.


RESEARCH GRANTS

- Canadian Genetic Diseases Network Grant 2004
- Research Fund of the Control of Infectious Diseases 2004, 2005, 2006
- SK Yee Medical Foundation 2010, 2013
- Innovation and Technology Fund 2013, 2017
- Heath and Medical Research Fund 2017

COMMUNITY SERVICES

- Executive Council member, International Academy of Cytology (2013–2016)
- President, Hong Kong Society of Cytology (2009, 2010)
- Hon Treasurer, Hong Kong Museum of Medical Sciences (2008–2011)
- SK Yee Medical Foundation project to provide HER2 FISH test for breast cancer patients requiring financial assistance

AWARDS AND HONOURS

- Ada MF Chan Endowed Professor in Oncologic Pathology (2017)
- Croucher Senior Research Fellowship Award (2015)
- Faculty Teaching Medal, The University of Hong Kong (2007)
- Vice-Chancellor Grant, The University of Hong Kong (1997)
- Mary Sun Fellowship in Oncology (1993)
LAM Ching-Wan
MBChB (CUHK), PhD (CUHK), FRCP (Glasg), FRCPA, FHKPath, FHKAM (Pathology), FFSc (RCPath)
Clinical Professor
Email: ching-wanlam@pathology.hku.hk

EDUCATION
- Chairman, Task Force in Chemical Pathology teaching of the MBBS curriculum, Faculty of Medicine, The University of Hong Kong

SELECTED PUBLICATIONS
Molecular genetics and genomics of gastrointestinal tract cancer

LEUNG Suet-Yi
MBBS, HK, MD, FHKAM (Pathology), FHKCPATH, FRCPATH (UK), FRCPA
Chair Professor
Associate Dean (Research), Li Ka Shing Faculty of Medicine
Y W Kan Professor in Natural Sciences
Chair of Gastrointestinal Cancer Genetics and Genomics
Email: suety@hku.hk

My research interests are focused on the molecular genetics and genomics of gastric and colorectal cancers. We have performed comprehensive molecular profiling and integrative genomic studies on a large series of gastric and colorectal cancers using next-generation sequencing, expression microarray, methylation array and DNA SNP genotyping array. Our studies reveal the complex genomic landscape of gastric cancer and first identified many new gastric cancer driver genes. Examples include frequent mutation of ARID1A, a chromatic remodelling gene, in gastric cancers with MSI or EBV, and hotspot mutation of RHOA in diffuse type gastric cancer. Integrative genomic analysis revealed molecular subtype-specific patterns of genetic and epigenetic perturbations, many of them converging to target the same key cancer driver genes or pathways.

More recently, we have used patient tumour biopsies to establish a living bio-bank of organoid cultures, which are very similar to in vivo tumours. We have collected a large repertoire of organoids, encompassing different molecular subtypes, key driver gene alterations, stages of disease, as well as normal organoids, and have performed detailed morphological, genomic and transcriptomic analysis of them. Currently, we are testing the feasibility of large-scale drug sensitivity screening of organoids as a potential first-line guide for patient treatment. Overall, our organoid bio-bank, with linked genomic data, provides a valuable resource for understanding both cancer biology and anti-cancer drugs that may facilitate the development of precision cancer therapy.

In addition, our team has characterized the genetic basis of early-onset colorectal cancer (CRC) in Hong Kong and was the first to describe a new mechanism of MSH2 inactivation in Lynch Syndrome (a heritable form of CRC), involving large germline deletions in the EPCAM gene which is upstream of MSH2. Our findings have led to the incorporation of EPCAM deletion into the standard genetic diagnosis protocol for Lynch Syndrome worldwide. We now apply our findings to patient care, by providing a charitable genetic diagnosis service including genetic testing and referral for prophylactic screening for early-onset or familial CRC patients. Our long-term goal is to enable genome-guided patient stratification, prognostic and personalised treatment of colorectal and gastric cancers by utilising genomic technology to identify novel pathways, biomarkers, drug targets and driver genes of carcinogenesis.

SELECTED PUBLICATIONS

10. Leung SY, Yuen ST, …, Chan ASY and Ho JCI. hMLH1 promoter methylation and lack of hMLH1 expression in sporadic gastric carcinomas with high-frequency microsatellite instability. Cancer Res 1999, 59:159-164.

RESEARCH INTERESTS

- Big Data Collection: Genomics and Omics
- Clinical Characterization
- Pathological and Molecular Characterization
- Survival Data

- Creating a Living Bio-bank that can be used for Omics-guided Precision Medicine
- Cancer Patients
- Live-cell imaging
- NGS Tumors

- Sequence cancer genome
- Cancer soft drug screening
- Drug array

RESEARCH GRANTS

- RGC General Research Fund; Hong Kong Cancer Fund; Donation grant from Mr Pan Su-Tong; Theme-Based Research Scheme (TBRs)

AWARDS AND HONOURS

- Faculty Outstanding Research Output Award, Li Ka Shing Faculty of Medicine, The University of Hong Kong (2012, 2015, 2017)
- Outstanding Women Professionals Award (2014)
- Croucher Senior Medical Research Fellowship (2007)
- Outstanding Researcher Award, The University of Hong Kong (2007)
- Research Output Prize, The University of Hong Kong (2007 and 2009)
- Outstanding Young Researcher Award, The University of Hong Kong (2001)
Lymphocyte development and its dysregulation in immune disease

LU Liwei
MMed Norman Bethune, PhD McGill
Professor of Immunology
Email: liweilu@hku.hk

My research has been focusing on lymphocyte development and its dysregulation in autoimmune diseases. Studies in normal and mutant mice have aimed to examine lymphocyte apoptosis and its role in maintaining quality control and homeostasis in the immune system. We are also interested in studying the dysregulated cytokine production and lymphocyte function during the pathogenesis of autoimmune disorders. Using an animal model for human rheumatoid arthritis, we are developing novel strategies for targeting TNF family cytokines in treating autoimmune arthritis. Further knowledge of the mechanisms underlying lymphocyte activation and function should shed light on the prophylaxis and therapy of immune diseases.

SELECTED PUBLICATIONS

RESEARCH GRANTS
- Role of leptin in regulating B cell function. RGC CERG
- Plasma cell and its regulation in autoimmunity. RGC CERG
- Natural killer cells and autoimmunity. RGC CERG
- B cell apoptosis and its regulation in autoimmunity. RGC CERG
- Innovative development of a gene-targeted therapy for rheumatoid arthritis. Innovation and Technology Support Programme
- Regulation of dendritic cell function and its therapeutic application in autoimmune diabetes. NSFC/GRC
- Functional interaction between dendritic cells and B cells in autoimmunity. NSFC/GRC
- Role of antigen-presenting cells in immune response and tolerance. National Key Basic Research Program of China
- Immunopathogenesis and therapeutic intervention of rheumatoid arthritis. National Key Basic Research Program of China

AWARDS AND HONOURS
- Chinese Medical Science and Technology Award (2018)
- Councilor (2015), Federation of Immunological Societies of Asia-Oceania
- Chairman (2014), Hong Kong Society for Immunology
- Beijing Science and Technology Award (2015)
- Outstanding Researcher Award (2013), The University of Hong Kong
- Croucher Senior Research Fellowship Award (2012), Croucher Foundation
- Medical Faculty Teaching Medal (2008), The University of Hong Kong
- Young Investigator Award (2003), Hong Kong Society for Immunology
- David Rae Memorial Award (2000), Leukemia Research Fund of Canada

Editorship
- Associate Editor-in-Chief, Cellular and Molecular Immunology
- Associate Editor, *International Journal of Rheumatic Diseases*
- Associate Editor, Cytokines
- Editor, *Frontiers in Immunology*
- Editor, *Chinese Journal of Immunology*
Liver cancer – Genomics, molecular pathology and cell signaling:
- Molecular mechanisms in pathogenesis and metastasis
- Delineation of important cell signaling pathways
- Liver cancer stem cells
- Tumor microenvironment

My current research focuses on the integrated functional genomics of liver cancer using genome-scale technologies coupled with clinical translational studies. I have an active program in the basic/translational research of liver cancer, using state-of-the art molecular approaches including genomics, transcriptomics, and single cell analysis, to address cancer heterogeneity. My research also aims to delineate the molecular and cellular mechanisms of this cancer, characterizing driver genes, pathways and cancer stem cells. I am coupling genomics, genetics, functional molecular analysis and in vivo pre-clinical animal models as well as patient-derived tumor xenograft models to address the molecular mechanisms of this cancer for early detection, diagnosis, prognosis and patient stratification towards precision oncology.


10. Sze KM, Wong KL, Chu GK, Yau TO, Ng IO. Loss of PTEN enhances cell invasion and migration through AKT/Sp-1 transcription factor/MMP2 activation and has clinicopathologic significance in HCC. Hepatology 2011, 53:1558-69.

RESEARCH GRANTS
(as PI and in the recent 5 years)
- RGC Theme-based Research Scheme on ‘Understanding cancer stemness in liver cancer – From regulation to translational applications’ (2016)
- HK, Macau & Taiwan Science and Technology Innovation Cooperation Key Project on liver cancer (2017)

AWARDS AND HONOURS
- Director, State Key Laboratory of Liver Research (2010–)
- The World Academy of Science Prize (Medical Science) (2014)
- Loke Yew Endowed Professorship in Pathology (2008–)
- Croucher Senior Medical Research Fellowship (2013–14 & 2005–06)
- Associate Editor, Hepatology (2018–)
- Fellow, American Association for the Study of Liver (2014–)
- Director, Croucher Summer Course in Cancer Biology (2013,15 & 17)
- Faculty Outstanding Research Output Award, HKU (2012 & 2018)
- Outstanding Research Student Supervisor Award, HKU (2007–08)
- Outstanding Researcher Award, HKU (2005)
How do viruses interact with cells? What can we do to enhance student learning?

