臺北醫學大學 泌尿腎臟研究中心 會議記錄

時間：**114 年 5 月 22 日(星期四) 9:00-10:00**

地點：視訊會議- (請以正式全名登入會議室，以利進行會議簽到)

使用 Google Meet (會議前 10 分鐘即開啟會議室)

會議室連結： https://meet.google.com/ihn-wugo-jfv

(敬略稱位)

會議主席：洪冠予

與會人員：

【附醫】劉明哲、葉劭德、吳建志、林孝友、吳政誠、張景欣、羅詩修、林敬哲、吳致寬、方德昭、吳逸文、陳錫賢、林彥仲、高治圻、陳靜怡、葉曙慶、邵月珠、周安琪

【萬芳】溫玉清、李良明、林克勳、林雍偉、蕭志豪、許軒豪、賴宗豪、鍾卓興、許永和、鄭仲益、陳作孝、劉崇德、楊韻紅、吳岳霖

【雙和】吳佳璋、陳冠州、劉家宏、江怡德、鄒凱亦、高偉棠、胡書維、魏汶玲、吳美儀、李明哲、洪麗玉、鄭彩梅、廖家德、游博翰、陳正憲、邱惠雯、高芷華、林冠宏

【新國民】蘇裕謀、鄒居霖

長官指導：

吳麥斯校長、許志成教授、陳瑞明所長、盧星華副院長、許永和副院長

議程：

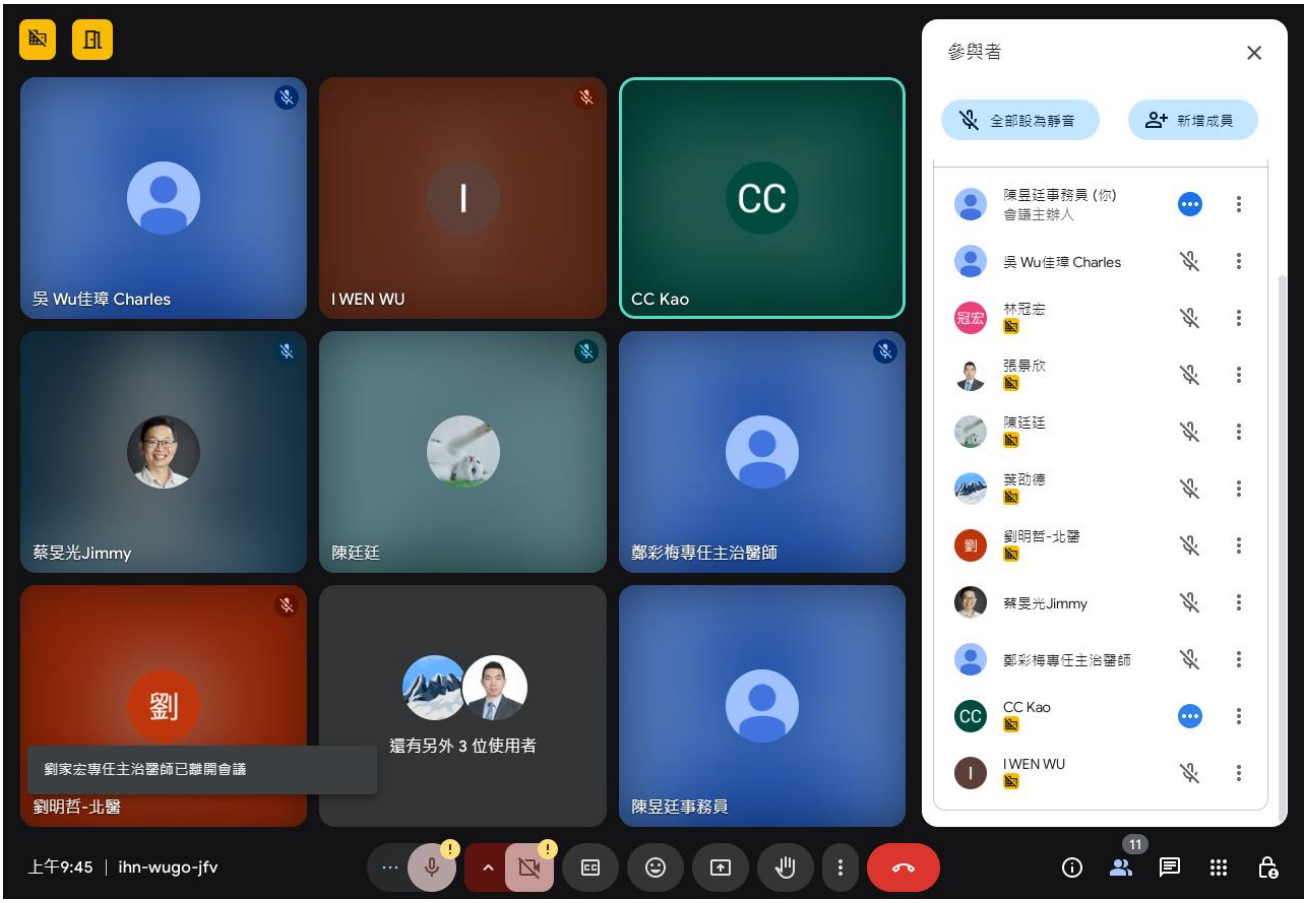
一、 腎臟泌尿精準健康計畫及生物檢體資料庫進度報告(吳逸文主任)

二、 校級研究中心績效成果報告(吳佳璋主任)

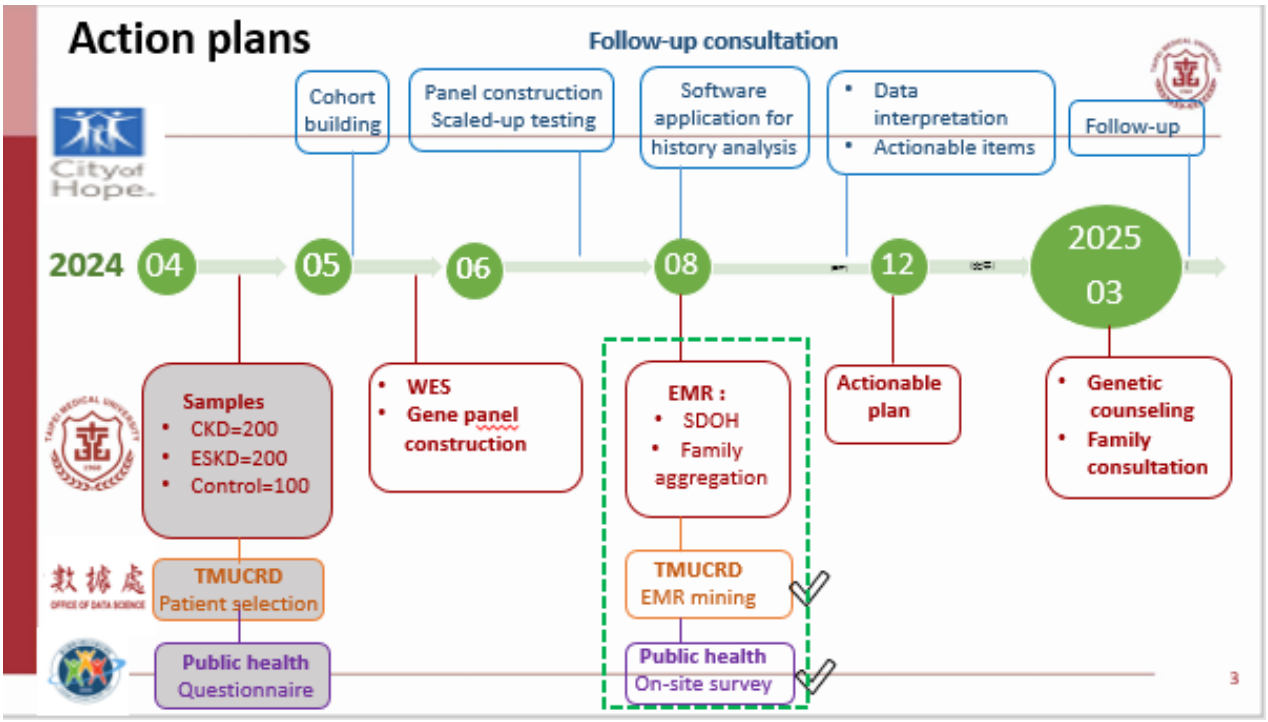
三、 團隊報告

1. 泌尿腎臟癌症團隊(劉家宏醫師)

2. 重症腎病團隊(高治圻醫師)




腎病精準醫學計畫：改變疾病照護策略，實現數位精準管理
S1
建立精準照護流程
S2
培育基因專業人才
S3
驗證精準照護效益
【基因檢測】建立檢體及定序流程
【基因檢測】結果判讀及報告
【基因資料庫】建立世代研究族群
【公衛環境】建立公衛及環境測值
【基因體學】基因分析人員培育與訓練
【遺傳諮詢】建立諮詢內容及訓練
【精準治療】建立基因建議介入項目
【驗證療效】確認精準檢測與預後關係
【臨床應用】數位精準管理
2024 04
2024 06
2024 12
2025 03
2025 12
2

