

## ACADEMIC ACTIVITIES

### BCAT MEETING

#### **A Novel Bottom-up Proteomics Approach for Proteoform Analysis through Achieving Complete Protein Sequence Coverage – Prof. Terence POON**

On 16 October, Prof. Terence POON presented his research on “A Novel Bottom-up Proteomics Approach for Proteoform Analysis through Achieving Complete Protein Sequence Coverage”. Prof. POON claimed that Proteoform analysis is a recent hot research area. Bottom-up mass spectrometry (MS) and top-down MS are the two major approaches for proteoform identification. However, limited success has been achieved, particularly for proteome-wide proteoform identification. Prof. POON reported that there are four classes of ambiguity in proteoform analysis which are 1) ambiguity in the identity of a post-translational modification (PTM); 2) ambiguity in the location of a PTM; 3) ambiguity in amino acid sequence; and 4) ambiguity in the gene of origin.

Prof. POON's team recently invented a new proteolytic method, called CDS. Using their new proteolytic method, long overlapping peptides were obtained from protein preparations. By CDS-based LC-MS/MS analysis, 100% protein sequence coverage was robustly obtained. This new approach allows identification of protein sequence variants, PTM identification and PTM localization with high confidence. Using this approach, previously unreported PTMs were found in asialofetuin and an in-house therapeutic antibody. A new group of protein N-terminal acetylated *E. coli* proteins were also discovered. Prof. POON finally concluded that their approach has successfully resolved the ambiguity in PTM identification, PTM localization and amino acid sequence.

### Seminar Series

#### **Endothelium and Combat against Vascular Diseases – Prof. Yu HUANG**

Prof. Yu HUANG, Professor of Biomedical Sciences and Associate Director (Research) of School of Biomedical Sciences, Director (Basic Science) of Heart and Vascular Institute, Chinese University of Hong Kong, presented “Endothelium and Combat against Vascular Diseases” on 16 October.

Prof. HUANG claimed that endothelium cells play a key role in maintaining vascular health and therefore he focused his research on endothelium cell function and dysfunction. Prof. HUANG then introduced that healthy vascular endothelium is the critical player in maintaining vascular homeostasis through releasing several vaso-protective substances called endothelium-derived relaxing factors (EDRFs) such as nitric oxide. By contrast, loss of EDRFs in diseased endothelial cells unmasks the vaso-harmful impact of endothelium-derived contracting factors (EDCFs) such as vaso-constrictive prostanoids. The disrupted balance between EDRFs and EDCFs in endothelium is referred to endothelial dysfunction, an important initial pathological event that triggers pathogenesis of vascular diseases in hypertension and diabetes.

Moreover, Prof. HUANG presented that the increased production of reactive oxygen species (ROS) in the vascular wall was probably the key factor to inactivate nitric oxide within endothelial cells. He also shared several ways to understand and target the sources of ROS, which can increase the bioavailability of endothelium-derived nitric oxide, and thus to preserve endothelial function in cardio-metabolic diseases. Such as a number of drugs clinically used to treat cardiovascular and metabolic diseases are able to reduce vascular oxidative stress to augment endothelial function in arteries from animals of diseases and from patients. In addition, Prof. HUANG claimed that targeting endothelium is also useful to inhibit vascular inflammation and disturbed blood flow-associated development of atherosclerosis.



## Chinese Population BRCA Mutation Data Analysis Workshop – Prof. Sanming WANG

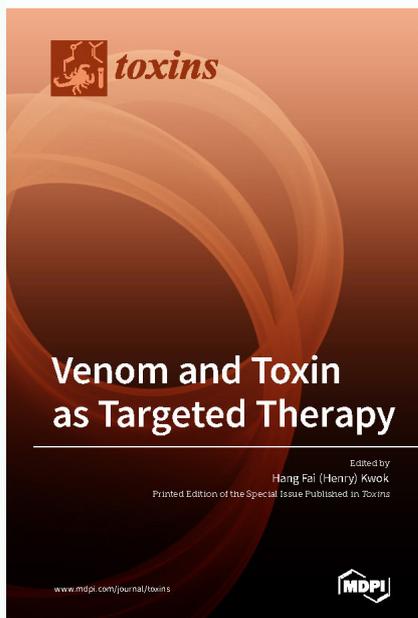
FHS held the “Chinese Population BRCA Mutation Data Analysis Workshop” successfully on 19 and 20 October. Prof. Chuxia DENG gave an opening speech for the workshop, and he warmly welcomed the researchers. Being the first cited scholar in the field of breast cancer in Greater China, Prof. DENG encouraged the participants to speed up the development and improvement of the China BRCA database. He claimed that this would benefit the breast cancer research in Greater China. Researchers from Singapore, China, Hong Kong and Macao have reported their research progress of BRCA in their regions during the workshop. They have further discussed the standards of the variation data analysis for the China BRCA database.

BRCA is referred to “BReast CAncer gene”. Despite the name, BRCA1 and BRCA2 are known as tumor suppressor genes and do not cause breast cancer in general. Every human has both the BRCA1 and BRCA2 genes that help repair DNA breaks which can lead to cancer and the uncontrollable growth of tumors.