NICHOLLS John Malcolm
MBBS Adel, FRCPA, FHKPath, FHKAM (Pathology)
Clinical Professor
Email: nicholls@pathology.hku.hk

Viruses are involved in a number of infectious and neoplastic diseases of the respiratory tract in humans. I have been investigating what role the Epstein-Barr virus plays in nasopharyngeal carcinoma (NPC), and in particular two of the viruses proteins (LMP1 and BARF1) which have been implicated in the development of NPC. In particular I have been looking at whether there is “good” or “bad” LMP or BARF1 and how these proteins differ in NPCs from different geographical regions. This work involves collaboration with EBV experts from Europe and North America. I have also collaborated with researchers from the Queensland Institute of Medical Research to exploit the expression of these viral proteins using a novel CTL based immunotherapy approach for NPC patients which has finished a Phase I clinical trial and is now in Phase II clinical trial.

In addition I have worked closely with colleagues from the School of Public Health in investigating why certain new and emerging viruses such as SARS and H5N1 appear to be so lethal in humans. Is it because they are attacking cells which are not normally attacked by viruses? Is it because they are triggering cells to release too many cytokines, or is it because they are interacting with cell receptors which are not normally expressed in normal conditions? Whatever the results, the main aim of my research is to put a clinical perspective on reducing the damage caused by viruses in the human and investigating what factors determine which cells may be bound by particular influenza viruses.

EDUCATION
- Pathology discipline coordinator, MBBS Years 3–5
- Professional Development, IMHSE
- Assessment Subcommittee Chairman

SELECTED PUBLICATIONS


AWARDS AND HONOURS
- University Teaching Fellowship 1997–1998
- Croucher Senior Medical Fellowship 2009–2010
- Faculty Outstanding Research Output Award 2008
**Giving a voice to the dead and the injured — forensic medicine**

**BEH Swan-Lip Philip**  
MBBS HK, DMJ (Clin et Path) Lond, CTLHE HK, FHKCPath, FHKAM (Pathology)

**Clinical Associate Professor**  
Email: philipbeh@pathology.hku.hk

Current research interests focus on updating knowledge about rape victims in Hong Kong. The lack of useful statistics is an obstacle to any attempts to improve the deficiencies in services provided to these victims by the health, forensic, law enforcement and legal sectors. I continue to provide professional review services to lawyers on homicide cases. The Hong Kong Homicide Monitoring Database has been discontinued due to lack of interest from the Police Force.

New-found areas of interest include issues surrounding end-of-life decision making and end-of-life care services in Hong Kong. Research collaboration continues with colleagues in other fields; particularly on suicide prevention as well as the use of new technologies for training in the forensic sciences.

---

**SELECTED PUBLICATIONS**

2. Chan ACY, Beh PSL and Broadhurst RG. To flee or not: Post killing responses among intimate partner homicide offenders in Hong Kong. *Homicide Studies* 2010, 14(4):400-418.

---

**RESEARCH GRANTS**

- **Homicide in three Chinese cities.** RGC General Research Fund. (Co-Investigator)
- **Homicide-Suicide in Hong Kong.** Lotteries Fund Study Grant. (Co-Investigator)

**AWARDS AND HONOURS**

- **Member of the forensic advisory board for the International Committee of the Red Cross since 2009**
- **Member of the editorial board of Forensic Science Research 2016–2018**
- **Member of the editorial board of Forensic Science International since 2011**
- **Member of international editorial board Medicine Science & Law 2009–2018**
- **Member of scientific advisory committee, International Academy of Legal Medicine 2009–2020**
- **President, Hong Kong Forensic Science Society 2009–2010**
- **President, World Police Medical Officers 2005–2008**
- **President-elect Hong Kong Forensic Science Society 2006–2008**
- **Chief Examiner (Forensic Pathology), Hong Kong College of Pathologists 2006–2010**
- **Vice President, International Association of Forensic Sciences 2002–2005**
- **Faculty Teaching Medal, Faculty of Medicine, HKU 2003**
- **SEDA-accredited teacher in higher education**
- **Associate Editor, Journal of Clinical Forensic Medicine**
- **Editorial advisory board member, Encyclopedia of Forensic and Legal Medicine** (Elsevier) 2005

---

**Book chapters in:**

Renal pathology

CHAN Kwok-Wah
MBBS HK, FRCPATH, FHKCPath, FHKAM (Pathology)
Clinical Associate Professor
Email: kwchan@pathology.hku.hk

- Molecular genetics of esophageal cancer
- Molecular genetics of prostatic cancer
- Study of cancer stem cell biology
- Renal pathology

EDUCATION
- Department Coordinator (BChinMed)

SELECTED PUBLICATIONS


RESEARCH INTERESTS

- Functional characterization and evaluation of the metastasis promoting effect of neuropilin-2 (NRP2) in esophageal squamous cell carcinoma RGC GRF 2013
- The role of interleukin-8 (IL-8) and efficacy of IL-8 targeted therapy in CD133+ cancer stem cells-driven hepatocellular carcinoma. RGC GRF 2011
- Identification, characterization and therapeutic targeting of tumourigenic liver cancer stem cells. Sir Michael and Lady Kadoorie Funded Research into Cancer Genetics 2007
- Growth and functions of human kidney tubular cells and transgenic mouse kidneys affected by mutated adult polycystic kidney disease gene, PKD1. RGC CERG 1998

control

lupus

laminin

fibronectin

fibronectin
IP Pun-Ching Philip  
MBChB, FRCPATH (UK), FHKCPath, FHKAM (Pathology)  
Clinical Associate Professor  
Email: philipipjhku.hk

To elucidate the molecular mechanisms of the development and progression of premalignant and malignant uncommon uterine lesions, predominantly on uterine mesenchymal tumors, preclinical drug testing, and in search of biomarkers relevant to diagnosis, treatment and prognosis.

EDUCATION
• The Hong Kong College of Pathologists Anatomical Pathology Chief Examiner  
• MBBS II Endocrine and Reproductive Systems Block Planning Group Coordinator  
• MBBS III Enrichment Year Mentor  
• MBBS IV Clinical Academic Advisor  
• The International Society of Gynecologic Pathologists Educational Subcommittee Global Advisory Network Asia-East representative.

SELECTED PUBLICATIONS (JOURNALS)
8. Ip PP, Tse KY, Tam KF. Uterine smooth muscle tumors other than the ordinary leiomyomas and leiomyosarcomas: A review of selected variants with emphasis on recent advances and unusual morphology that may cause concern for malignancy. Adv Anat Pathol 2010, 17:91-112.

KEY PUBLICATIONS (TEXTBOOKS)

EDITORSHIP
• International Journal of Gynaecological Pathology (official journal of The International Society of Gynaecological Pathologists)  
• Acta Cytologica
LO Cheuk-Lam Regina
MBChB, FRCPath, FHKCPath, FHKAM (Pathology)
Clinical Associate Professor
Email: reginalo@pathology.hku.hk

- Identification of key functional molecular targets in liver cancer
- Liver transplant pathology

SELECTED PUBLICATIONS


RESEARCH INTERESTS

RESEARCH GRANTS

- General Research Fund (GRF), Research Grants Council of Hong Kong 2016
- Health and Medical Research Fund (HMRF), Food and Health Bureau, The Government of the Hong Kong SAR 2016
- Health and Medical Research Fund (HMRF), Food and Health Bureau, The Government of the Hong Kong SAR 2016

AWARDS AND HONOURS

- Clinical Research Fellowship, Research Grants Council, Hong Kong, 2016
- Distinguished Young Fellow, Hong Kong Academy of Medicine, 2015
- Junior Investigator Award, The International Liver Cancer Association 9th Annual Conference, 2015
Cancer genetics and epigenetics, molecular pathogenesis of liver cancer

WONG Chun-Ming Jack
BSc HKPU, MMedSc HK, PhD HK
Associate Professor
Email: jackwong@pathology.hku.hk

- Genetic and epigenetic alterations in liver cancer
- Non-coding RNA deregulation in liver cancer
- Mechanisms of epigenetic gene regulation

Liver cancer (hepatocellular carcinoma, HCC) is one of the most common malignancies worldwide and is particularly prevalent in Asia. Liver cancer is an aggressive cancer associated with a poor prognosis that is often due to late presentation of symptoms and frequent cancer metastasis. However, the molecular mechanisms underlying hepatocarcinogenesis are unclear. We are interested to use next-generation sequencing technology to identify novel genetic alterations in liver cancer. We also employ cutting-edge genome-wide CRISPR library screening to study the functional genome of liver cancers. In addition to genetic alterations, recent evidence has indicated that epigenetic abnormalities also play a very important role in hepatocarcinogenesis. DNA methylation, histone modifications and chromatin remodeling are the three major epigenetic events that work very closely in regulating chromatin structure and gene expression pattern. Recently, the mRNA methylation emerged as a new layer of epigenetic regulation to control mRNA stability and translation. We and others have shown that epigenetic alterations play a crucial role in silencing tumor suppressor genes in human cancers. We are interested to elucidate the molecular basis and pathological roles of various epigenetic modifying enzymes in human HCC. MicroRNA and long non-coding RNA are regulatory RNAs profoundly involved in epigenetic gene regulation and recently been implicated in human carcinogenesis. We are also interested in studying the expression profiles, epigenetic alterations and molecular functions of non-coding RNAs and their roles in liver cancer development and metastasis. We believe that a better knowledge of the underlying molecular mechanisms of hepatocarcinogenesis and cancer metastasis is of crucial importance for the development of new diagnostic tools and therapeutic interventions for this lethal cancer.