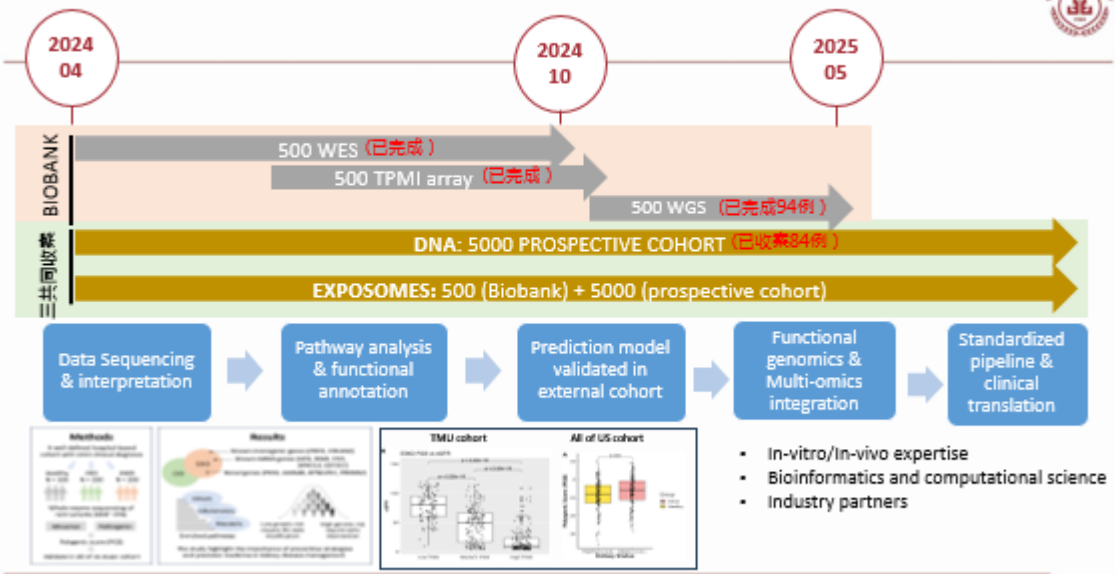

Action plans
Follow-up consultation
Cohort building
Panel construction Scaled-up testing
Software application for history analysis
Data interpretation
Actionable items
Follow-up
City of Hope
2024 04
05
06
08
12
2025 03
Samples
CKD=200
ESKD=200
Control=100
WES
Gene panel construction
EMR :
SDOH
Family aggregation
Actionable plan
Genetic counseling
Family consultation
TMUCRD
Patient selection
TMUCRD
EMR mining
Public health
Questionnaire
Public health
On-site survey
3

Exploratory phase: samples from biobank

Parameters	Normal control, n = 100	CKD, n = 200	ESKD, n = 200	P-value
Age, years	62.45 (13.07)	61.87 (13.00)	61.74 (13.13)	0.902
Male, No. (%)	63 (63.00)	124 (62.00)	126 (63.00)	0.975
Hypertension, No. (%)	0 (0.00)	70 (35.00) [c]	186 (93.00) [c]	< 0.001*
Obesity, No. (%)	1 (1.89) [b]	15 (8.82)	28 (15.56) [b]	0.010*
Diabetes, No. (%)	0 (0.00)	47 (23.50) [c]	127 (63.50) [c]	< 0.001*
Laboratory data				
eGFR, mL/min per 1.73 m^2	90.74 [80.22, 106.19] [a, b]	60.00 [48.97, 75.19] [a, c]	8.22 [5.80, 15.83] [b, c]	< 0.001*
BUN, mg/dL	16.50 [13.00, 18.81] [b]	18.17 [14.50, 26.38] [c]	60.30 [49.30, 73.53] [b, c]	< 0.001*
Serum albumin, g/dL	4.38 (0.52) [b]	4.37 (0.41) [c]	3.71 (0.46) [b, c]	< 0.001*
Cholesterol, mg/dL	200.93 (31.42) [a, b]	180.58 (28.53) [a, c]	166.88 (33.89) [b, c]	< 0.001*
Glycohemoglobin (HbA1c), %	5.70[5.44, 5.90] [b]	5.86 [5.52, 6.54]	6.07[5.50, 7.16] [b]	0.015*
Glucose, mg/dL	101.08 [93.94, 109.00] [b]	102.20 [95.50, 115.39] [b, c]	117.47[102.31, 155.87] [c]	< 0.001*

a The comparison between Normal group and CKD group is significant at the 0.05 level.
b The comparison between Normal group and ESRD group is significant at the 0.05 level.
c The comparison between CKD group and ESRD group is significant at the 0.05 level.

精準腎臟健康計畫進度及未來方向：



- In-vitro/In-vivo expertise
- Bioinformatics and computational science
- Industry partners

Journal Biomedical Science, under review

Current Polygenic Risk Score Testing

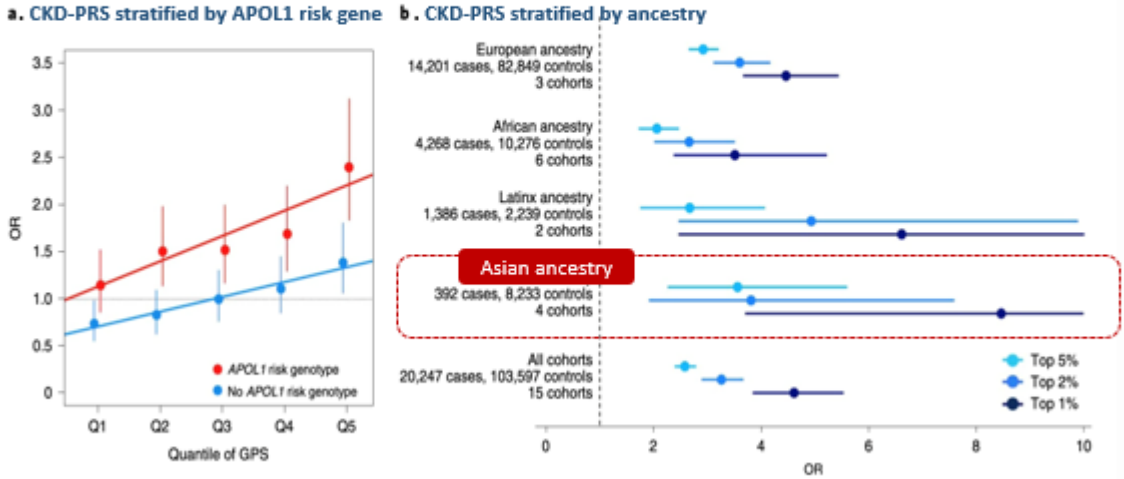
- Western population-predominant
- Array-based
- Partial transethnic transferability
- Lack gene-environmental interaction

PGS	Trait	Population	Discovery sample size	Discovery ancestry	Validation cohort
PGS000883 (PGS_GFR)	Incident CKD = eGFR of 60 ml/min per 1.73m^2 plus ≥30% eGFR decline during a follow-up visit compared with baseline	UK Biobank + CKDGen	1,159,871	White = 82%; East Asian = 14.4%; South Asian = 1.8%; Black = 1.5%; Hispanic = 0.42%	ARIC
PGP000269 (PGS_CKD_53)	Case = eGFR <60 ml/min per 1.73 m^2 Control = eGFR >90 ml/min per 1.73 m^2	70% of UKBB Europeans	177,208	European/White = 100%	CKDGen, UK Biobank, eMERGE-III, BioMe, UAB
PGS000664 (PGS_decline_2021)	eGFRcrea decline: 3 ml/min per 1.73 m^2 per year, eGFRcrea decline ≥25%, and eGFRcrea <60 ml/min per 1.73 m^2 at follow-up among those with eGFRcrea 60 ml/min per 1.73 m^2	41 Studies from CKDGen and UK Biobank	>2,700,000	NA	Validated alternate kidney markers
Gorski 2022[27] (PGS_decline_2022)	Decline in eGFR ml/min per year (eGFR at follow-up − eGFR at baseline/number of follow-up years)	CKDGen, UK Biobank	343,339	White = 74%	The Trøndelag Health Study
PGS000822 (PGS_ACR)	Cases = urine ACR > 30 mg/g, Control = urine ACR < 10 mg/g	CKDGen, UK Biobank	564,257	White = 97% East Asian = 1.1% South Asian = 0.4% Black = 1.2% Latin = 0.3%	CKDGen Consortium

Bakshi A et al, Kidney Int, 2023

6

Prediction performance of PRS is under-represented in Asian population



Khan A et al. Nat Med, 2022

7

Methods

A well-defined hospital-based cohort with strict clinical diagnosis

Healthy	CKD	ESKD
N = 100	N = 200	N = 200

Whole-exome sequencing of rare variants (MAF <5%)

Missense | Pathogenic

Polygenic score (PGS)

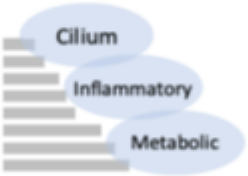
Validate in All of Us Asian cohort

Results

Known monogenic genes (*PKD1, COL4A4*)

