

CARDIOVASCULAR MEDICINE

Heart Diseases -
Cardiac Imaging And
Intervention



Principal Investigator

Professor Alex Lee



Team Members

Randolph Wong | Yiting Fan | Kevin Kam | Kent So | Ada Yu | Josie Chow | Xueting Wang | Kandy Li | Tsz-ngai Chan

Research Progress Summary

The team led by Professor Alex Lee has published their study on adult-onset cardiac variant Fabry disease, for the first time in Hong Kong. They identified a high prevalence of undiagnosed Fabry disease among Chinese patients with left ventricular hypertrophy. In the area of mitral regurgitation, they published a review article on atrial functional mitral regurgitation; they also published an original article on *The Annals of Thoracic Surgery* on the prevalence of thoracic aortic aneurysm in hypertensive patients detected using a point-of-care ultrasound device.

The team has successfully organised the “ECHO guidance for screening and interventions in Structural Heart Diseases” online training in September and November 2020, with excellent feedback from the 49 attendees from Hong Kong, Macau and Mainland China. A webinar series on 3D echocardiography, “CU ECHO PRO 3D Echo Advanced Webinar Series” was held in November - December, attracting 131 attendees in the Asia-pacific region. They also held “The CUHK Transthoracic Echo Course for Anesthesiologists” to develop trainer competence in the comprehensive echocardiographic examination for 24 Hong Kong doctors.

Research and Scholarship

Academic Editorship

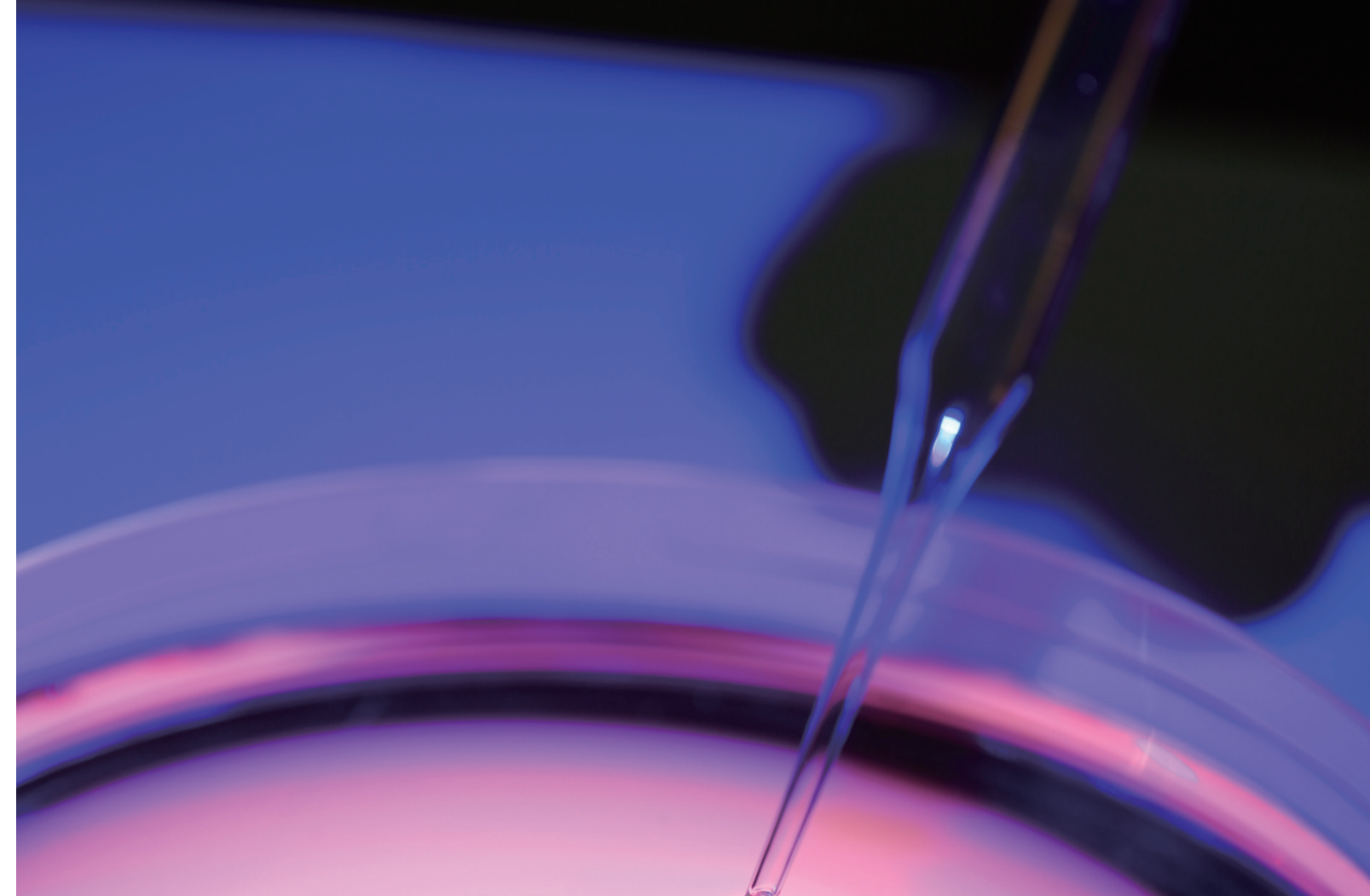
Member's Name	Details	
	Role	Journal
Alex Lee	Associate Editor	Frontiers in Cardiovascular Medicine
	Editor	Frontier in Physiology