SELECTED PUBLICATIONS
4. Ho DH, Chan LK, Chiu YT, Xu JM, Poon RT, Cheung TT, Tang CN, Tang VW, Lo HL, Lam PW, Yao DT, Li MX, Wong CM#. Ng IO#. TSC1/2 mutations define a molecular subset of HCC with aggressive behaviour and treatment implication. *Gut* 2017, 66:1496-1506. (#Corresponding authors)
5. Chiu YT, Wong JK, Choi SW, Sze KM, Ho DW, Chan LK, Lee JM, Man K, Cherry S, Yang WL, Wong CM#. Sham PCi, Ng IO#. Novel pre-mRNA splicing of intronically integrated HBV generates oncogenic chimera in hepatocellular carcinoma. *J Hepatol* 2016, 64:1256-64. (#Corresponding authors)
7. Fan DN, Tsang FH, Au SL, Wong CC, Tam AH, Wei L, Lee JM, He X, Ng IO#. Wong CM#. Histone methyltransferase, suppressor of variegation 3-9 homolog 1, promotes hepatocellular carcinoma progression and is negatively regulated by microRNA-125b. *Hepatology* 2013, 57:637. (#Corresponding authors)
8. Au SL, Wong CC, Lee JM, Fan DN, Tsang FH, Ng IO # and Wong CM#. Enhancer of zeste homolog 2 (EZH2) epigenetically silences multiple tumor suppressor miRNAs to promote liver cancer metastasis. *Hepatology* 2012, 56:622. (#Corresponding authors)
9. Wong CM*, Wong CC*, Lee JM, Fan DN, Au SL, and Ng IO#. Sequential alterations of microRNA expression in hepatocellular carcinoma development and venous metastasis. *Hepatology* 2012, 55:1453. (*Co-first authors; #Corresponding authors)

RESEARCH GRANTS
- Health and Medical Research Fund (two grants 2016, two grants 2017, two grants 2018)
- National Natural Science Foundation of China (2015, 2018)
Lung cancer pathology, biology and molecular genetics

WONG Pik Maria
MBBS HK, MD HK, FHKAM (Pathology), FHKCPath
Clinical Associate Professor
Email: mwipk@hku.hk

Women in Hong Kong are mostly non-smokers but have an unusually high incidence and mortality of non-small cell lung cancer, mostly adenocarcinomas. The mechanisms of this unusual epidemiology are not fully understood and lung cancer treatment remains a challenge. My research team studies the pathology, cancer biology and molecular genetics of clinical lung cancers, aiming to achieve a better understanding of its pathogenesis, improve diagnosis, prognostication and therapy.

- **Cancer genomics** – In our earlier studies, we profiled mutations of key oncogenes using direct sequencing (Fig. 1), and found somatic EGFR mutations in >70% of nonsmokers, mostly women, and 20% of smokers, mostly men. The EGFR mutation profile is complex and different mutation types vary in treatment responses to tyrosine kinase inhibitors (TKI). The ALK translocation frequency is 5%, and apart from EML4-ALK, we reported the novel fusion partners of KIF5B-ALK. Currently, we are using next generation sequencing to investigate the whole exome sequencing (WES) profiles of EGFR-mutant adenocarcinomas, their relations with TKI response patterns, as well as intratumoral genetic heterogeneity of non-small cell lung cancers. These studies are supported by HKR grants.

- **Cancer susceptibility loci** – We are members of the Female Lung Cancer Consortium in Asia (FLCCA) coordinated by the National Cancer Institute, USA, which conducts multiple large-scale international projects to identify lung cancer susceptibility loci and their relation with environmental factors. The next project aims to study WES profiles of lung adenocarcinomas from female non-smokers and their correlation with genomic susceptibility loci in order to identify biomarkers for cancer prediction and genetic screening.

- **Lung cancer biology** – Cancer initiating cells (TIC) are believed to embrace superior tumorigenic and drug resistant properties but their existence and identity remain elusive. We demonstrated cancer cells with ALDH
sup
/CD44
sup expression have TIC-like properties. Through calcium signaling pathways mediated by NFATc2 and CamK2A, pluripotency and anti-oxidant activities are enhanced leading to drug resistance (Fig. 2). These studies are supported by GRF grants.


8. Wong DW, Leung EL, So, KK, Tam IV, Sihoie AD, Cheng LC, Ho KK, Au JS, Chung LP and Wong MP. The EML4-ALK fusion gene is involved in various histologic types of lung cancers from nonsmokers with wild-type EGFR and KRAS. *Cancer* 2009, 115(8):1723-1733.


**SELECTED PUBLICATIONS**


Liver cancer metastasis and tumor microenvironment

YAM Wai-Ping Judy
BSc Wash, MSc HKUST, PhD HKUST
Associate Professor
Email: judyam@pathology.hku.hk

My research interests focus on the characterization of tumor suppressors and oncogenes and elucidation of associated cellular signaling pathways which contribute to liver cancers tumorigenesis and metastasis. I have a particular interest in focal adhesion proteins which form structural links between extracellular matrix and actin cytoskeleton, and are important sites of signal transduction. A number of diverse focal contact proteins are interconnected at the focal adhesions. Dysregulation of focal adhesion proteins has been implicated in various cancers and contributed to the acquired metastatic behavior of cancer cells. We believe a better understanding of the functional effects of focal adhesion proteins in the aggressive phenotypes of cancer cells will have profound implications for the diagnosis and therapeutic interventions for liver cancer.

SELECTED PUBLICATIONS

2. Tey SK, Tse EYT, Mao XW, Ko FCF, AST Wong, Lo RCL, Ng IOL, **Yam JWP**. Nuclear Met promotes hepatocellular carcinoma tumorigenesis and metastasis by upregulation of TAK1 and activation of NF-κB pathway. *Cancer Lett* 2017, 411:150-161.

RESEARCH GRANTS

- NSFC-General Program (2010)
- Health and Medical Research Fund (2013, 2014)

AWARDS AND HONOURS

- Outstanding Young Researcher Award 2010, HKU
Malignant lymphoma

AU YEUNG Kwok-Him Rex
MBBS HK, FHKAM (Pathology), FRCPath
Clinical Assistant Professor
Email: rex.auyeung@hku.hk

Molecular pathogenesis of malignant lymphoma

SELECTED PUBLICATIONS


RESEARCH GRANTS

- Seed Funding Programme for Basic Research (2015 and 2017) (Principal Investigator)
Diagnostic haematology and haematological malignancies

SIN Chun-Fung Albert
MBBS HK, MRes(Med), FHKCPath, FHKAM(Pathology)
Clinical Assistant Professor
Email: jscf185@pathology.hku.hk

I currently work under the Division of Haematology providing diagnostic service in Queen Mary Hospital. My current research interest is in the area of molecular pathogenesis and therapeutic targets of acute leukaemia. Another theme of my research is to investigate the interaction between genotype and phenotype of thalassaemia intermedia.

RESEARCH INTERESTS

RESEARCH GRANTS

- Seed fund for Basic Research for New Staff

Renal and genitourinary pathology

TANG Hin-Ning Alexander
MBBS HK, MRes(Med), FRCPA, FHKCPath, FHKAM(Pathology)
Clinical Assistant Professor
Email: alexang@pathology.hku.hk

I have been providing clinical diagnostic service in general surgical pathology and renal pathology for the Department of Pathology, HKU and the Division of Anatomical Pathology in Queen Mary Hospital since joining in October 2018. My current research interest is in the area of renal and genitourinary pathology.
Hepatocellular carcinoma (HCC), or primary liver cancer, is the fifth most common cancer in the world and the second leading cause of cancer deaths. High mortality rate in HCC is mainly due to late symptom presentation and lack of curative therapy. Therefore, knowledge on the molecular biology of HCC is warranted for the development of better diagnostic and therapeutic strategies. Our research focuses on two important aspects in HCC:

1. Tumor microenvironment in HCC:
   Solid tumors, in addition to malignant cells, are made up of other non-malignant cell types (stromal cells e.g. immune cells) and are embedded in a remodeled extracellular matrix (ECM). Solid tumors are constantly experiencing inflammation and temporal changes of oxygen tension. These cellular and non-cellular components provide a unique tumor microenvironment conferring malignant cells’ oncogenic and metastatic properties. Our research focuses on the molecular mechanisms involved in the formation of tumor microenvironment in HCC. Currently, we are investigating the clinical implications, regulations, and roles of hypoxia (oxygen deprivation) in ECM modification in HCC. We are also investigating the roles of hypoxia in immune cell-cancer cell interaction.

2. Metabolic reprogramming in HCC:
   The major difference between a cancer cell and normal cell is that cancer cell growth is uncontrollable. Unlike normal differentiated cells which utilize mitochondrial oxidative phosphorylation to produce energy, cancer cells metabolize glucose by aerobic glycolysis, a phenomenon called the Warburg Effect. Although aerobic glycolysis is an energy-inefficient process, it advantages cancer cells to divert glucose intermediates for anabolic reactions and anti-oxidant production. The liver has many unique metabolic functions including gluconeogenesis, glycogen synthesis and storage, and blood glucose homeostasis. However, how the metabolic machineries are reprogrammed during the formation of HCC is largely unknown. Our group is investigating the signaling pathways that rewire the metabolic programs in HCC.

3. Translational research in HCC:
   Immune therapies involve activation of the immune system to combat cancer. We are studying how the tumor microenvironment determines the response of patients for immune therapies using different preclinical mouse models. We are particularly interested in identifying novel therapeutic strategies as single agents or combined agents with immune therapies.

SELECTED PUBLICATIONS


RESEARCH GRANTS

- National Natural Science Foundation of China (2017) (PI)
- Research Grant Council Theme-based Research Scheme (2016) (Co-PI)

AWARDS AND HONOURS

- HKU Outstanding Young Researcher Award 2016–17
- Croucher Innovation Award 2017
- Croucher Foundation Fellowship 2009–2011
- Li Ka Shing Prize 2009
- Dr KP Stephen Chang Gold Medal 2009
- Hong Kong Young Scientist Award 2009
Molecular biology in liver cancer

CHAN Lo-Kong
PhD HK
Research Assistant Professor
Email: clckchan@pathology.hku.hk

SELECTED PUBLICATIONS


5. Chan LK, Chiu YT, Sze KM, Ng IO. Tensin4 is upregulated by EGF-induced ERK1/2 activity and promotes cell proliferation and migration in hepatocellular carcinoma. Oncotarget 2015, 6(25):20964-76.


7. Chan LK, Ko FC, Sze KM, Ng IO, Yam JW. Nuclear-targeted deleted in liver cancer 1 (DLC1) is less efficient in exerting its tumor suppressive activity both in vitro and in vivo. PLoS ONE 2011, 6(9):e25547.