Known GWAS genes (*SPI1, RIN3, FTO, SIPA1L3, EEF1E1*)

Novel genes (*PEX1, GANAB, DYNC2H1, PROKR2*)



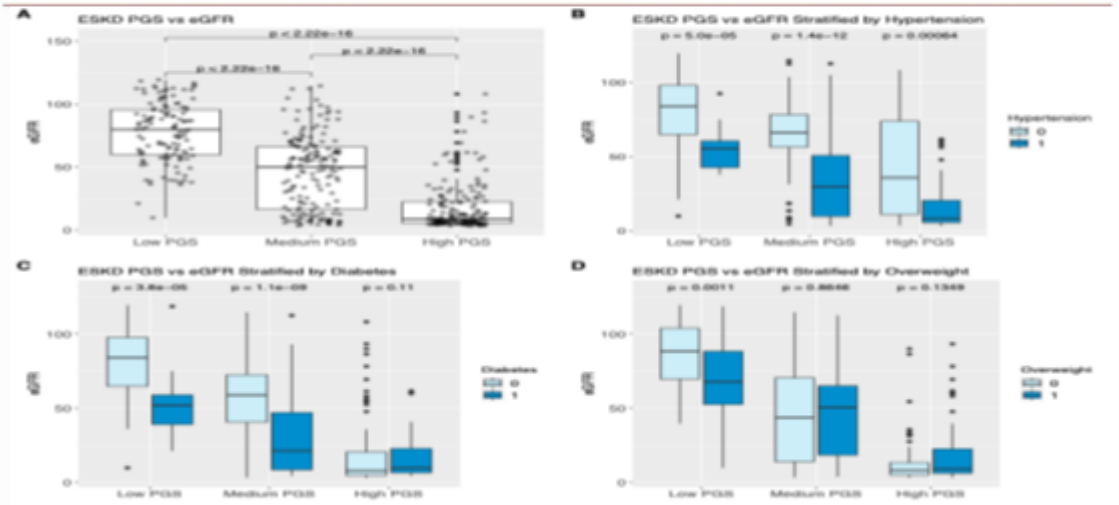
Enriched pathways

Low genetic risk require life style modification

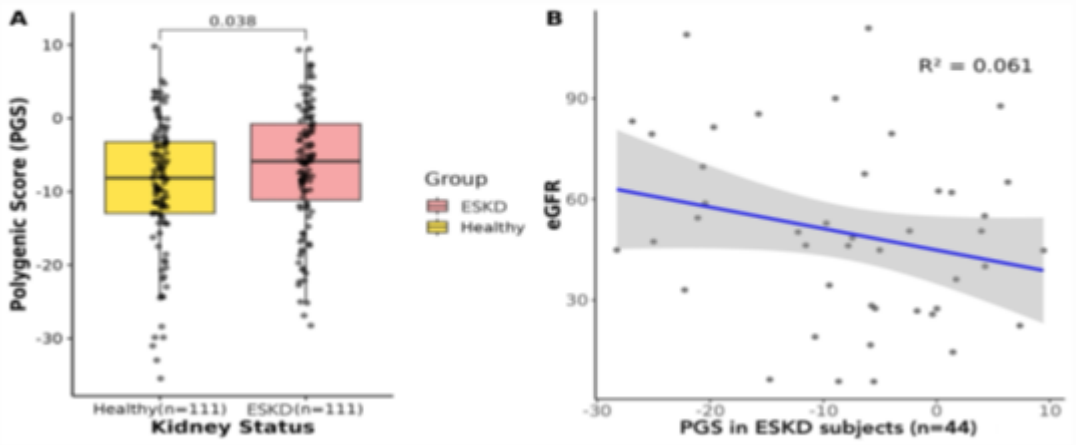
High genetic risk require early intervention

The study highlight the importance of preventive strategies and precision medicine in kidney disease management.

Implication of ESKD polygenic scores according to comorbidities

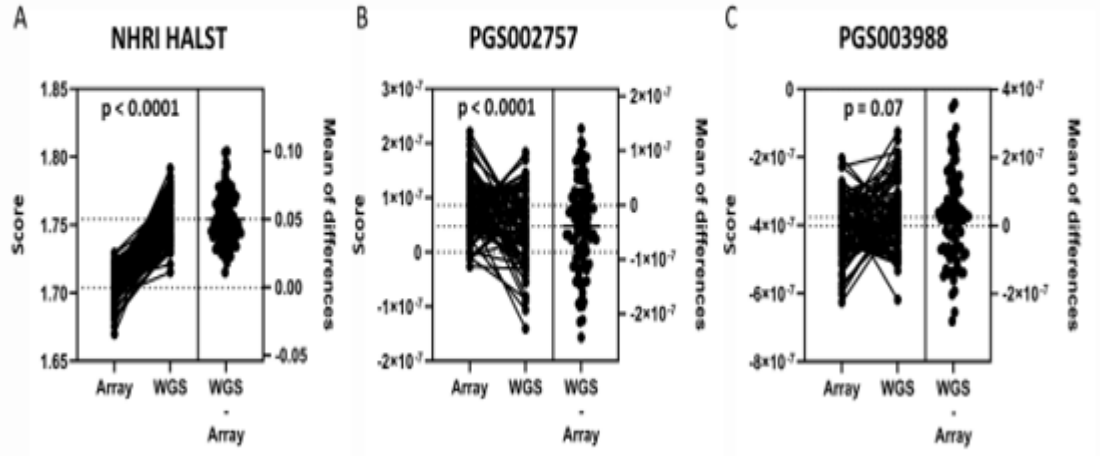


Validation of the ESKD PGS in the Asian population from All of Us cohort.

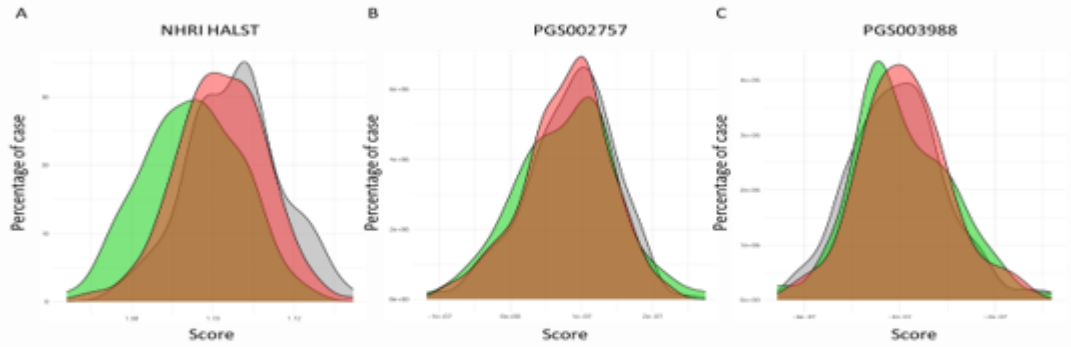


Journal Biomedical Science, under review

Comparison of PRS across different CKD models and platforms



Prediction performance between array-based PRS and WGS-based PRS



	NHRI HALST	PGS002757	PGS003988
Prediction of CKD AUC :	0.674	0.505	0.523
Prediction of ESKD AUC:	0.731	0.533	0.479

* CKD cases (red), ESKD cases (gray), controls (green), and overlapping regions (brown)

建置暴露體數據平台：優化腎病健康及環境問卷

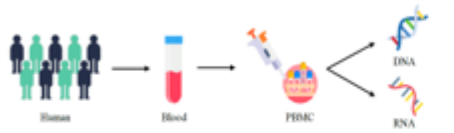
Gene-Environment interaction:
從代謝疾病及肺癌開始(有基因數據)
在HIS架構下建立個人的暴露體資料
在數據處建置暴露體數據資料庫
串聯外部資料庫

SurveyCake 問卷平台

https://tmu.surveycake.biz/s/NwVWe

精準腎臟健康計畫

Samples from TMU Biobank



Disease	No. case	進度
Normal control	100	8/30完成定序
CKM stage1 (Obesity)	200	未來可增加組別
CKM stage 2 (CKD)	200	8/16完成定序
CKM stage 4b (ESKD)	200	8/9 完成定序

目前進度：

- Library construction and WES reporting (9/19)
- TMU-TPMI data analysis: IRB revision (10/14 核准)
  + Serum/Urine: Multi-omic analysis
  + Exposome
  + TMUCRD data mining
- TPMI array: 500 例-DNA完成出庫 (9/30)，結果 (10/16)

Pending:

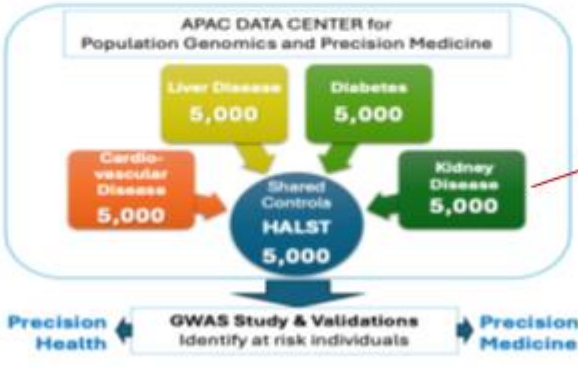
- GWAS analysis and first draft (10/31)
- TMUCRD: 數據處