Reviewer of Journal / Conference

Member's Name	Role	Details
		Journal / Conference
Alex Lee	Reviewer	The Atlanta Journal-Constitution
		JACC Cardiovascular Imaging
		The American Journal of Cardiology
		Cardiovascular Ultrasound
		Annals of the New York Academy of Sciences
		Journal of the American Society of Echocardiography
		Cardiovascular Research and Practice
		Cardiovascular Ultrasound
		IJC Heart and Vasculature
		International Journal of Cardiovascular Imaging
The Journal of Visualized Experiments		

Grants and Consultancy

Name	Project Title	Funding Source	Start Date (dd/mm/yyyy)	End Date (dd/mm/yyyy)	Amount (HK\$)
Alex Lee	A Randomized Parallel-group, Placebo-controlled, Double-blind, Event-driven, Multi-center Pivotal Phase III Clinical Outcome Trial of Efficacy and Safety of the Oral sGC Stimulator Vericiguat in Subjects with Heart Failure with Reduced Ejection Fraction	Merck Sharp & Dohme (Asia) Ltd	05/01/2017	05/05/2020	825,987.5
	Prevalence of Fabry Disease among Chinese Patients with Left Ventricular Hypertrophy in Hong Kong	Sanofi-Aventis Hong Kong Ltd	01/09/2017	31/10/2020	743,400
	3D Printing Technology for Planning Left Atrial Appendage Occlusion: A Randomised Trial	Food and Health Bureau – Health and Medical Research Fund	01/05/2018	30/04/2021	1,191,977
	A Multinational, Multicenter Study to Assess the Effects of Oral Sildenafil on Mortality in Adults with Pulmonary Arterial Hypertension (PAH)	Pfizer Corporation Hong Kong Limited	25/10/2018	31/08/2023	2,399,028
	Heart Failure Study	Novartis Pharmaceuticals (HK) Ltd	01/02/2019	31/07/2020	433,626.68
	Randomized, Double-blind, Placebo-controlled, Parallel-group Study to Assess Cardiovascular Outcomes Following Treatment with Ertugliflozin (MK-8835/PF-04971729) in Subjects with Type 2 Diabetes Mellitus and Established Vascular Disease	Merck Sharp & Dohme (Asia) Ltd	08/06/2014	30/03/2020	756,470
	Automatic Retinal Image Analysis (ARIA) to Predict Coronary Artery Disease in HIV-Infected Individuals	Centre for Health Protection AIDS Trust Fund	04/2019	03/2021	560,462
	Non-interventional Study on Edoxaban Treatment in Routine Clinical Practice for Patients with Non Valvular Atrial Fibrillation (ETNA-AF-Hong Kong)	Daiichi Sankyo Hong Kong Ltd	29/09/2017	30/09/2021	176,772.5
	A Multicenter, Randomized, Double-blind, Double-dummy, Parallel-group, Active-controlled Study to Evaluate the Efficacy and Safety of Finerenone Compared to Eplerenone on Morbidity and Mortality in Patients with Chronic Heart Failure and Reduced Ejection	Bayer HealthCare Limited	01/04/2016	31/12/2020	595,300