RESEARCH INTERESTS

- Characterization of driver genes in liver cancer and their underlying signaling pathways
- Identification of novel mutant genes in liver cancer and their potential application in patient stratification and targeted therapy
- Biochemical characterization of protein-protein interactions and subcellular localization control of cancer-related proteins

RESEARCH GRANTS

- Health and Medical Research Fund on liver cancer (as Co-I, 2016)

AWARDS AND HONOURS

- Young Investigator Award, The 9th Asia-Pacific Primary Liver Cancer, Expert Meeting, Seoul, 2018
- Best Presentation Award, 6th Departmental Research Postgraduate Retreat, Department of Pathology, The University of Hong Kong, 2008
- Outstanding Oral Presentation Award (Cancer session), 12th Research Postgraduate Symposium, Faculty of Medicine, The University of Hong Kong, 2007
My research focuses are bioinformatics analysis on high-throughput omics data and computational analysis tool development. I have a particular interest in genomics studies of hepatocellular carcinoma (HCC) through the application of next-generation sequencing, large-scale screening and single-cell genomics. I am involved in multidisciplinary and integrative studies to investigate and understand the molecular mechanism of hepatocarcinogenesis and metastasis of HCC.

- Genomic analyses of liver cancer using next-generation sequencing and single-cell genomics
- Bioinformatics development of computational analysis tools and database

**Molecular pathogenesis of gastrointestinal tract cancer**

YAN Hoi-Ning Helen  
BSc HK, PhD HK  
Research Assistant Professor  
Email: hyan@pathology.hku.hk

**RESEARCH INTERESTS**

- Characterization of gastric cancer driver genes
- Deregulation of signaling pathways in colorectal cancer (CRC)
- Identification of prognostic gene expression signature for CRC patient stratification
- Establishment of 3D human gastrointestinal tumor and paired normal organoid cultures as living biobank for drug sensitivity screening and cancer driver gene characterization

**SELECTED PUBLICATIONS**


7. Yan HH and Cheng CY. Laminin alpha 3 forms a complex with beta3 and gamma3 chains that serves as the ligand for alpha6beta1-integrin at the apical ectoplasmic specialization in adult rat testes. *J Biol Chem* 2006, 281:17286-17303.


**RESEARCH GRANTS**

- Health and Medical Research Fund (2015): Use of whole genome sequencing to unveil new mechanisms of germline DNA mismatch repair gene alterations in Lynch Syndrome patients
- Health and Medical Research Fund (2013): Intestinal organoid cultures of early onset colorectal cancers
INNOVATIONS IN CURRICULUM DESIGN AND DELIVERY

Pathology leads the way in diversity of learning formats

The institution of an integrated medical curriculum with the adoption of problem-based learning (PBL) in the Department of Pathology has meant a drastic reduction in didactic sessions, creating space for student-directed learning.

Lectures in the first 2 years of the pathology curriculum were reduced to core material, with students learning principles and basic systems-based pathology. To enhance learning, diverse formats are offered, including lectures, practicals, PBL tutorials, web-based virtual microscopy and online interactive case-based exercises.

Many teachers in our department have held positions of leadership in undergraduate medical education and have been pivotal in the design and implementation of new tutorial cases in every module and in the introduction to health and disease blocks. As medically qualified graduates, our teachers are ideally positioned to see the overall picture of pathological science in the curriculum and work with basic science faculty to translate this perspective into meaningful cases. Their excellence has been recognized with both faculty and university level awards for teaching.

Our department also takes an active role in the planning and factual input of the curriculum. Members of staff serve as directors of the MBBS curriculum committee and the Bau Institute of Medical and Health Sciences Education (BIMHSE).

Our contribution to the final years of the MBBS curriculum

With the realigned 130 MBBS Curriculum and introduction of an enrichment year, our department was invited to contribute to the teaching of pathology for the MBBS IV Clinical Foundation Block. This involves the teaching of chemical pathology, forensic pathology, immunology, transplantation and immunogenetics, as well as advanced diagnostic techniques in pathology. The latter includes the principles and application of molecular genetic analysis, case studies in molecular genetics and special phenotypic investigations.

The clinical application of molecular genetic testing is an important contribution of pathology to personalized patient management. This has been made possible due to rapid advances in molecular sciences which have revolutionized approaches to diagnosis, treatment and management of many human diseases.

To enhance students’ understanding of the role and relevance of pathology to clinical practice, we have developed the whole-class seminars Understanding Anatomical Pathology Practice, Principles and Applications of Immunohistochemistry, and Investigation of Hematological Disorders.

Strengthening of chemical pathology teaching

Chemical pathology is a clinical subspecialty registered by The Medical Council of Hong Kong. Its teaching at undergraduate level is of the utmost importance, enabling medical students to apply chemical pathology knowledge to clinical decision-making, interpretation of test results, and to selection of laboratory tests for real-time patient care. Since a regular review of the curriculum revealed deficiencies in the teaching of chemical pathology to undergraduates, Professor Lam Ching-Wan led the introduction of new modes of delivery in the form of lectures and workshops across the MBBS years with the help of a dedicated team of specialist honorary teachers. Professor Lam also established The Roche Prize in Chemical Pathology for medical students scoring the highest mark in the subject.

Autopsy observations

During the academic year MBBS students are scheduled to visit a public mortuary in small groups where they observe autopsies. This experience also enables students to learn about gross pathology and the system of death investigation and certification in Hong Kong.
Web-based virtual microscopy in education

Microscopy utilizes the microscope as a tool for viewing, exploring and understanding what can be visualized in the microscopic world. However, light microscopy is difficult to master, and many students make mistakes in viewing slides under high power magnification and out of context. With the reduction in the amount of time allocated to histology and pathology instruction, exposure to microscopy has declined, depriving students of an opportunity to engage with sufficient depth in a learning activity that can enrich their understanding of morphology and the function of tissues in health and disease.

Our department has set up a Core Imaging Facility based on the Aperio ScanScope System which provides high quality microscope scanning and web-based virtual microscopy. Using this system, glass microscopic slides are scanned and viewed on a computer window browser as virtual slides. These images can be stored on DVDs or accessed over the Internet. The virtual images are completely maneuverable in any direction, and thus the computer becomes the microscope.

This innovative system has been used in the teaching of pathology practical sessions since 2008, and a survey of its application has shown that more than 90% of students agree that it facilitates more effective learning. Students find the images clearer, the demonstration process smoother and orientation of the slides easier, helping them understand pathological features better. Virtual microscopy thus alters how students learn and interact with course material, enhancing the learning process.

Numerous requests were made by students for access to the materials online and use of the system for anatomy-histology practical sessions and demonstration of gross specimens. In response, with the support of a development fund grant, a dedicated server was acquired for joint hosting of pathology and anatomy teaching slides and images and to allow students online access to the teaching material. This has provided opportunities for further innovative curriculum development and the cultivation of a student-centered learning environment, in line with the HKU strategic theme of providing a rich virtual learning environment that complements other pedagogies.

With support from the Center for the Enhancement of Teaching and Learning (CETL), we have also combined the use of digital pathology with a Moodle platform as the interface for interactive clinico-pathological case exercises for students.

Expanding the interactive learning experience beyond a classroom setting, these are case-based exercises presenting short clinical vignettes, with visual demonstration of pertinent pathologic features linked to the Aperio system followed by a series of questions designed to cover the important teaching points for each disease entity. By integrating pathological entities within clinical vignettes, students have a better opportunity to appreciate and understand the relevance of pathology in the clinical setting and to integrate multidisciplinary aspects in the learning of pathology.

These cases complement the PBL approach and specifically support the disciplinary knowledge of pathology and its application in medicine through provision of clinical data and the application of skills of visual interpretation.

This innovative form of pathology teaching was given specific commendation by a visiting team from the Hong Kong Medical Council during the HKU medical education and training accreditation exercise in November 2013.
The Use of Moodle and Virtual Microscopy for Pathology Teaching

Ui-Soon Khoo, Department of Pathology, Li Ka Shing Faculty of Medicine, the University of Hong Kong

Pathology is the study and diagnosis of disease, which encompasses the following:
- **Cause/etiology**
- **Structural alterations of cells/tissues**
  - morphologic changes
- **Mechanisms of development**
- **Consequences of these changes**
  - clinical manifestations

Visualization is important for understanding pathological processes:
- **Fundamental basis for understanding the principles of diagnosis and treatment in clinical practice**
- **Students are given the opportunity to examine gross specimens and tissue sections**

**Aperio Scan Scope**
- Web-based Virtual Microscopy
- The microscope is a tool
- Microscopy uses this tool as a means of viewing, exploring and understanding what can be visualized in the microscopic world
  - Glass microscopic slides scanned and viewed on a computer window browser as virtual slides
  - Images can be accessed over the internet
  - The computer becomes the microscope

**Students Comments of Virtual Microscopy**
- This digital demonstration provides a great chance for us to understand the pathological slides better
  - Useful and easier to learn
  - Better orientation of the slide
  - Images clearer, process is much smoother & teaching is more efficient

**Students Experience of Virtual Microscopy**
- Virtual microscopy altered how students learnt & interacted with course material
  - Enhancement of the learning process
  - Encouraged greater depth of engagement of learning of gross and microscopic pathology
  - Student centered learning

**Open-ended responses**
- For some cases, more variety could be included, just like that in a PBL case, coupled with images of gross specimens, histopathology, and radiological scans (CT, MRI, X-ray)
- More cases for self-study would be appreciated.
  - They are great!!
- The cases are closely relevant and they are effective for us to assess our learning progress. Thus there is motivation to do the cases.
  - Interesting and overall, easy to use
- Length of the cases are sufficient for pathology, but recommend to extend to include more subjects to mimic a PBL case and/or recommend to other subjects.
- May consider to add more cases each year in a question base format to widen scope of learning

- Thank you so much for your effort!! The cases were interesting and well written!! Thanks!!
- I love the inclusion of online cases so much as they are both challenging knowledge-wise and a lot of fun to finish......Please keep them coming!
The Bachelor of Biomedical Sciences degree was introduced by the Faculty of Medicine in 2012. The objective of this program is to provide students with core knowledge across a broad range of biomedical science disciplines to prepare them for a variety of opportunities in academia, industry and other career paths. The Department of Pathology plays an important role in this mission by facilitating student experiential learning in the application of biomedical sciences for better understanding and the diagnosis and management of human diseases. Our department’s clinical input underlies the uniqueness of this program amongst similar programs in Hong Kong. Two core courses, The Mechanisms and Pathology of Human Diseases and Molecular Diagnostics Laboratory, together cover a range of topics that enable students to understand the basic pathogenetic mechanisms of diseases in different organ systems, as well as the principles and practice of key molecular diagnostic tests employed in the advanced management of patients.

