14

NEPHROLOGY

Biomarker and Translational Research

Principal Investigator

Professor Cheuk Chun Szeto

Team Members

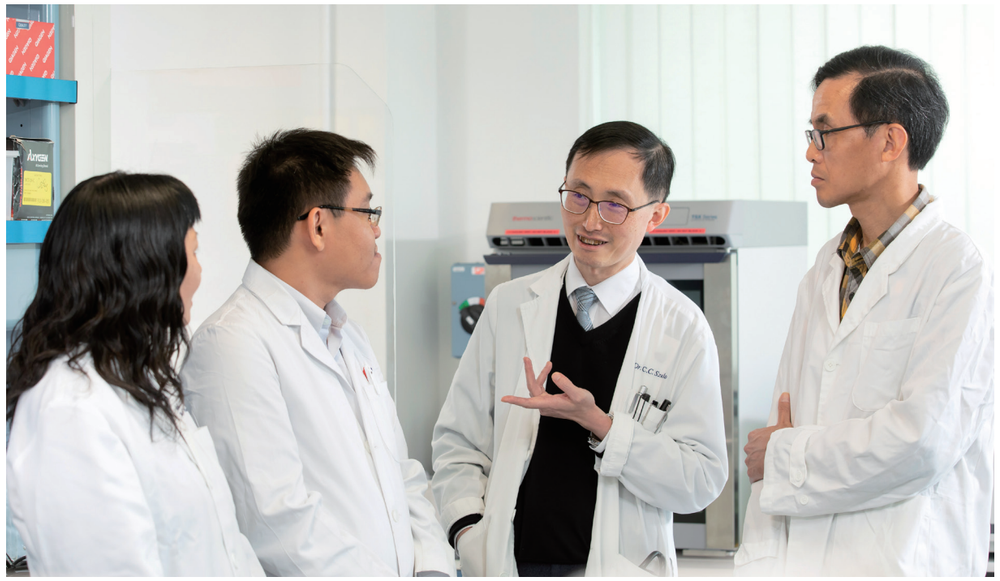
Peter Poon | Ka Bik Lai | Cathy Luk | Dineal Than | Lingfeng Zeng | Phyllis Cheng | Bonnie Kwan | Jack Ng | Winston Fung | Gordon Chan

Research Progress Summary

Current research activities concentrate on clinical and laboratory study of peritoneal dialysis and glomerulonephritis, notably IgA nephropathy. In addition, the research team led by Professor Cheuk Chun Szeto has secured financial and technical support for a territory-wide research project on autosomal dominant polycystic kidney disease.

Efforts Made to Attract Private Funds for Research

The team received various donations supporting clinical and laboratory research during this period. In addition, they have been actively exploring various funding sources from overseas non-profit making establishments.



Opportunities and Difficulties in Inter-institutional Collaboration in Research Activities

Over the past year, they had an increasing collaboration with academic institutes and pharmaceutical companies. Here are a few recently completed or on-going collaboration with international and regional organisations:

1. With Professor Chris McIntyre, Division of Nephrology, Schulich School of Medicine and Dentistry, University of Western Ontario, Canada on: Endotoxemia in chronic kidney disease;
2. With Professor Stanley Fan, Barts Health NHS Trust, London, United Kingdom on: Polymerase Chain Reaction/Electrospray Ionisation-Mass Spectrometry (PCR/ESI-MS) for rapid bacterial identification in peritoneal dialysis effluent;
3. With Dr. Daniel March, Department of Infection, Immunity & Inflammation, University of Leicester, The United Kingdom on: Endotoxemia and cardiovacular disease in dialysis patients; and
4. With Professor Christoph Aufricht, Medical University of Vienna, Austria on: Alanyl-Glutamine in Peritoneal Dialysis Fluids Improves Peritoneal Health and Systemic Inflammation.

Promotion of Research Collaboration with Industry and Other Outreaching activities

Their patient population represents a wealth of resource for clinical research. They are actively exploring opportunities to collaborate with industrial and biotechnological establishments in the field of peritoneal dialysis for product development and validation.