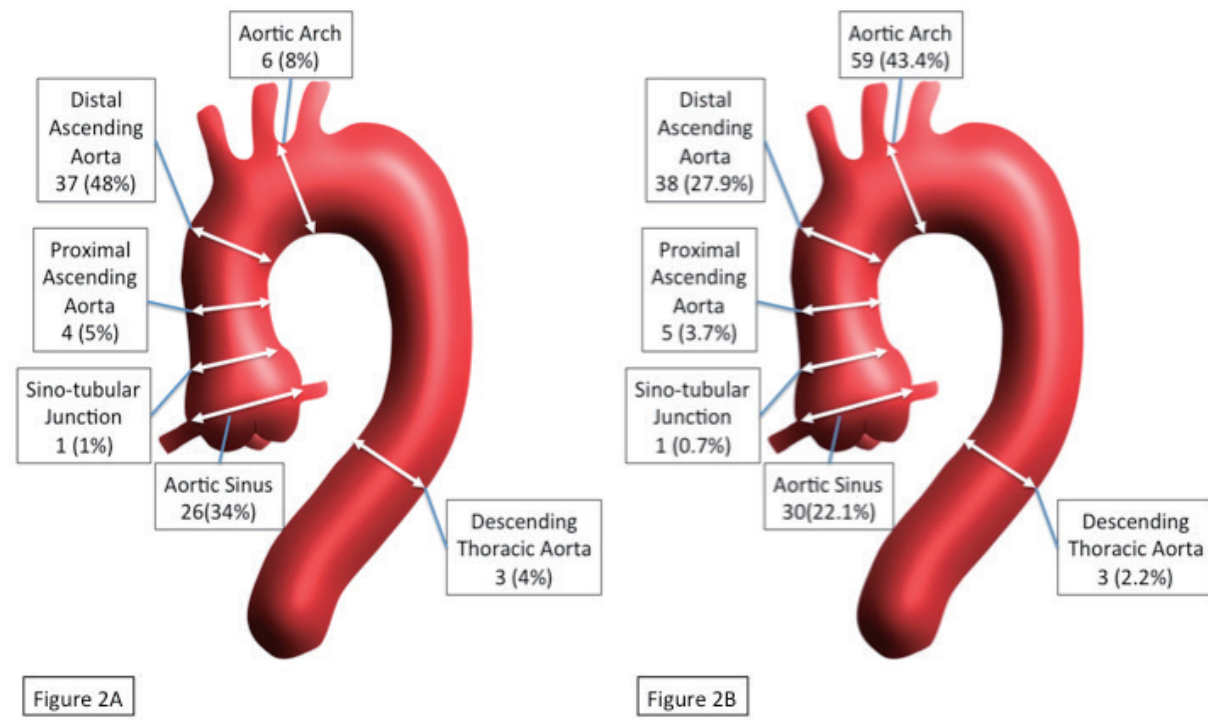
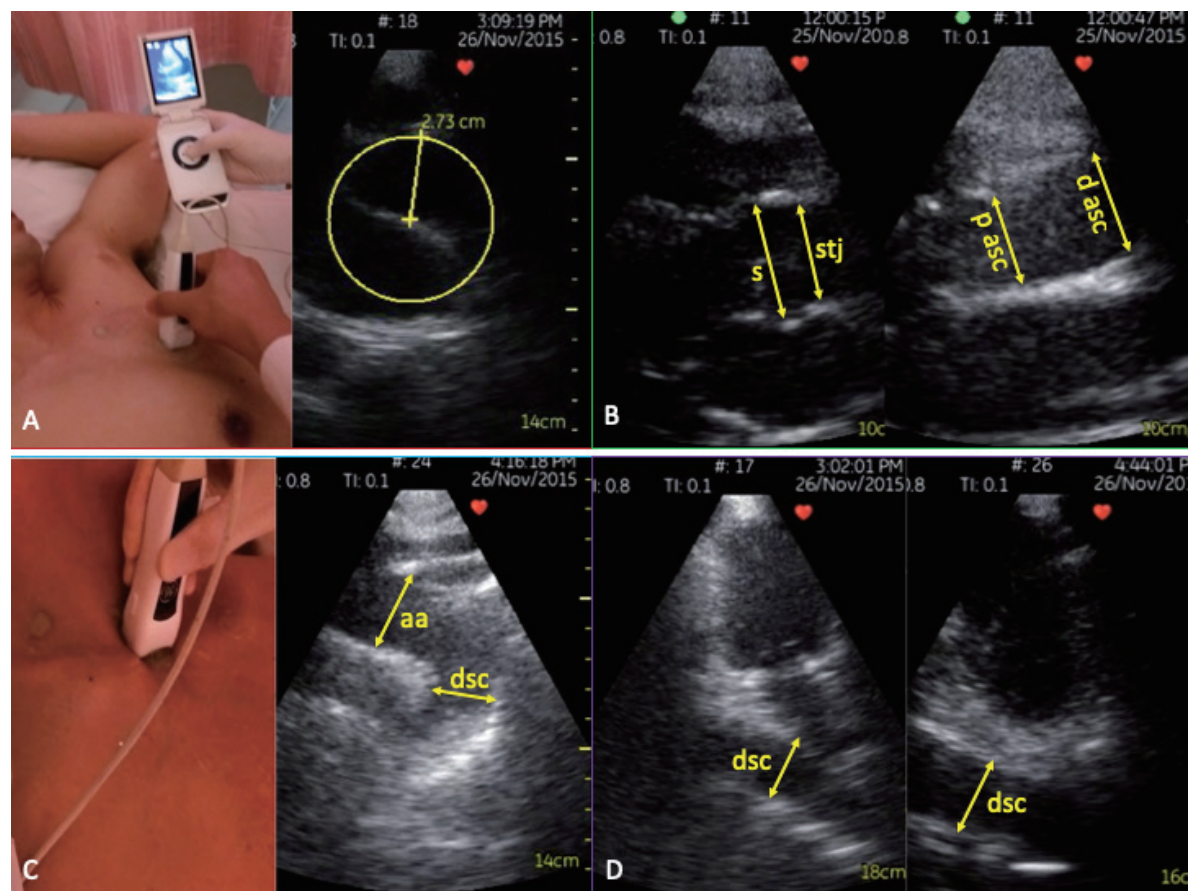
Publications