Looking to the future

Senior students are now distributed in many allied hospitals where honorary teachers have a valuable role to play in offering teaching sessions, options to observe cut-ups, and clinical-pathological meetings. Laboratory attendance enables these students to better appreciate the importance of diagnostic pathologists in patient care and, overall, the direct contribution of the pathology profession to medical care. With regards to public perception, we endeavour to improve the image of pathologists, finding opportunities to make the general public better aware of the contribution of our expertise in many aspects of medicine.

The Common Core Curriculum

Resulting from the 2012 implementation of the new undergraduate curriculum at HKU, students are required to undertake the Common Core, a series of six courses across four Areas of Inquiry:

- Scientific and Technological Literacy
- Humanities
- Global Issues
- China: Culture, State and Society

Teachers in our department are actively engaged in developing multidisciplinary programs to serve the needs of this new initiative.
POSTGRADUATE DIPLOMA IN MOLECULAR AND DIAGNOSTIC PATHOLOGY
POSTGRADUATE CERTIFICATE IN MOLECULAR AND DIAGNOSTIC PATHOLOGY

Academic Director
Professor Khoo Ui-Soon

Course Coordinator
Dr Yam Wai-Ping Judy

Module Coordinators
Professor Cheung Nga-Yin Annie
Professor Khoo Ui-Soon
Professor Lam Ching-Wan
Dr Lo Cheuk-Lam Regina
Dr Sin Chun-Fung Albert
Dr Yam Wai-Ping Judy
Dr Yam Wing-Cheong

This structured postgraduate course was launched in 2010 with the aim of providing healthcare professionals with a deeper understanding of the molecular and genetic basis of diseases and the application of molecular technologies in disease management. The Postgraduate Diploma in Molecular and Diagnostic Pathology (PDipMDPath) has been approved by the Medical Council of Hong Kong as a quotable qualification.

Rapid advances in molecular sciences have revolutionized approaches to diagnosis, treatment and management of many human diseases. In this program, emphasis is given to understanding molecular and diagnostic pathology with a view to clinical translational application, enabling participants to meet the increasing expectations of patients and the general public with regards to healthcare.

Suitable for specialists, resident specialists, community physicians and medical laboratory staff responsible for developing, managing and providing molecular diagnostic services, the diploma and certificate courses are delivered through didactic seminars, tutorials, case studies, practicals, self-assessment exercises and completion of a project report. Participation of overseas students is facilitated through online delivery of lectures and tutorials.

The diploma program is a two-year part-time course, offered every two years, consisting of eight weekend sessions.

Molecular Pathology Modules
- Principles and Techniques of Molecular Pathology
- Clinical Applications of Molecular Testing
- Fundamentals of Genetic Testing for Hereditary Disorders
- Practical Course in Laboratory Methods
- Clinical Applications of Genetic Testing in Inherited Diseases and Genetic Counselling

Diagnostic Pathology Modules
- Chemical Pathology, Immunology, Diagnostic Haematology and Transfusion Medicine
- Essential Anatomical Pathology for Clinicians
- Molecular Microbiology and Infectious Diseases Update
- Renal Pathology, Immunology and Transplant Related Pathology

Candidates who have completed either five modules plus a project or seven modules are awarded the Postgraduate Diploma (PDipMDPath). Completion of four modules is required for award of the Postgraduate Certificate (PCMDPath).

Students who wish to undertake individual modules or specific parts of the Diagnostic Pathology Modules to gain CME points are able to do so as occasional students.
We are very appreciative of the contributions made by our Honorary Teachers towards the enhancement of our medical students’ learning and understanding in Pathology.

### Honorary Clinical Professors

| Professor NGAN Yuen-Sheung Hextan | Professor TAM Sidney |
| Professor YUEN Siu-Tsan | |

### Honorary Professors

| Professor CAO Xuetao | Professor HOU Lee-Tsun Laurence | Professor WAN Shek-Kong Thomas |
| Professor CHEAH Phaik-Leng | Professor LUK Moon-Ching John | Professor YIP Shea-Ping |
| Professor HO Chi-Suk Faith | Professor MAK Tak-Wah | Professor YU Jun |

### Honorary Clinical Associate Professors

| Dr CHAN Shueng-Wai Gavin | Dr LO Fai-Man Ivan | Dr SO Chi-Chiu Jason |
| Dr CHAN Yuk-Tat Eric | Dr LOKE Shee-Loong | Dr TAI Hok-Leung Morris |
| Dr CHENG Yue | Dr LUI Yun-Hoi | Dr TANG Wai-Lun |
| Dr CHEUNG Man-Fung | Dr MA Kwok-Fai Tony | Dr WONG Kit-Fai |
| Dr CHOW Yu-De Eudora | Dr MA Shiu-Kwan Edmond | Dr WONG Lap-Gate Michael |
| Dr CHU Wan Raymond | Dr MAK Miu Chloe | Dr YIP Sze-Fai |
| Dr KAN Nim-Chi Amanda | Dr NG Wai-Kuen | Dr YUEN Yuet-Ping Liz |
| Dr KWOK Siu-Yin Janette | Dr PANG Siu-Wah | |
| Dr LAM Chun-Kit Clarence | Dr POON Wing-Tat David | |
| Dr LEUNG Chung-Ying | Dr SHEK Wai-Hung Tony | |

### Honorary Associate Professors

| Dr CHAN Tsun-Leung | Dr KAN David |
| |

### Honorary Clinical Assistant Professors

| Dr AU Yuen-Ling Elaine | Dr IP Ka-Ling Rosalina | Dr LUK Ho-Ming |
| Dr CHEN Pak-Lam Sammy | Dr LEE Cheuk-Kwong | Dr TRENDELL-SMITH Nigel Jeremy |
| Dr CHING Chor-Kwan Doris | Dr LEUNG Fung-Shan Kate | Dr TSUI Po Polly |
| Dr CHOI Wai-Lap | Dr LEUNG Kin-Chung | Dr WONG Wai-Shan |
| Dr CHONG Yeow-Kuan | Dr LEUNG Yuk-Yan Rock | Dr WONG Wing-Cheuk |
| Dr HO Siu-Lun Ronnie | Dr LO Wing-Ip Anthony | Dr YEUNG Chun-Wing Matthew |
| Dr IP Ho-Wan | Dr LOONG Florence | |

### Honorary Assistant Professors

| Dr CHAN Lo-Kong | Dr IP Wai-Ki Ricky | Dr WONG Wai-Yu William |
| Dr CHAN Yuen-Kwong Kelvin | Dr SZE Man-Fong | |
| Dr HO Wai-Hung Daniel | Dr WONG Gee-Wan | |
Our commitment to research, clinical services and teaching excellence is supported by a dedicated and outstanding team of technical, administrative and supporting staff with wide-ranging laboratory and technical expertise. Due to these staff, our laboratories are of such a high standard as to be accredited by the College of American Pathologists.

Led by Chief Technician Ms Annie Chan, the team comprises 21 full-time staff serving various research and teaching laboratories of the department.

On the administration side, Administrative Assistant Mr Raymond Ho supervises the provision of administrative and secretarial support in our department. At present there are 10 executive and supporting staff serving various operations of the Department of Pathology, including the State Key Laboratory of Liver Research (HKU).
The Department of Pathology places great emphasis upon, and stands at the forefront of, both medical and scientific research. The department currently has 21 full-time academic staff, all actively engaged in cutting-edge biomedical research. In collaboration with our clinical colleagues, we study different forms of human diseases in clinical samples to animal models, and from epidemiology to molecular mechanisms. Cancer, immunology and infections, stem cell biology, forensic pathology and chemical pathology are the five major themes of our research activities.

<table>
<thead>
<tr>
<th>Cancer</th>
<th>AU YEUNG Kwok-Him Rex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHAN Kwok-Wah</td>
</tr>
<tr>
<td></td>
<td>CHAN Lo-Kong</td>
</tr>
<tr>
<td></td>
<td>CHEUNG Nga-Yin Annie</td>
</tr>
<tr>
<td></td>
<td>HO Wai-Hung Daniel</td>
</tr>
<tr>
<td></td>
<td>IP Pun-Ching Philip</td>
</tr>
<tr>
<td></td>
<td>KHOO Ui-Soon</td>
</tr>
<tr>
<td></td>
<td>LEUNG Suet-Yi</td>
</tr>
<tr>
<td></td>
<td>LO Cheuk-Lam Regina</td>
</tr>
<tr>
<td></td>
<td>LU Liwei</td>
</tr>
<tr>
<td></td>
<td>NG Lui Oi-Lin Irene</td>
</tr>
<tr>
<td></td>
<td>NICHOLLS John Malcolm</td>
</tr>
<tr>
<td></td>
<td>SIN Chun-Fung Albert</td>
</tr>
<tr>
<td></td>
<td>TANG Hin-Ning Alexander</td>
</tr>
<tr>
<td></td>
<td>WONG Chak-Lui Carmen</td>
</tr>
<tr>
<td></td>
<td>WONG Chun-Ming Jack</td>
</tr>
<tr>
<td></td>
<td>WONG Pik Maria</td>
</tr>
<tr>
<td></td>
<td>YAM Wai-Ping Judy</td>
</tr>
<tr>
<td></td>
<td>YAN Hoi-Ning Helen</td>
</tr>
</tbody>
</table>

| Stem Cells & Gene Therapies          | CHEUNG Nga-Yin Annie    |
|                                      | KHOO Ui-Soon             |
|                                      | LU Liwei                |
|                                      | NG Lui Oi-Lin Irene     |

| Infection & Immunity                | KHOO Ui-Soon             |
|                                      | NICHOLLS John Malcolm   |

| Forensic Medicine                   | BEH Swan-Lip Philip      |
|                                      |                         |

| Chemical Pathology                  | LAM Ching-Wan           |
|                                      |                         |

<table>
<thead>
<tr>
<th>RESEARCH THEMES AND DIRECTIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[Table as above]</td>
<td></td>
</tr>
</tbody>
</table>
AWARDS AND HONOURS

Endowed Professorships

Professor Khoo Ui-Soon
Ada MF Chan Professor in Oncological Pathology

Croucher Senior Medical Research Fellowship
Professor Cheung Nga-Yin Annie
Professor Khoo Ui-Soon
Professor Leung Suet-Yi
Professor John Nicholls
Professor Ng Lui Oi-Lin Irene

Croucher Senior Research Fellowship
Professor Lu Liwei

Croucher Innovation Award
Dr Wong Chak-Lui Carmen

HKU Outstanding Researcher Award
Professor Leung Suet-Yi
Professor Lu Liwei
Professor Ng Lui Oi-Lin Irene

HKU Outstanding Young Researcher Award
Professor Leung Suet-Yi
Dr Wong Chak-Lui Carmen
Dr Yam Wai-Ping Judy

HKU Outstanding Research Student Supervisor Award
Professor Cheung Nga-Yin Annie
Professor Ng Lui Oi-Lin Irene

HKU Research Output Prize


HKU LKS Faculty of Medicine Outstanding Research Output Award


Research Postgraduate Students

Between 1997 and 2018, 71 PhD, 49 MPhil and 176 MMedSc students have graduated from our department. Many of them have received distinguished awards for their research excellence including Swire Scholarships, the YS and Christabel Lung Postgraduate Scholarship and Best Presentation Award of the Research Postgraduate Symposium. Currently, there are 31 PhD, 15 MPhil and 11 MMedSc students in our department.