原500例，送WGS (台基盟) ：16,000 NT *500= 800萬

禁世峰老師案

Large Scale WGS Cohort Targeting Four Linked Common Diseases in Taiwan (by 2025)

AGD Taiwan



TMU:原500例，
DNA QC未過
需要全數重新出庫

illumina PDC4PM

One campus: 共同收案，共享資料，共同發表

- **Prospective Genomic Cohort Establishment:** Prospective cohort: 106

高治圻/吳逸文

IgA nephropathy

廖家德/林冠宏

Polycystic kidney disease

吳岳霖

Other kidney disease

年度	月份	腎臟科_雙和_血液	腎臟科_附醫_血液	腎臟科_萬芳_血液
2024	7	0	1	0
2024	8	0	2	0
2024	9	0	7	0
2024	10	0	13	0
2024	11	0	11	0
2024	12	0	18	0
2025	1	0	12	0
2025	2	0	10	1
2025	3	2	10	0
2025	4	1	17	1

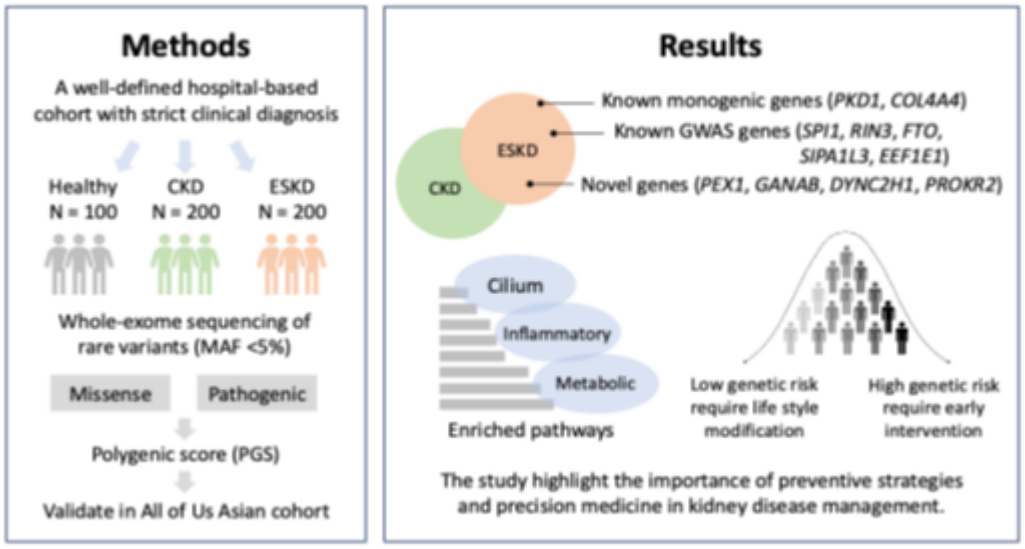
目前成果

- 教育部高教深耕計畫：腎病精準醫學計畫（2024, 2025）
- 國際研討會：台灣腎臟醫學會：台馬泰國際研討會 (2024/12)
- 國內研討會：台基盟X國衛院：2025 精準論壇 (2025/04)
- 論文： Polygenic Score for Kidney Function and Clinical Management through Whole-Exome Sequencing in the Taiwanese Population (審查中)
- 計畫:
- 國科會：2 件（審查中）
- 國衛院計畫：2 件（審查中）

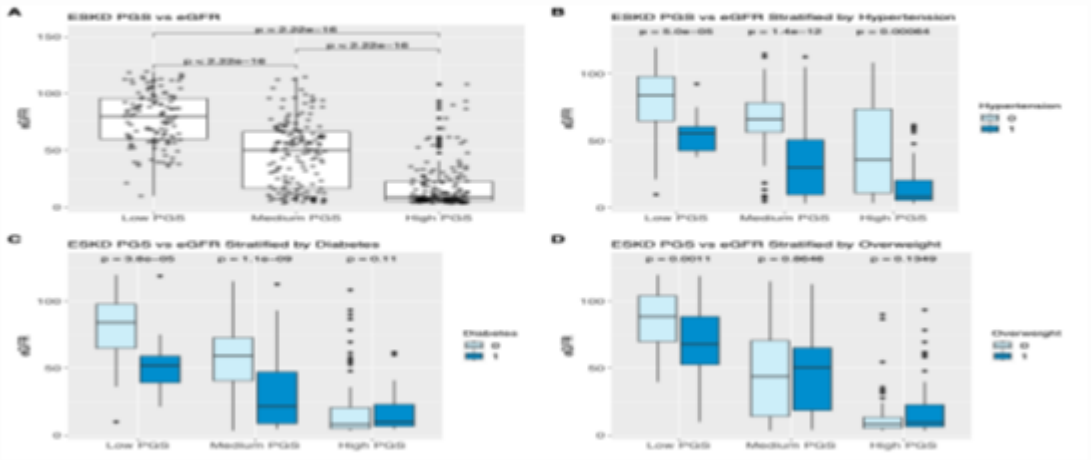
論文內容：

Parameters	Normal control, n = 100	CKD, n = 200	ESKD, n = 200	P-value
Age, years	62.45 (13.07)	61.87 (13.00)	61.74 (13.13)	0.902
Male, No. (%)	63 (63.00)	124 (62.00)	126 (63.00)	0.975
Hypertension, No. (%)	0 (0.00)	70 (35.00) [c]	186 (93.00) [c]	< 0.001*
Obesity, No. (%)	1 (1.89) [b]	15 (8.82)	28 (15.56) [b]	0.010*
Diabetes, No. (%)	0 (0.00)	47 (23.50) [c]	127 (63.50) [c]	< 0.001*
Laboratory data				
eGFR, mL/min per 1.73 m^2	90.74 [80.22, 106.19] [a, b]	60.00 [48.97, 75.19] [a, c]	8.22 [5.80, 15.83] [b, c]	< 0.001*
BUN, mg/dL	16.50 [13.00, 18.81] [b]	18.17 [14.50, 26.38] [c]	60.30 [49.30, 73.53] [b, c]	< 0.001*
Serum albumin, g/dL	4.38 (0.52) [b]	4.37 (0.41) [c]	3.71 (0.46) [b, c]	< 0.001*
Cholesterol, mg/dL	200.93 (31.42) [a, b]	180.58 (28.53) [a, c]	166.88 (33.89) [b, c]	< 0.001*
Glycohemoglobin (HbA1c), %	5.70[5.44, 5.90] [b]	5.86 [5.52, 6.54]	6.07[5.50, 7.16] [b]	0.015*
Glucose, mg/dL	101.08 [93.94, 109.00] [b]	102.20 [95.50, 115.39] [b, c]	117.47[102.31, 155.87] [c]	< 0.001*

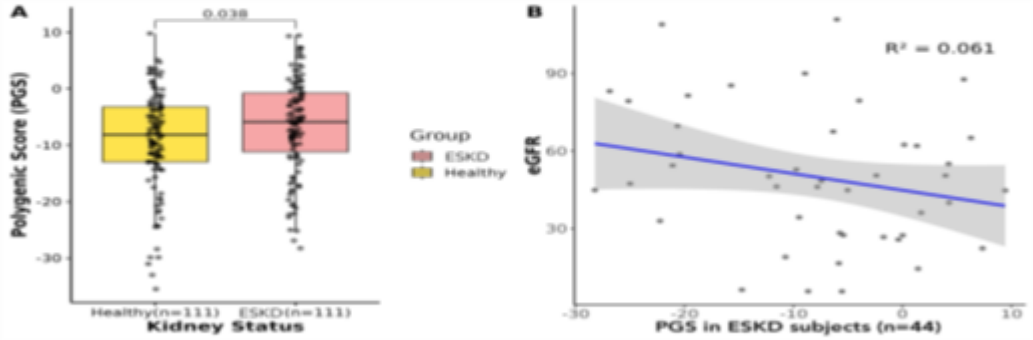
a The comparison between Normal group and CKD group is significant at the 0.05 level.
b The comparison between Normal group and ESRD group is significant at the 0.05 level.
c The comparison between CKD group and ESRD group is significant at the 0.05 level.



Polygenic scores predict renal function beyond comorbidities



Validation of Polygenic scores with All of US cohort



績效指標	目標值	Q1 (8-10)			Q2 (11-1)			Q3 (2-4)			Q4 (5-7)			當責者
		目標值	實際值	達成率	目標值	實際值	達成率	目標值	實際值	達成率	目標值	實際值	達成率	
三院AKD收案量年增率10%(現況累計330例)	380	350	351 T:0 W:59 S:292	100.3%	360	374 T:0 W:66 S:308	103.9%	370	413 T:6 W:81 S:326	116.2%	380			(T)吳逸文 (W)鄭仲益 (S)廖家德
三院攝護腺癌局部精準治療(海福刀)	60例	15	14 T:4 W:0 S:10	93.3%	15	12 T:2 W:0 S:10	80%	15	24 T:12 W:2 S:10	160%	15			(T)劉明哲 (W)林雍偉 (S)吳佳璋

Intergrated Chip Provide Rapid Identification of Uropathogen

Taipei Medical University – Department of Urology

Speaker : Associated Professor, Chia-Hung Liu , M.D..PhD.