A. Journal Papers

1. Wong HLR, Yang F, Fujikawa T, Wong CSM, Yu CHS, John Underwood M, Lee PWA. Pocket-size mobile echocardiographic screening of thoracic aortic aneurysms in hypertensive patients. *The Annals of Thoracic Surgery*. Published online 2020. doi:10.1016/j.athoracsur.2020.07.018. (In press)
2. Fan Y, Wan S, Wong RHL, Lee APW. Atrial functional mitral regurgitation: Mechanisms and surgical implications. *Asian Cardiovascular and Thoracic Annals*. 2020;28(7):421-426. doi:10.1177/0218492320941388. (Review)
3. Sadasivan C, Chow JTY, Sheng B, Chan DKH, Fan Y, Choi PCL, Wong JKT, Tong MMB, Chan TN, Fung E, Kam KKH, Chan JYS, Chi WK, Paterson DI, Senaratne M, Brass N, Oudit GY, Lee APW. Screening for fabry disease in patients with unexplained left ventricular hypertrophy. *PLOS One*. 2020;15(9):e0239675. doi:10.1371/journal.pone.0239675.
4. Chan JS, Tse G, Zhao H, Luo X, Jin C, Kam K, Fan Y, Lee AP. Echocardiography update for primary care physicians: A review. *Hong Kong Medical Journal*. 2020;26(1):44-55. doi:10.12809/hkmj198080. (Review)

B. Book

1. Yang J, Lee AP, Vida VL. Cardiovascular 3D Printing. *Springer Singapore*; 2021. doi:10.1007/978-981-15-6957-9.



Aortic ultrasound imaging using the pocket-size mobile echocardiographic device. (A) Left parasternal long-axis view and corresponding echo view showing the aortic root and measurement of diameter. (B) Measurements of the lengths of aortic sinus diameter (s), sinotubular junction (stj), proximal ascending aorta (p asc), and distal ascending aorta (d asc). (C) Suprasternal view and corresponding echo view showing the measurement of aortic arch (aa) and proximal descending aorta (dsc). (D) The apical 2-chamber view showing the descending thoracic aorta (dsc).

Location of the thoracic aortic aneurysm (TAA). (A) The number and proportion of TAAs distributed in different segments of the thoracic aorta based on the criteria of aortic diameter ≥ 4.5 cm. (B) The number and proportion of TAAs distributed in different segments of the thoracic aorta based on the criteria of either aortic diameter ≥ 4.5 cm or $\geq 50\%$ increase in diameter relative to diameter of the adjacent normal segment.

Source: Wong HLR, Yang F, Fujikawa T, Wong CSM, Yu CHS, John Underwood M, Lee PWA. Pocket-size mobile echocardiographic screening of thoracic aortic aneurysms in hypertensive patients. *The Annals of Thoracic Surgery*. Published online 2020. doi:10.1016/j.athoracsur.2020.07.018.

Source: Wong HLR, Yang F, Fujikawa T, Wong CSM, Yu CHS, John Underwood M, Lee PWA. Pocket-size mobile echocardiographic screening of thoracic aortic aneurysms in hypertensive patients. *The Annals of Thoracic Surgery*. Published online 2020. doi:10.1016/j.athoracsur.2020.07.018.