Student Awards

**Mr Bao Hao-Ran, MPhil (Supervisor: Dr CCL Wong)**

- Outstanding Poster Presentation, 23rd Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2018

**Miss Chui Nog-Qin Noreen, MPhil (Supervisor: Dr CCL Wong)**

- Outstanding Poster Presentation, 23rd Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2018

**Miss Wong Lok-Sze, MPhil (Supervisor: Dr JCM Wong)**

- Outstanding Poster Presentation, 23rd Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2018

**Ms Chan Yuen-Ki, PhD (Supervisor: Dr CCL Wong)**

- Outstanding Poster Presentation, 22nd Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2017
- Outstanding Poster Presentation, 23rd Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2018

**Ms Chen Mengnuo, PhD (Supervisor: Dr JCM Wong)**

- Outstanding Poster Presentation Award, 21st Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2016
- Best Presentation Award, Research Postgraduate Retreat, Department of Pathology, The University of Hong Kong, February 2017
- YS and Christabel Lung Postgraduate Scholarship 2017–2018, June 2018

**Ms Cheu Wing-Sum, PhD (Supervisor: Dr CCL Wong)**

- University Postgraduate Fellowship (UPF) 2018–2019, March 2018

**Mr Gao Xuyuan, PhD (Supervisor: Dr MP Wong)**

- Hong Kong PhD Fellowship (HKPF) 2014–2015, March 2014
- Best Presentation Award, Research Postgraduate Retreat, Department of Pathology, The University of Hong Kong, August 2016

**Mr Husain Abdullah, PhD (Supervisor: Professor IOL Ng)**

- Best Presentation Award, Research Postgraduate Retreat, Department of Pathology, The University of Hong Kong, February 2018

37
Mr Law Cheuk-Ting, PhD (Supervisor: Dr JCM Wong)

- Outstanding Poster Presentation, 20th Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2015
- Best Presentation Award, Research Postgraduate Retreat, Department of Pathology, The University of Hong Kong, February 2016
- Outstanding Poster Presentation, 21st Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2016
- Best Poster Award, The 4th International Anatomical Sciences and Cell Biology Conference 2016–2017, School of Biomedical Sciences, The University of Hong Kong, December 2016
- Wong Ching Yee Medical Postgraduate Scholarship 2016–2017, The University of Hong Kong, June 2017
- Reaching Out Award, HKSAR Government Scholarship Fund 2016–17, HKSAR Government, April 2017
- Tigris Educational Fund Graduate Student Travel Scholarship 2016–17, Tech Dragon Limited, March 2017
- Tse Family HKU-Cambridge Hughes Hall Scholarship 2017–18, The University of Hong Kong, July 2017

Mr Lee Chi-Hang Bernard, PhD (Supervisor: Professor SY Leung)

- Butterfield-Croucher Studentship 2018-2019, Croucher Foundation, April 2018

Mr Lee Derek, PhD (Supervisor: Dr CCL Wong)

- Tigris Educational Fund Graduate Student Travel Scholarship 2016–2017, Tech Dragon Limited, March 2017
- Outstanding Poster Presentation, 22nd Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2017
- YS and Christabel Lung Postgraduate Scholarship 2016–2017 (June 2017), 2017–2018 (June 2018)

Ms Liu Hei-Man, PhD (Supervisor: Dr JWP Yam)

- University Postgraduate Fellowship (UPF) 2016–2017, May 2016

Miss Ma Po-Yee, PhD (Supervisor: Dr JWP Yam)

- Outstanding Poster Presentation, 23rd Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2018

Ms Sethi Jasmeen Kaur, PhD (Supervisor: Professor ANY Cheung)

- 1st Runner-Up, The HKU Three Minute Thesis (3MT®) Competition 2018, The University of Hong Kong, March 2018
- Judges’ Vote and People’s Choice Award, The University of Queensland’s Three Minute Thesis (3MT®) Competition at the McDonnell Academy Symposium, October 2018

Ms Shen Jialing, PhD (Supervisor: Dr JCM Wong)

- Hong Kong PhD Fellowship (HKPF) 2016–2017, March 2016
- Best Presentation Award, Research Postgraduate Retreat, Department of Pathology, The University of Hong Kong, July 2018

Ms Wang Siqi, PhD (Supervisor: Dr MP Wong)

- University Postgraduate Fellowship (UPF) 2015–2016, April 2015
- Outstanding Poster Presentation, 22nd Research Postgraduate Symposium, Li Ka Shing Faculty of Medicine, The University of Hong Kong, December 2017

Mr Xiao Fan, PhD (Supervisor: Professor LW Lu)

- University Postgraduate Fellowship (UPF) 2014–2015, March 2014
- Best Presentation Award, Research Postgraduate Retreat, Department of Pathology, The University of Hong Kong, July 2018
The Department of Pathology is well-equipped with essential facilities. Fourteen research laboratories are housed in Block T, Queen Mary Hospital Compound and the Laboratory Block, Li Ka Shing Faculty of Medicine Building, with state-of-the-art research equipment available to researchers and students. The fully-equipped research laboratory located in the Li Ka Shing Faculty of Medicine Building was generously donated by the SH Ho Foundation in 2003, and has since become our second major base for cutting-edge medical research.

**Research laboratories**
- Breast Cancer Genetics Research Laboratory
- Cancer Biology Laboratory
- Gastrointestinal Cancer Genetics and Genomics Laboratory
- Genetics and Metabolomics Research Laboratory
- Gynaecological Cancer Clinical Research Laboratory
- Gynaecological Disease Research Laboratory
- Haematology Research Laboratory
- Hepatopancreatobiliary Diseases Research Laboratory
- Immunology Laboratory
- Liver Cancer and Hepatitis Research Laboratory
- Liver Cancer Metastasis Research Laboratory
- Lung Cancer Research Laboratory
- Lymphoma Research Laboratory
- Nasopharyngeal and Viral Pathogenesis Laboratory

**State-of-the-art equipment**
- Next-generation Sequencing platform NextSEQ 500 and MiniSEQ
- NanoZoomer Slide Scanning system
- MetaSystems Fluorescent / FISH system
- BD Flow Cytometer Analyzers and Sorter
- Leica LMD6 Laser Microdissection system
- Nikon Ti2 Fluorescent Live Cell Imager
- Roche Discovery Ultra automated system for IHC and ISH
- Real-time Quantitative PCR system
- MDS Nordion Gammacell 3000 Elan II Irradiator
STATE KEY LABORATORY OF LIVER RESEARCH (HKU)

Laboratory Director
Professor Irene OL Ng (Department of Pathology)

Laboratory Deputy Directors
Professor XY Guan (Department of Clinical Oncology)
Professor DY Jin (School of Biomedical Sciences)
Professor CL Lai (Department of Medicine)

For a full list of Principal Investigators and members, please refer to the laboratory website at http://www.skllr.hku.hk

The State Key Laboratory of Liver Research (SKLLR) (The University of Hong Kong) was set up in 2010 with the approval of the Chinese Ministry of Science and Technology. It is a partner laboratory of the State Key Laboratory of Oncogenes and Related Genes affiliated with the Shanghai Cancer Institute and Shanghai Jiao Tong University.

SKLLR investigators include top local physicians, surgeons, pathologists and basic scientists dedicated to enhancing understanding of the pathogenetic mechanisms of liver cancer, Hepatitis B virus (HBV) infection and cirrhosis by engaging in cutting-edge basic research. The laboratory aims to develop better and earlier diagnosis and treatment modalities to prevent, retard, and treat these life-threatening conditions by capitalizing on existing strengths in molecular biology, cancer genetics, functional proteomics, virology, clinical trials, improved surgery and liver transplantation.

The SKLLR also acts as a top training center for graduate students and medical doctors specializing in liver diseases. Guided by outstanding, highly experienced scientists and medical experts, young and talented researchers and medical doctors are nurtured and inspired to reach their full potential.

By regularly organizing symposia, seminars and other activities, the SKLLR provides versatile knowledge exchange opportunities for the sharing of liver disease research and technology developments among the local and regional medical and research communities.
Since its inception in 2013, the Hong Kong Pathology Forum held in January or February has become the annual flagship event of the department.

The forum aims to promote dialogue and knowledge exchange between pathology professionals and members of the medical community. With presentations by eminent local and international specialists, the forum focuses on cutting-edge developments in modern pathology with a strong emphasis on the clinical and treatment perspectives of different pathology disciplines.

Overseas speakers in the last three years include Dr Lester Thompson, Professor Yasuni Nakanuma, Professor Elizabeth Montgomery, Dr Alberto Quaglia, Professor Brett Delahunt and Professor Ian Ellis. Forum attendance has been steadily increasing, with participants of diverse professional backgrounds including pathologists, clinicians, physicians, medical practitioners and allied health professionals.