Ongoing and upcoming collaborative work with biotechnological establishments (not including pharmaceutical company-sponsored clinical trials) include:

1. Zytoprotec GmbH, Germany on: Alanyl-Glutamine in Peritoneal Dialysis Fluids Improves Peritoneal Health and Systemic Inflammation;
2. liberDi, The Trendlines Group, Israel on: The liberDi dialysis system; and
3. Ethos Biosciences, Philadelphia, USA on: Novel urinary biomarkers for chronic kidney disease.

Research and Scholarship

Academic Editorship

Member's Name	Details	
	Role	Journal
Cheuk Chun Szeto	Deputy Editor	Nephrology (Official journal of the Asian Pacific Society of Nephrology)
	Associate Editor	Peritoneal Dialysis International (Official journal of the International Society for Peritoneal Dialysis)
	Theme Editor (Peritoneal Dialysis)	Clinical Kidney Journal (Official publication of the European Renal Association)
	Editorial Board	Clinical Journal of American Society of Nephrology

Reviewer of Journal / Conference

Member's Name	Details	
	Role	Journal / Conference
Cheuk Chun Szeto	Member of Scientific Committee and Coordinator of Abstract Review Committee	American Society of Nephrology Renal Week 2020, Denver 2020
	Programme Committee Chair	14th Asia Pacific Congress of Nephrology

Grants and Consultancy

Name	Project Title	Funding Source	Start Date (dd/mm/yyyy)	End Date (dd/mm/yyyy)	Amount (HK$)
Winston Fung Cheuk Chun Szeto	A Longitudinal Observational Cohort of Autosomal Dominant Polycystic Kidney Disease Patients in Hong Kong: The Establishment of a Disease Data Registry	Hong Kong Society of Nephrology 35th Anniversary Research Grant	01/11/2018	30/11/2023	500,000
	The Effect of Nonsteroidal Anti-inflammatory Drugs on Intraperitoneal Cytokine Levels and the Concomitant Alterations in Peritoneal Transport Characteristics in Peritoneal Dialysis Patients	Hong Kong College of Physicians Young Investigator Grant	01/10/2019	01/10/2021	50,000
Gordon Chan Cheuk Chun Szeto	Association between Frailty and Bone Mineral Density in Peritoneal Dialysis Patients	Hong Kong Society of Nephrology Research Grant	01/01/2020	30/09/2020	40,000

Publications

A. Journal Papers

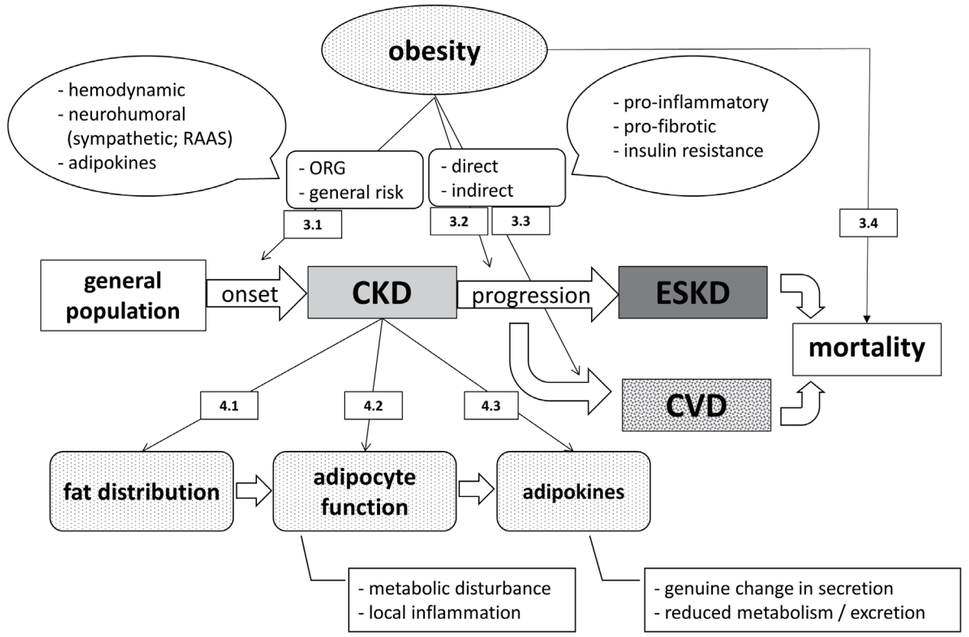
1. Fung WWS, Poon PYK, Ng JKC, Kwong VWK, Pang WF, Kwan BCH, Cheng PMS, Li PKT, Szeto CC. Longitudinal changes of NF-κB downstream mediators and peritoneal transport characteristics in incident peritoneal dialysis patients. *Scientific Reports*. 2020;10(1):6440. doi:10.1038/s41598-020-63258-3.