Urinanalysis

- Screening of urine samples is the third most frequencly performed test in the clinical labotatories .[1]
- Urinalysis generally includes two kinds of methods: strip tests and microscopic examinations . [1]
- Urine microscopy, urine sediment analysis using microscope, has been used to detect various urologic diseases affecting from kidney to urinary tract. [1][2]
- **However, manual microscopic examination is time consuming and needs experts for interpretation .**

1. Zaman Z. Automated urine screening devices make urine sediment mi- croscopy in diagnostic laboratories economically viable. Clin Chem Lab Med 2015;53:s1509-11.
2. Becker GJ, Garigali G, Fogazzi GB. Advances in urine microscopy. Am J Kidney Dis 2016;67:954-64.

strip tests

manual method

automated method

Each person will vary in the operation of meter , the amount of urine , the light in environment used in the reading

strip tests-home test

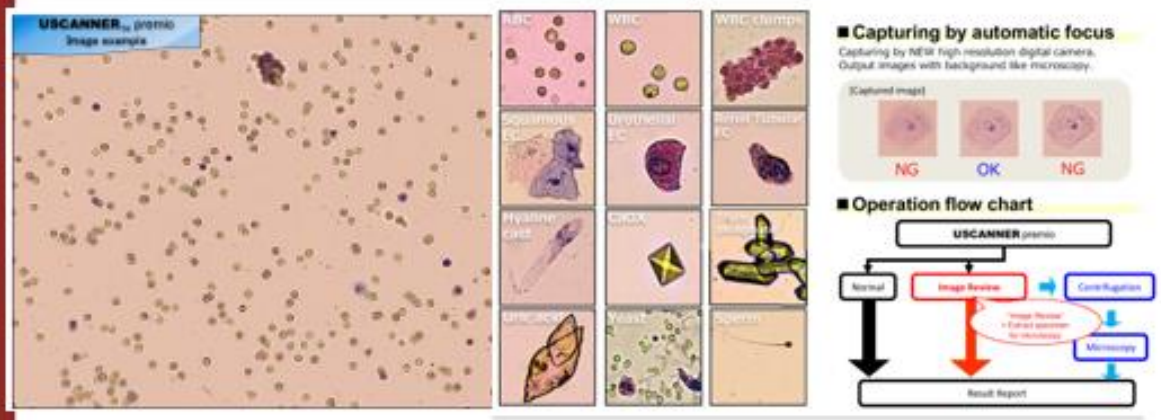
Video clip adapted from Stanford News ,2016

Standford University
This easy-to-assemble black box is part of an experimental urinalysis testing system designed by Stanford engineers. The black box is meant to enable a smartphone camera to capture video that accurately analyzes color changes in a standard paper dipstick in order to detect conditions of medical interest.

urine sediment analysis ?

1 .Manual microscopic examination ?

2. Laser-based flow cytometry and digitized microscopy

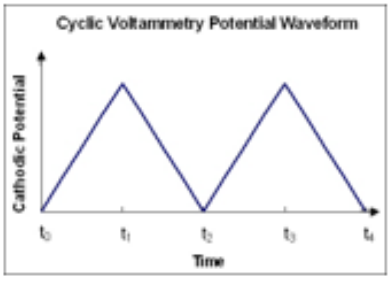


Goals

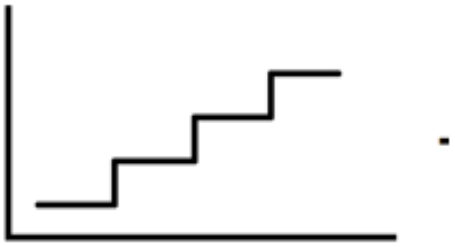
1. The present study proposes a unique approach for the quick and cost-effective , quanitative detection of Escherichia coli (E. coli) in urine samples using disposable gold electrode sensing chips
2. Synthesized metal organic framework (MOF) Pd@VNU-1(Zr)-SH modified Biosensor on a screen-printed electrode (SPE) displayed a very acceptable and accurate results like sensitivity, limit of detection (LOD) and a very good selectivity.
3. Where all those obtained through the cyclic voltammogram (CV) and square wave voltammograms (SWV)

Material and method

Cyclic Voltammetry and Square wave voltammetry

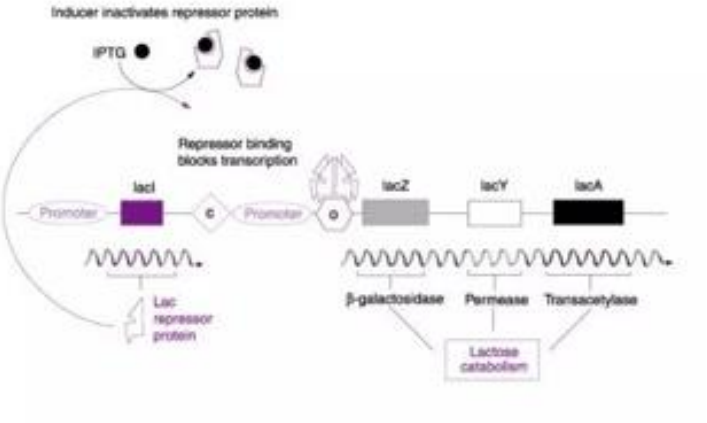


Cyclic Voltammetry



Square wave voltammetry

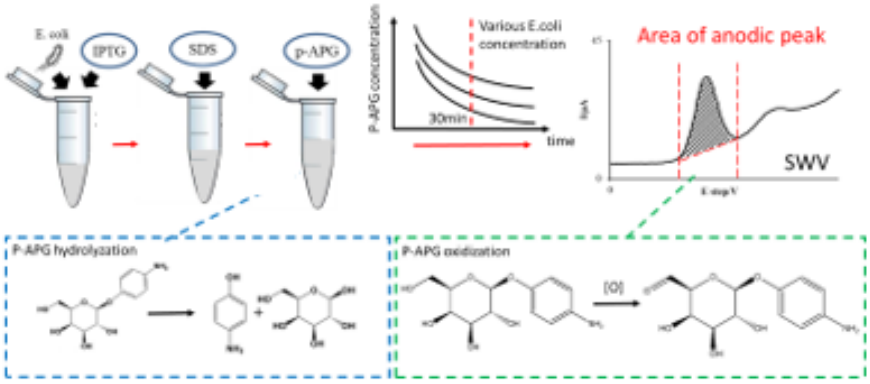
Material and method



IPTG ⬆ β-galactosidase ⬆

Isopropyl β -D-1-thiogalactopyranoside (IPTG) is a molecular mimic of allolactose and not metabolized by *E. coli* , can *induce β-gal expression in E. coli*

Material and method

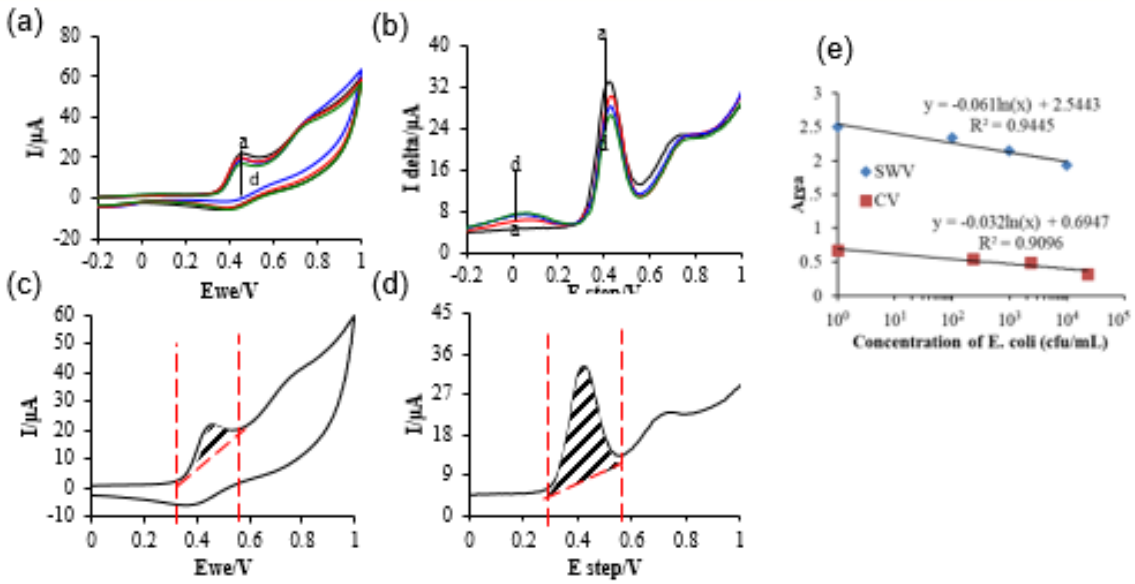


Concentraction of E. Coli ⬆ + β-galactosidase ⬆, hydrolysis of p-APG ⬆

the oxidation current of p-APG ⬇

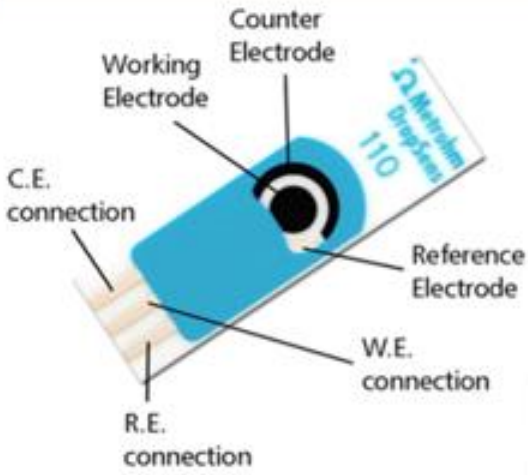
p-aminophenyl- β -D-galactopyranoside (p-APG) is a isomer of galactose