The Hong Kong Pathology Forum incorporates two named lectures, the Hou Pao-Chang Memorial Fund Lecture, and the James Gibson Lecture. The Hou Pao-Chang Memorial Fund was established by Professor Laurence Hou to commemorate the distinguished career of his father, department head from 1948 to 1960. The James Gibson Fund was established by friends and colleagues of the late Emeritus Professor James Gibson, department chair from 1963 to 1983, in recognition of his many years of distinguished service to the University and the community.
Dr Au Yeung Kwok-Him Rex
Dr Au Yeung is a histopathologist with a special interest in lymphoma pathology. He is a member of the Queen Mary Hospital regular adult combined haematopathology and paediatric haematopathology meetings. He also issues molecular pathology investigation reports in the diagnosis of malignant lymphoma.

Dr Beh Swan-Lip Philip
Dr Beh provides independent autopsy services for families, insurers, lawyers, etc. He consults in the review of death investigations, death reports and autopsy reports for civil and criminal cases, provides expert opinions and evidence in criminal and civil trials and advises lawyers on interpretation of forensic evidence. Dr Beh also advises on the management of victims of sexual abuse and assault where interpretation of injuries is required. In addition, he provides consultation and examination services for victims of human rights abuses and asylum seekers.

Dr Chan Kwok-Wah
Dr Chan’s clinical work covers surgical pathology, cytopathology and autopsy aided by molecular studies. Areas of special interest developed over many years of clinical practice and research are renal and urological pathology. Overseas training in renal pathology was under Professor J Tighe of St Thomas’s Hospital, London. The number of renal biopsies conducted currently stands at about 250 a year, a number nearly matched by that of consultation cases comprising biopsies from private hospitals and Macau’s Central Hospital. Dr Chan maintains an archive of renal biopsy materials for convenient case review and training in diagnostic renal pathology.

Professor Cheung Nga-Yin Annie
In addition to general anatomical pathology service, Professor Cheung is a key pathologist in gynaecological histopathology and cytology. She has trained with world-renowned experts in gynaecological pathology including Professors Harold Fox (University of Manchester), Robert E Scully (Massachusetts General Hospital) and Henry J Norris (Armed Forces Institute of Pathology). Professor Cheung is involved in the weekly gynaecological tumour board meeting and the training of gynaecological pathology. She is pathologist in charge of the HKU Cervical Cytology Laboratory and University Pathology Laboratory (Molecular Pathology), the first Hong Kong laboratory accredited by the College of American Pathologists and one of the first in Asia to adopt large scale liquid-based cervical cytology, automated cytology imaging and molecular detection of the human papillomavirus. Professor Cheung is interested in the application of cutting-edge molecular biology techniques in the early detection and improved management of gynaecological cancers.
Dr Ip Pun-Ching Philip

Dr Ip subspecialises in gynaecological pathology. Trained by Dr Robert H Young at Harvard Medical School, Massachusetts General Hospital and Dr Philip B Clement at the University of British Columbia, Vancouver General Hospital, he has accumulated 16 years’ experience in this specialty. Dr Ip’s subspeciality-related commitments at Queen Mary Hospital include peer review of all inhouse gynaecological pathology cases as well as outside referrals. He is a key member of the Hong Kong West Cluster gynaecological oncology team and chairs weekly tumour board meetings with the Department of Obstetrics & Gynaecology and the Department of Clinical Oncology.

Professor Khoo Ui-Soon

In addition to the general anatomical pathology service of diagnostic surgical biopsy and cytology, Professor Khoo is specialized in breast pathology, having trained at Nottingham City Hospital under Professor CW Elston and Dr Ian Ellis. Working closely with surgeons, radiologists and oncologists, Professor Khoo is involved in regular multidisciplinary meetings to review cytology, histology and radiological findings with a view to management. From her longstanding collaborative work with the Samuel Lunenfeld Research Institute, Mount Sinai Hospital, Toronto, Professor Khoo has acquired expertise in genetic testing for hereditary breast cancer, namely for BRCA1 and 2 gene mutations and provides individual referrals with genetic counseling and offers mutation testing if appropriate. She has also contributed to setting up the Fluorescent In-Situ Hydridization (FISH) assay for HER2 amplification in breast cancer in the HKU Molecular Pathology Laboratory.

Professor Lam Ching-Wan

Professor Lam trained as a chemical pathologist in Hong Kong with an emphasis on inborn errors of metabolism, genetics and genomics. He was trained in genomic medicine at Harvard Medical School and Brigham Children and Women’s Hospital, under Professor Victor Dzau and Professor CC Liew. He supervises residents undergoing specialist training while providing clinical services in the Hong Kong West Cluster. He provides clinical consultative services for genetic and undiagnosed diseases.

Professor Leung Suet-Yi

Professor Leung is a histopathologist with a special interest in molecular gastrointestinal pathology and neuropathology. She supervises the Hereditary Gastrointestinal Cancer Genetic Diagnosis Laboratory which provides genetic diagnosis tests including microsatellite instability analysis, mutational analysis for DNA mismatch repair genes (Hereditary Non-Polyposis Colorectal Cancer Syndrome), Adenomatous Polyposis Coli gene (Familial Adenomatous Polyposis Syndrome), LKB1 gene (Peutz-Jegher syndrome), SMAD4 and BMPR1A genes (Juvenile Polyposis syndrome) and PTEN gene (Cowden syndrome). She also provides consultative services in neurosurgical pathology and neuromuscular pathology.
Dr Lo Cheuk-Lam Regina
Dr Lo has a special interest in liver pathology. She is currently a member of the Continuous Quality Improvement Committee for the anatomical pathology service.

Professor Ng Lui Oi-Lin Irene
On top of a general anatomic pathology service, Professor Irene Ng specializes in liver pathology including hepatitis, liver cancer and liver transplantation. She trained in liver pathology at King’s College and Royal Free Hospitals with Professors Bernard Portmann and Peter Scheuer, respectively. She is a member of the International Collaboration on Cancer Reporting (ICCR) and has contributed to produce the Reporting Guide on liver cancer and is also an author of the WHO Classification of Tumours ‘blue book’: Digestive System (5th edition). She has been chief pathologist of the HKU liver transplant team at Queen Mary Hospital since the first successful liver transplantation in Hong Kong in 1991. Professor Ng provides consultative services in liver pathology and has also trained a number of scholars from different parts of the world in liver transplant pathology. Being the Chief of Service of QMH Pathology, she emphasizes the provision of modern pathology which includes, among many others, the application of next-generation sequencing for clinical services across all divisions of Pathology.

Professor Nicholls John Malcolm
Professor Nicholls trained as an anatomical pathologist in Adelaide, Australia with an emphasis on paediatric pathology. When he came to Hong Kong, he focused in addition to paediatric pathology work on nasopharyngeal carcinoma diagnosis and monitoring after radiotherapy, and on other diseases of the head and neck. He holds regular meetings with paediatric oncologists and surgeons and has been involved in clinical head and neck presentations.

Dr Sin Chun-Fung Albert
Through the Haematology Laboratory and Blood Bank at Queen Mary Hospital, Dr Sin provides a comprehensive diagnostic service for a wide range of haematological disorders. Investigations on acquired and hereditary white cell and red cell disorders, bleeding and thrombotic diseases, thalassaemias, haematological malignancies and serological problems are available. Cytogenetic and molecular genetic techniques are employed to aid both diagnosis and patient monitoring. Dr Sin provides regular services to the Hong Kong West Cluster and receives referrals from both public and private hospitals territory wide.
Dr Wong is an anatomical pathologist with expertise in lung pathology and lung cancer diagnosis. She has helped set up the molecular diagnostic service for testing of oncogene mutations in lung cancer including EGFR and ALK fusion genes in the University Pathology Laboratory, and established a tissue triage service for the Molecular Pathology Laboratory, Department of Pathology, Queen Mary Hospital. Dr Wong is also a trained cytopathologist with special expertise in performing and interpreting fine needle aspiration biopsies of palpable lesions.

Dr Tang is an anatomical pathologist with a special interest in renal pathology. He undertook overseas renal pathology training at Vanderbilt University in the USA with Dr Agnes Fogo.
Established in 1992, the HKU Cervical Cytology Screening Laboratory is dedicated to the continuous improvement of cervical cytology screening in Hong Kong, with nearly 1.2 million samples reported with an average of 80,000 cases per annum.

The laboratory is a pioneer in the introduction of state-of-the-art technologies.

- In March 2000, liquid-based cytology technology approved by the United States Food and Drug Administration (FDA) was adopted for full-scale cervical cancer screening.
- In 2001, the laboratory became the first in Hong Kong to be accredited by the College of American Pathologists (CAP). The laboratory has since maintained its CAP accreditation status.
- In 2004, a pilot study on HPV testing for triage of women with atypical squamous cells of undetermined significance (ASCUS) in cervical smears was conducted with the generous support of the SK Yee Medical Foundation.
- In July 2005, the laboratory was the first in Hong Kong and Asia to introduce the latest model of automated cervical cytology screening imager approved by the FDA.
- The impressive results encouraged the January 2007 adoption of reflex HPV test for women with cervical cytology diagnosed with ASCUS.
The Tissue Processing and Reporting Laboratory provides a tissue processing service for surgical biopsy specimens. This includes tissue processing, embedding, microtome-sectioning, and H&E staining. Pathologists perform macroscopic description, block-sampling of specimens such as cervical LEEP excision, as well as pathology reporting. Our services are accredited by the College of American Pathologists (CAP).

Tissue microarray is the construction of a paraffin embedded block, comprised of multiple tissue elements derived from individual “donor” tissue blocks. It allows cost-effective production of immunohistochemistry and in situ hybridization.