2. Szeto CC, Ng JKC, Fung WWS, Lai KB, Chow KM, Li PKT, Massiah A, Alcolea-Medina A, Wilks M, Fan SL. Polymerase chain reaction/electrospray ionization–mass spectrometry (PCR/ESI-MS) is not suitable for rapid bacterial identification in peritoneal dialysis effluent. *Peritoneal Dialysis International*. 2021;41(1):96-100. doi:10.1177/0896860820917845. (Epub ahead of print)

3. Than WH, Chan GCK, Ng JKC, Szeto CC. The role of obesity on chronic kidney disease development, progression, and cardiovascular complications. *Advances in Biomarker Sciences and Technology*. 2020;2:24-34. doi:10.1016/j.abst.2020.09.001. (Review, Epub ahead of print)

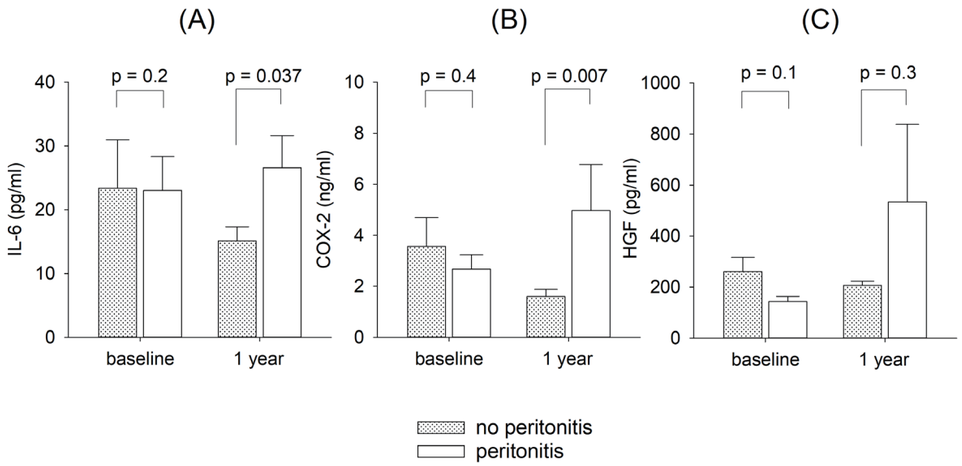
B. Book Chapter

1. Than WH, Szeto CC. Prognostic Roles of Peritoneal Dialysis Effluent Mitochondrial DNA Level. In: *American Society of Nephrology Renal Week 2020*. Abstract SU-OR27.



The relation between obesity and chronic kidney diseases (CKD) (ESKD, end-stage kidney disease; CVD, cardiovascular disease; ORG, obesity-related glomerulopathy; RAAS, renin-angiotensin-aldosterone system. Bold numbers in boxes correspond to the sections that are discussed in the text.)

Source: Than WH, Chan GCK, Ng JKC, Szeto CC. The role of obesity on chronic kidney disease development, progression, and cardiovascular complications. Advances in Biomarker Sciences and Technology. 2020;2:24-34. doi:10.1016/j.abst.2020.09.001.



Comparison of peritoneal dialysis (PD) effluent level of (A) interleukin-6 (IL-6); (B) cyclooxygenase-2 (COX-2); and (C) hepatocyte growth factor (HGF) at baseline and one year after dialysis between patients with and without peritonitis

Source: Fung WWS, Poon PYK, Ng JKC, Kwong VWK, Pang WF, Kwan BCH, Cheng PMS, Li PKT, Szeto CC. Longitudinal changes of nf-κb downstream mediators and peritoneal transport characteristics in incident peritoneal dialysis patients. Scientific Reports. 2020;10(1):6440. doi:10.1038/s41598-020-63258-3.