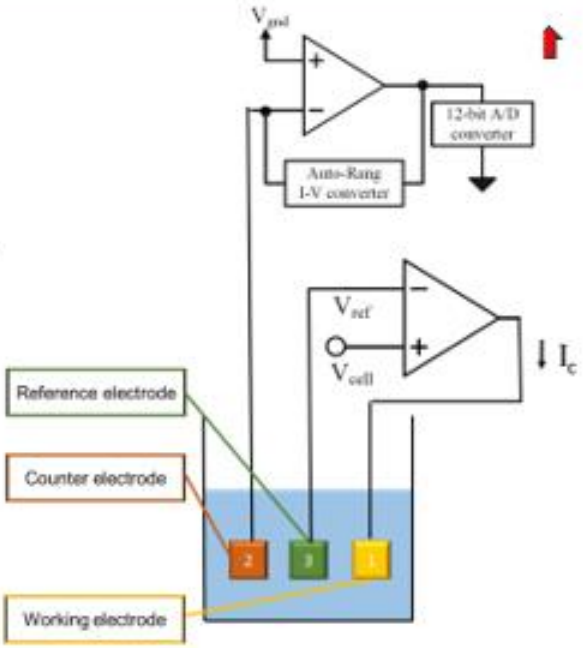
Material and method



Cyclic Voltammetry Square wave voltammetry

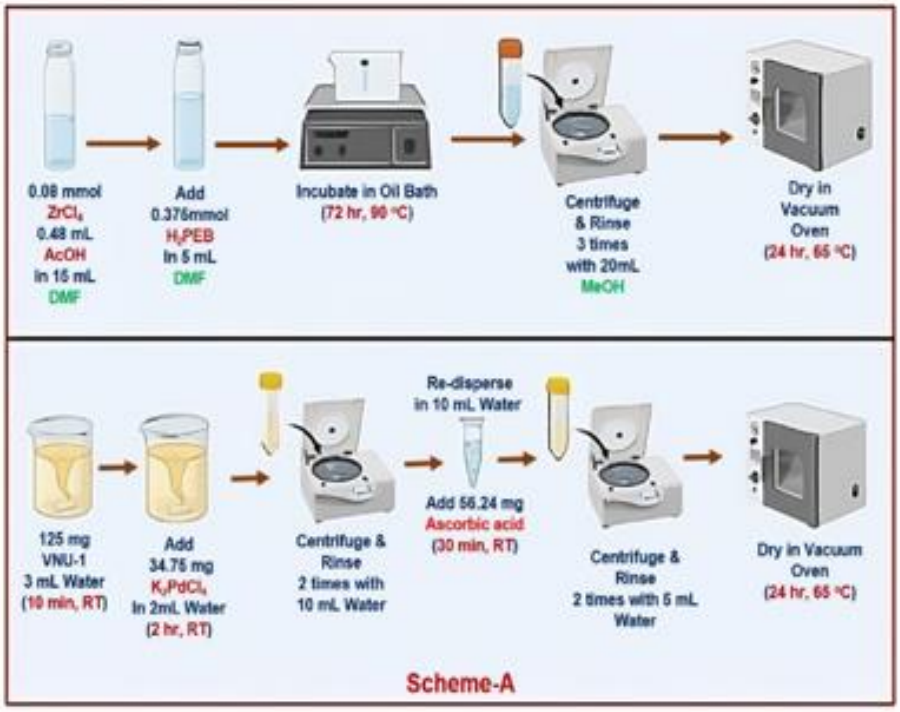
Materials and methods





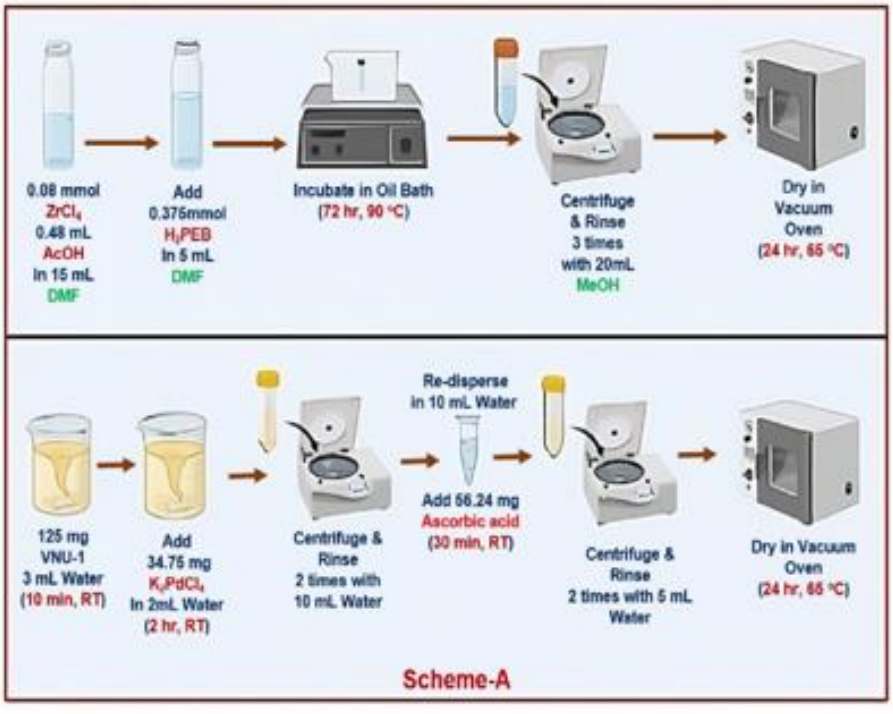
1. Reference electrode (RE)
2. Counter electrode (CE)
3. Working electrode (WE)

Materials and methods- Pd@VNU-1(Zr)



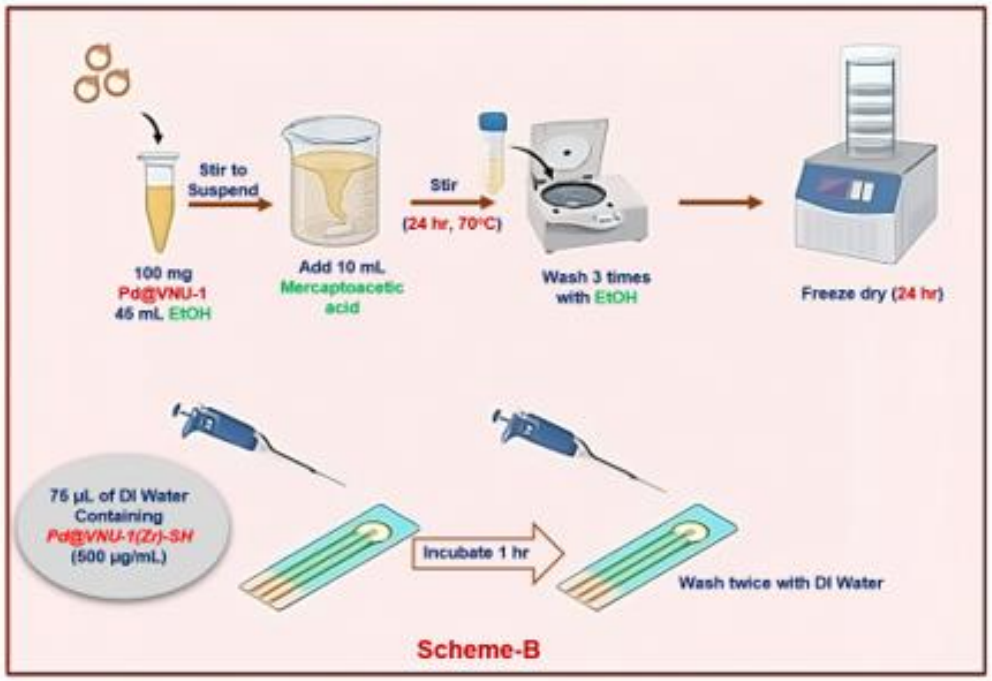
Scheme-A

Materials and methods- Pd@VNU-1(Zr)