Our services can be applied for clinical and translational research including clinical trials and contracted research.
The Hereditary Gastrointestinal Cancer Genetic Diagnosis Laboratory was established in 1995. We currently provide genetic tests, genetic counselling, psychosocial support and advice and referral for prophylactic screening for families at risk for Lynch syndrome (also known as Hereditary Nonpolyposis Colorectal Cancer, HNPCC), Familial Adenomatous Polyposis (FAP) and other polyposis syndromes. This is a charitable service supported by the Hong Kong Cancer Fund, aiming to achieve colon cancer prevention in local high risk families. Since 2006, we have had the support of St Paul’s Hospital, which has allowed us to set up a patient referral centre in their hospital venue to facilitate population-wide patient recruitment. The laboratory provides its comprehensive genetic diagnosis service in collaboration with both public and private doctors in Hong Kong to help them plan appropriate prophylactic screening for at risk individuals. Recently, with decreasing costs and higher throughput, we have shifted our approach to a Next Generation Sequencing (NGS)-based workflow to accelerate the pace of discoveries, prevention and treatment. This has resulted in hundreds of polyps being removed and early cancers detected, saving many lives. With our services, many individuals from at risk families have also discovered that they did not inherit the cancer-predisposing mutations, relieving them of a tremendous psychological burden and enabling great medical resource saving. To date, over 2,000 families have benefited from our genetic diagnosis services. Amongst these, 367 families were confirmed to carry HNPCC, APC, PJS, JP, PTEN or TP53 gene germline mutations, with predictive genetic testing done for over 1,800 family members and over 900 gene carriers identified. The laboratory has generated a large database on mutation spectrum of DNA mismatch repair genes in the Chinese population, and uncovered a novel mechanism causing HNPCC through EPCAM gene deletion. This has become a standard genetic test worldwide. Our findings have resulted in numerous high-profile publications of both local and global importance in prestigious journals including Nature Genetics and the American Journal of Human Genetics. Our laboratory has provided an innovative model for academic researchers to serve the community through partnerships with charitable organisations, as well as public and private health care providers.
The University Pathology Laboratory (UPL), accredited by the College of American Pathologists, is a state-of-the-art laboratory committed to providing an excellent diagnostic service specially tailored for serious and common disorders in Hong Kong and the region. We are staffed by a comprehensive panel of professoriate-grade clinical pathologists for consultation and clinical interpretation of tests and employ cutting-edge technologies for diagnosis and management of human diseases along the following main themes:

- Cancer molecular prognostic marker for “personalized medicine”
- Clinical pharmacogenomics
- Genetic diagnosis of hereditary cancers and disorders
- Viruses and cancer

**Genetic diagnosis of hereditary cancers and disorders**

**A. BRCA1/2 mutations in breast and/or ovarian cancers**

Inherited alterations in BRCA1 and BRCA2 susceptibility genes may be found in cases of hereditary breast and ovarian cancer, which convey increased risk for breast and ovarian cancer. Testing should begin by identification of a specific mutation in affected family members. Once such mutation is identified, ‘carrier’ testing can be offered to family members who wish to learn whether or not they have inherited that mutation.

**B. Multiple endocrine neoplasia (MEN) syndromes**

The MEN syndromes comprise three genetically distinct familial diseases involving hyperplasia and cancer in several endocrine glands. Genetic testing of the MEN1 and RET genes for the MEN1 and MEN2/Familial Medullary Thyroid Carcinoma (FMTC) syndromes respectively can be used for pre-symptomatic identification of at risk individuals for early interventional management.

**Viruses and cancer**

**Human papillomavirus (HPV) and cervical lesion/cancer**

UPL provides various tests for HPV and cervical lesion or cancer:

- FDA approved Roche cobas® 4800 HPV Test for detection of 14 high risk HPV genotypes and identification of HPV 16/18 in cervical cells collected in liquid-based cytology.

- HPV genotyping by sequencing

**Applications:**

- Reflex HPV detection test for atypical squamous cells of undetermined significance (ASC-US)
- Screening for cervical cancer and precursors
- Monitoring for disease recurrence (Test of Cure)
- Quality control for HPV test from referral laboratories

**Cancer molecular prognostic marker for “personalized medicine”**

**HER2 amplification test for breast cancer**

PathVysion®, the only FDA approved HER2 assay, is performed by UPL for assessment of amplification status of the HER2 oncogene. The assessment assists the selection of patients suitable for adriamycin-based therapy and of patients who may respond to Herceptin® treatment. The test can be performed on formalin-fixed paraffin-embedded surgical pathology tissue blocks.

**Clinical pharmacogenomics**

A comprehensive pharmacogenetic testing for individualized therapy is provided for guiding the treatment of disease including selection of drugs with the greatest efficacy and predicting individual patients’ adverse reaction for a given drug therapy.
PARTNERSHIP WITH THE DEPARTMENT OF PATHOLOGY, QUEEN MARY HOSPITAL

Overview
Professor NG Lui Oi-Lin Irene
Chief of Service
Department of Pathology
Queen Mary Hospital

Academic staff work closely with the chief of service and professional staff in the Department of Pathology, Queen Mary Hospital (QMH) to provide diagnostic laboratory services in five divisions: anatomical pathology, chemical pathology, clinical immunology, haematology and transplantation & immunogenetics. These services are accredited by the College of American Pathologists. The hospital staff include nine consultants, seven associate consultants / senior medical officers, 12 resident trainees and 11 scientific officers. The hospital also funds a number of staff employed by HKU who also participate in clinical diagnostic services, including a scientific officer who works specifically in the area of developing and utilizing diagnostic molecular pathology tests. The department has been accredited by the Royal College of Pathologists of Australasia (RCPA) since 2013 as a training centre for genetic pathology, including biochemical genetics and medical genomics.

Anatomical Pathology Division
Head: Dr CHAN Shuang-Wai Gavin

The Anatomical Pathology Division provides services in surgical pathology, cytopathology and autopsy to QMH and other hospitals in the Hong Kong West Cluster (HKWC) as well as other private and public hospitals in the territory on a referral basis. Pathologists with subspecialty training and interests are available for consultation on most organ systems. In 2017, the division reported on 56,388 surgical specimens including 1,310 frozen section cases. In addition, 24,797 cytology specimens and 115 autopsies, including 89 coroner’s cases, were handled. The clinical practice of anatomical pathology is supported by a number of special laboratories and modalities, including immunohistochemistry, electron microscopy, image analysis and molecular pathology. Like other divisions in the department, the Anatomical Pathology Division is a certified training centre of the Hong Kong College of Pathologists (HKCPATH), the RCPA and the Royal College of Pathologists of the UK.
The Chemical Pathology Division provides chemical pathology and clinical consultation services to QMH, HKWC hospitals, and other private and public hospitals in the territory and Macau on a referral basis. In 2017, about 7.8 million test requests were received and handled by this division. A repertoire of more than 270 laboratory tests is provided, including general chemistry, paediatric general chemistry, endocrinology and lipidology, special chemistry, clinical toxicology, heavy metal analysis, therapeutic drug monitoring, urinary steroid profiling and molecular diagnostics. The division also provides urgent laboratory service and a two-tier duty biochemist/pathologist consultation around the clock. It has developed specialised chemical pathology services on esoteric lipids, cerebral spinal fluid neurotransmitter analysis, biochemical genetics and next-generation sequencing (NGS)-based genetic analysis.

This unit is a recognised training centre for chemical pathology of the Hong Kong College of Pathologists and the RCPA. Since 2014, it has been recognised by the RCPA as a training centre for biochemical genetics and medical genomics.

There are four pathologists (one HKU staff member and three Hospital Authority staff members) and two resident trainees in the division. Two of its chemical pathologists are also fellows in genetic pathology.

The Haematology Division provides a comprehensive diagnostic and consultative service to the HKWC, the territory of Hong Kong and neighbouring areas including Macau and Shenzhen. The scope of service spans basic diagnostic testing such as round-the-clock full blood count, clotting profile, malaria screening, body fluid examination, new oral anticoagulant measurement, pre-transfusion compatibility testing, to sophisticated tests involving flow cytometry, cytogenetics and genomics. The division is the Hong Kong pioneer in adopting massive parallel sequencing in personalizing management of patients with various myeloid neoplasms. It aspires to contribute to translational research that can guide clinical practice, especially in the fields of inherited red cell disorders (particularly thalassaemia and haemoglobinopathy), haematological neoplasms and transfusion science, and lead quality haematopathology practice in Hong Kong.
Clinical Immunology Division
Head: Dr AU Yuen-Ling Elaine

The Clinical Immunology Division provides a wide range of laboratory tests for the diagnosis and monitoring of immunodeficiency, autoimmunity, allergy and monoclonal gammopathy. It is organized into four main sections: (1) the serology laboratory detecting and quantitating autoantibodies; (2) the immunohistochemistry section assessing immunoglobulins profiles, tumour markers, cryoglobulin and monoclonal gammopathy; (3) the cell function laboratory quantitating lymphocytes subsets, assessing immune cell functions and investigating the genetic aspects of immune functions; (4) the allergy laboratory providing diagnostic tests for allergic diseases. The division also provides service to other hospitals and clinics in Hong Kong and the region. In 2017, approximately 220,000 specimens were received and over 396,000 tests were performed.

In recent years, we have focused our service development on allergy, neuroimmunology and molecular diagnostics. In collaboration with the Department of Medicine, we have established the Hospital Authority's first drug allergy clinic, providing consultations and follow-up allergy test services such as skin tests. The clinic service is expanding gradually and now includes assessment of allergy cases other than drug allergies and immunodeficiency case workup.

The division is actively involved in the training of immunologists and is the only centre in Hong Kong accredited by HKCPath and RCPA for training in immunology.
Transplantation and Immunogenetics Division
Head: Dr KWOK Siu-Yin Janette

The Division of Transplantation & Immunogenetics (T&I) is accredited by both College of American Pathologists (CAP) and American Society of Histocompatibility and Immunogenetics (ASHI). T&I is also one of training centers for ASHI. As a tertiary laboratory in Hong Kong, T&I provides specialised histocompatibility testings for patients awaiting solid organ and haematopoietic stem cell transplantsations (HSCT). Comprehensive transplant assessment programmes, encompassing Human Leukocyte Antigen (HLA) typing, antibody testing and cross-match testing are available to these patients to enhance transplant safety. We also perform HLA typing for the donors of the Hong Kong Bone Marrow Donor Registry and Hong Kong Red Cross Catherine Chow Cord Blood Bank. To assist clinical management, we provide testings for HLA-associated diseases and pharmacogenetics as well as HLA-related transfusion reactions. Furthermore, immunogenetics testings including Human Neutrophil Antigen (HNA) antibody testing, HNA genotyping and genetic testing for immunodeficiency diseases are available on consultation basis. In 2017–18, over 23,000 specimens were received and over 47,500 tests were performed.