## BOOK SHARING

### Venom and Toxin as Targeted Therapy – Prof. Henry KWOK



A book titled “Venom and Toxin as Targeted Therapy” which was edited by Prof. Henry KWOK was published in September 2019. The book consists of 15 chapters and was written by leading researchers and scientists from nine different countries, including Prof. Ira PASTAN from the National Institutes of Health (NIH), USA, a world-renowned scholar and founder of the Molecular Biology Laboratory of National Cancer Institute (NCI).

Targeted therapy has been a very hot research topic for the past decade. It focuses on the use of the specific drugs to treat specific diseases such as cancer, diabetes and heart disease. One of the most exciting discoveries in targeted therapy is that acting the specific targeting molecules, which were isolated from natural sources such as animal venoms and plant metabolites/toxins, on the diseases, and using them as a template for innovative drug motif design.

Prof. Henry KWOK’s research team has published more than 22 articles on the discovery and characterization of novel bioactive molecules, including amphibious defensive skin secretions and venoms of reptile scorpions and insects for the development of the therapeutic potential for anti-cancer, anti-bacterial and anti-fungal drugs since he joined FHS in 2014. Prof. KWOK is recognized as one of the experts in the field of toxic liquid toxicology and pharmacology. In 2017, the editor of the journal *Toxins* invited Prof. KWOK to join the editorial board, and he also served as a guest editor of the *Toxins* special issue “Venom and Toxin as Targeted Therapy”. The Multidisciplinary Digital Publishing Association (MDPI) recently selected this special issue and published it as a single book. The book will also be listed in the Directory of Open Access Books (DOAB), Google Books and WorldCat.



If you are interested in this book, you may view the book via <https://www.mdpi.com/books/pdfview/book/1648>.

## STUDENT ACTIVITY

### FHS Postdoc Student Seminar - Presented by Prof. Chris WONG’s group and Prof. Jun ZHENG’s group

On 16 October, Mr. Ang LI of Prof. Chris WONG’s group presented “Functional Dissection of GATA Type Transcription Factor AreA in *Aspergillus Nidulans*” and Ms. Wenwen ZHANG of Prof. Jun ZHENG’s group presented “Organism Dual RNA-Seq Reveals the Control on both Pathogen and Host through BarA/UvrY of *Vibrio Parahaemolyticus* for Successful Infection”.

The next seminar will be held on 31 October and presented by the group members of Prof. Xiaoling XU and Prof. Qi ZHAO.



October / November				
Mon	Tues	Wed	Thurs	Fri
21	22	23	24	25
		<p><b>Life Tech Protein Day</b> Time: All Day Venue: N22-G Floor</p>		
28	29	30	31	November 1
<p><b>Seminar Series</b> The Role of Anesthetics in Cancer Growth and Metastasis Speaker: Prof. Jun LIN Host: Prof. Wenhua ZHENG Time: 16:00 - 17:00 Venue: E12-G004</p>	<p><b>Seminar Series</b> Strategies Focused on Overcoming Bacterial Resistance Speaker: Prof. PharmDr. JOSEF JAMPÍLEK Host: Prof. Kin TAM Time: 11:00 - 12:30 Venue: E12-G004</p> <p><b>Seminar Series</b> Reprogramming Metabolomics Speaker: Prof. Xuanxian PENG Host: Prof. Wenhua ZHENG Time: 15:00 - 16:00 Venue: E12-G004</p>	<p><b>B-CAT Meeting #19</b> Speaker: Prof. Ruiyu XIE Time: 17:00 Venue: E12-G004</p>	<p><b>FHS Postdoc/ Student Seminar</b> Field: Cancer Research Host: Prof. Xiaoling XU and Prof. Qi ZHAO Time: 17:00-18:00 Venue: N22-G002</p>	
4	5	6	7	8
<p><b>The first working day after All Soul's Day</b></p>	<p><b>Seminar Series</b> Transdifferentiation, a Novel Mechanism in Vascular Regeneration Speaker: Prof. Shu MENG Host: Prof. Chuxia DENG Time: 10:30 - 11:30 Venue: E12-G004</p>	<p><b>Oral Defense</b> Weilong HOU Supervisor : Prof. Chuxia DENG Time: 15:00 Venue:N6-G010</p> <p><b>Seminar Series</b> Evolution of Translational Regulation and its Implication in Cancer Etiology Speaker: Prof. Jian LU Host: Prof. Sanming WANG Time: 10:00 - 11:00 Venue: N22-G004</p>	<p><b>Seminar Series</b> Acceleration of Translational &amp; Regenerative medicines by Flow Cytometry Speaker: Ms. Susanna LI Host: Professional Health Trading Company Ltd. and Beckman Coulter Hong Kong Ltd. Time: 14:30 - 15:30 Venue: N22-4028</p>	<p><b>Seminar Series</b></p> <ol style="list-style-type: none"> <li>1. Endosome-associated Actin Dynamics during Endocytic Recycling</li> <li>2. From TRP to TMC, the Molecular Mechanisms Underlying Mechanosensation in <i>C. elegans</i></li> <li>3. The Generation and Function of risiRNA in <i>C. elegans</i></li> </ol> <p>Speaker: Prof. Angbing SHI, Prof. Lijun KANG and Prof. Shouhong GUANG</p> <p>Host: Prof. Hongjie ZHANG Time: 10:00 - 13:00 Venue: E12-G004</p>