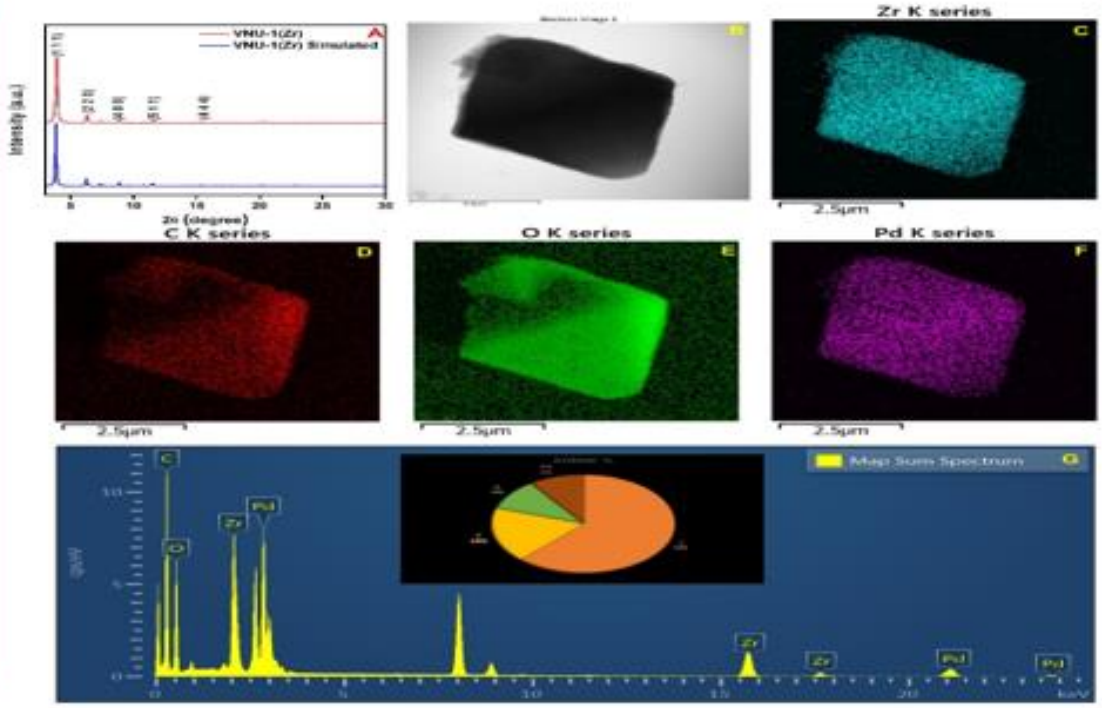
Scheme-A

Materials and methods- Pd@VNU-1(Zr)

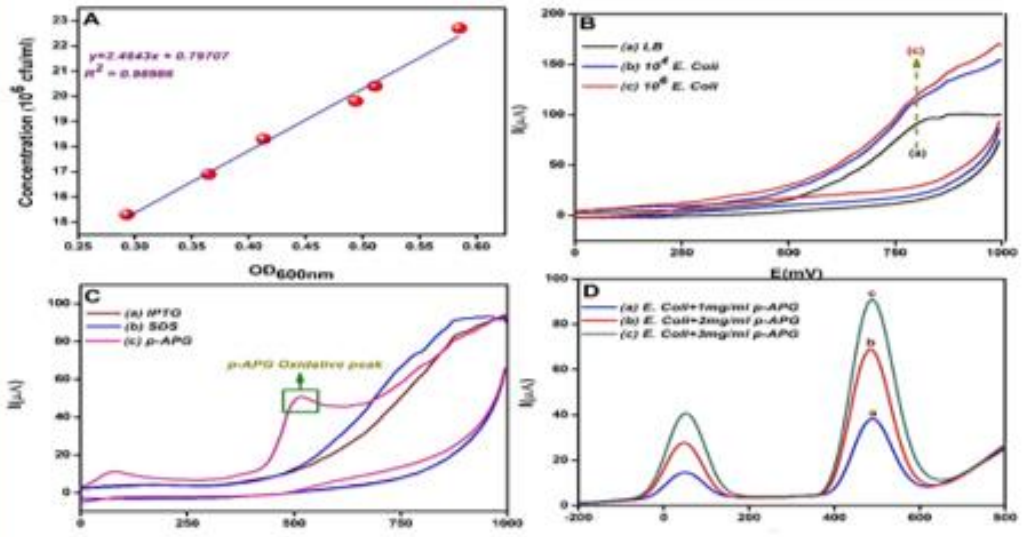


Scheme-B

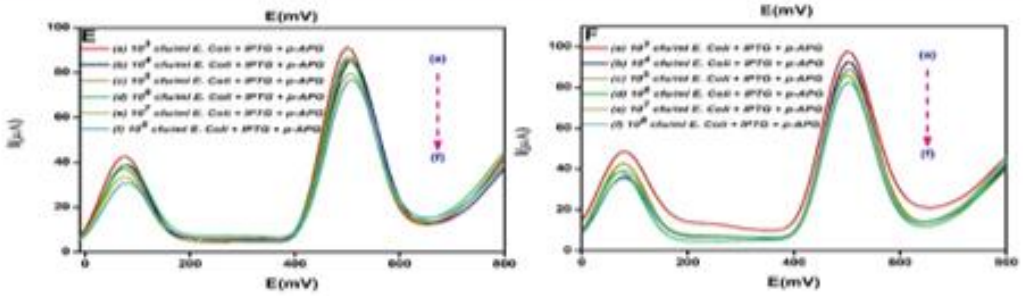
Results Pd@VNU-1(Zr)

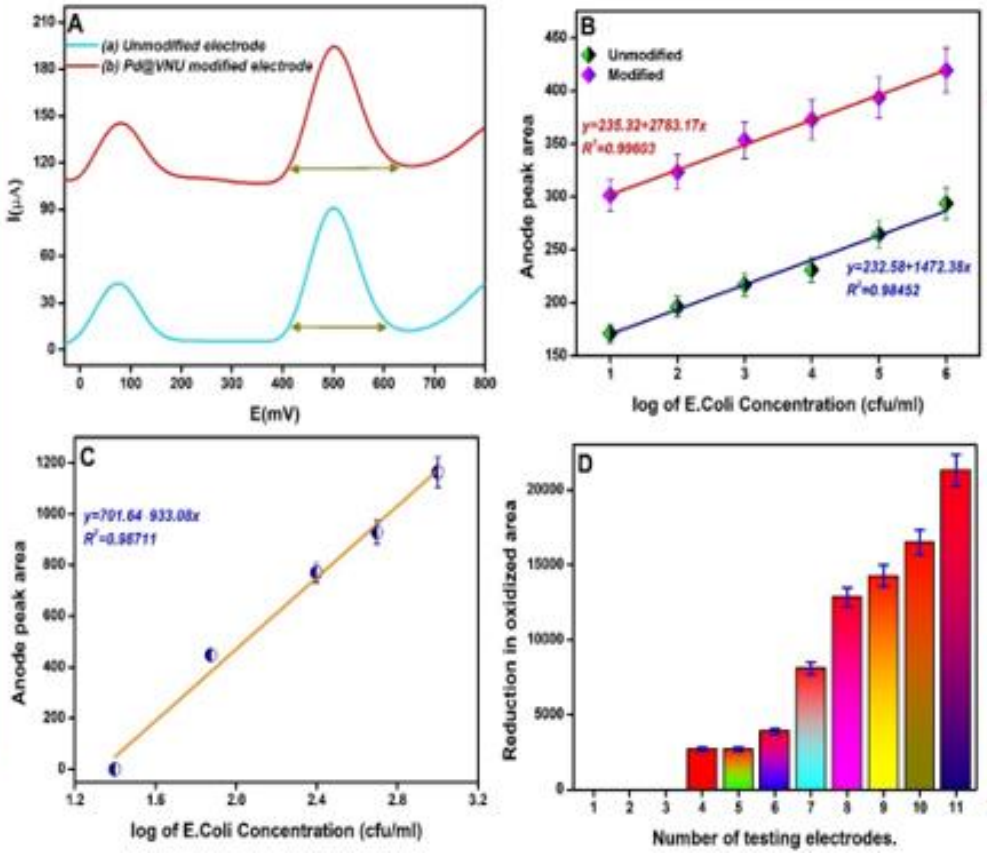


Results



Results





TMU-JIRB Form(V6/2020/07)

Taipei Medical University

Certificate of TMU-JIRB Approval

Issue Date: 2022/06/21

TMU-JIRB No.: N202206035
Protocol Title: Development of a high-sensitivity electrochemical sensor for rapid urine microbial detection
Principal Investigator: chia-Hung , lu
CO- Investigator: Fan Yu-Jui
Study Member: Chiu Po Han
Study Site:TMU-Shuang-Ho Hospital
Protocol Version/Date: Version 2.0/2022.06.15
Informed Consent Forms: Version6/2022/06/08
Case Report Forms: Version1.0/111.03.02

The above study will be approve by expedited review process of the TMU-Joint Institutional Review Board in meeting #111-07-2(date:2022/07/12), duration of validity is from 2022/06/21 to 2023/06/20, and must be monitored by TMU-JIRB.

According to Ministry of Health and Welfare and the relevant regulations, follow-up procedures and requirements are as below:

1. Continuing Report: Continuous report frequency is every 12 months. The report should be submitted in 2 months before the end of validity (2023-04-20). The trial/study cannot going if the continuous report not approve yet.
2. Final Report: The report should be submitted when the trial/study complete. TMU-JIRB will withdraw the approval of this trial/study if the report is not submitted final report within three months from the date of validity of this trial/study. Also, suspend principal investigator's right of new trial/study application in accordance with TMU-JIRB SOP for three months.
3. Serious Adverse Events(SAE) Report: The investigator is required to report in accordance with "Regulations for Good Clinical Practice" and "Procedures for Reporting Serious Adverse Drug Reactions".

Chairman:

Walter W. Chen, M.D.

臺北醫學大學醫學倫理暨研究倫理委員會
聯合人體研究倫理委員會
Taipei Medical University
Joint Institutional Review Board

The TMU Joint Institutional Review Board performs its functions according to written operating procedures and complies with GCP and with the applicable regulatory requirements.

TMU-JIRB Form(V6/2020/07)

Results

Follow-up bacterial culture quantification (/μL)	Urine Infection Judgment Result A	Electrodes Quantitative results	Reduction in oxidized area	Electrode fragment area determination result	Electrode Judgment Result B
8.6	negative	5.3	2700	0	negative
13.4	negative	5.3	2700	0	negative
15.8	negative	7.1	3900	0	negative
26.8	negative	11.2	6600	0	negative
43	negative	3.5	1500	0	negative
67.7	negative	22.6	8100	0	negative
188.3	positivity	24.4	3000	3000	positivity
890	positivity	13.4	12856	12856	positivity
1599	positivity	5.8	14279	14279	positivity
4372.3	positivity	20.6	21327	21327	positivity
66.4	negative	22.7	16508	0	negative

Conculsion

1.The proposed biosensor successfully detected urine bacterial counts with a sensitivity of about 75 colony-forming units per millilitre (cfu/ml), despite difficulties in detecting extremely low E. coli concentrations.

Both modified and unmodified gold electrodes showed an inversely proportional oxidation peak at 500 mV for p-PAG in E. Coli experiments employing SWV, with the modified electrodes showing greater sensitivity

2.The use of electrochemical techniques resulted in a significant decrease in experimental time, allowing real-time analysis for useful applications in the detection of bacteria in urine.

Acknowledgement

This work was supported by the National Science and Technology Council (NSTC) of Taiwan under grant numbers NSTC 112-2636-E-038 -003, and by jointed founding of Taipei Medical University and Shuang Ho Hospital under grant number 111TMU-SHH-

We would also like to thank the Semiconductor Fabrication Lab of the Consortia of Key Technologies, and the Nano-Electro-Mechanical-System Research Center, National Taiwan University for facility support.

重症腎病團隊

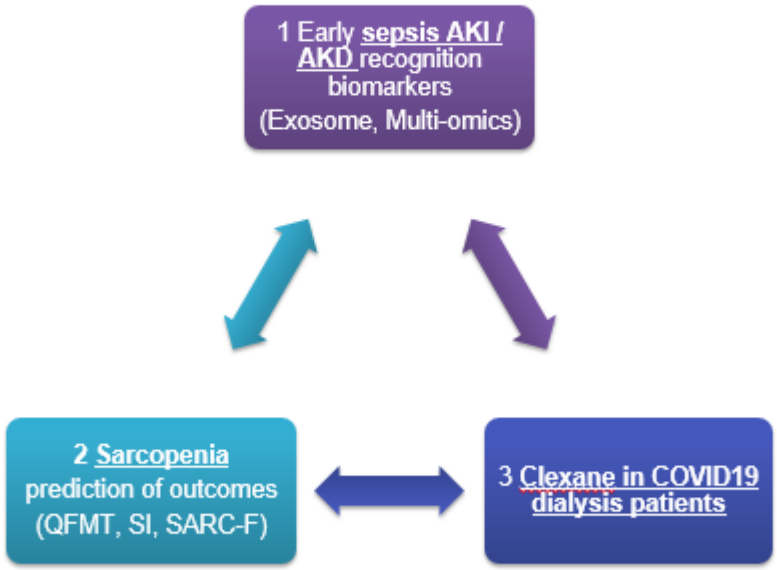
報告人：高治圻

114.5.22

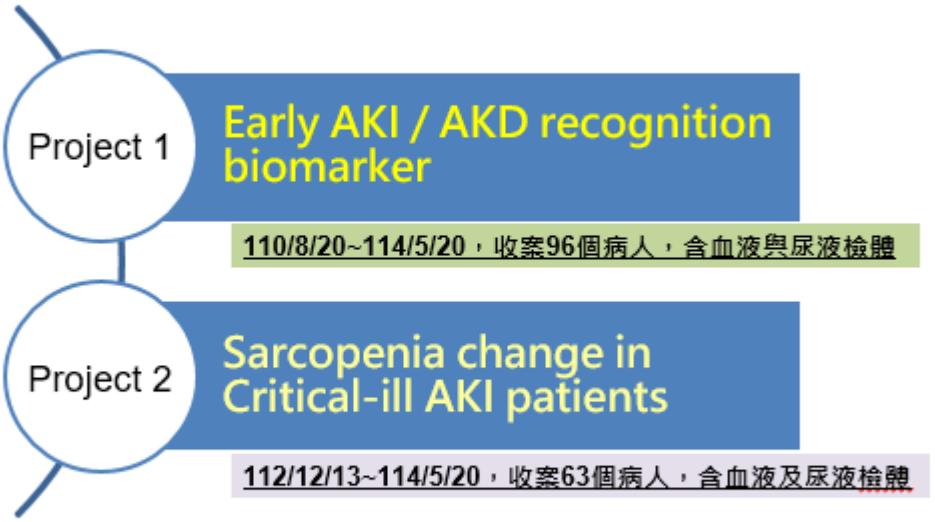
組織架構

醫院	姓名	個人經歷	專長
北醫	高治圻 	腎臟內科主治醫師 急重症透析	Clinical nephrology、Critical care
	陳靜怡 	腎臟內科主治醫師 一般醫學、醫學教育	Clinical nephrology、Critical care、Medical education
	邵月珠 	腎臟內科主治醫師 高齡醫學	Clinical nephrology、Geriatric medicine
萬芳	劉崇德 	腎臟內科主治醫師	Clinical nephrology、Vascular access
	楊韻紅 	腎臟內科主治醫師 急重症透析	Critical-care nephrology
雙和	洪麗玉 	腎臟內科主治醫師 急重症透析	Clinical nephrology、Critical care
	林冠宏 	腎臟內科主治醫師	Clinical nephrology、Critical-care dialysis

Critical-ill patients



Clinical samples collection



Early AKI / AKD biomarker

Characteristic	S-AKI	Sepsis-only	p value
N	29	23	
Male, n (%)	17 (58.6%)	11 (47.8%)	0.576
Age, years	74.0 (59-81)	69.0 (56-77)	0.524
Laboratory data			
Hb (g/dL)	10.0 (8.1-11.3)	10.1 (8.3-11.1)	0.808
WBC (n/μL)	11040 (7920-17480)	10820 (8670-15810)	0.912
Albumin (g/dL)	3.0 (2.5-3.4)	3.0 (2.5-3.2)	0.787
BUN (mg/dL)	60 (28-84)	17 (14-25)	<0.0001
Glucose (mg/dL)	121 (103.8-179.5)	178 (119-217)	0.199
CRP (mg/dL)	11.9 (6.3-24.2)	6.8 (3.6-17.4)	0.125
Cr (mg/dL)	2.1 (1.4-3.8)	0.6 (0.6-0.8)	<0.0001
eGFR (mL/min)	29 (15-45)	107 (97-133)	<0.0001
Infection [c]			
Gram-positive bacteria (%)	6 (21%)	6 (27%)	0.627
Gram-negative bacteria (%)	21 (72%)	15 (68%)	
Gram-positive+negative bacteria (%)	2 (7%)	1 (5%)	
Medical history, n (%) [c]			
Diabetes mellitus	9 (31%)	10 (43.5%)	0.396
Congestive heart failure	4 (13.8%)	2 (8.7%)	0.682
Coronary artery disease	4 (13.8%)	3 (13.0%)	>0.999
Hypertension	21 (72.4%)	14 (60.9%)	0.552
Chronic obstructive pulmonary disease	2 (6.9%)	2 (8.7%)	>0.999
Cancer	3 (10.4%)	2 (8.7%)	>0.999
Liver disease	0 (0%)	0 (0%)	>0.999
Chronic kidney disease (CKD)	13 (46.4%)	2 (8.7%)	0.005
Severity at the time of ICU [b]			
SOFA	5 (4-7)	3 (2-4.5)	0.009
APACHEII	16 (12-19)	13 (8.5-17)	0.099

Under review

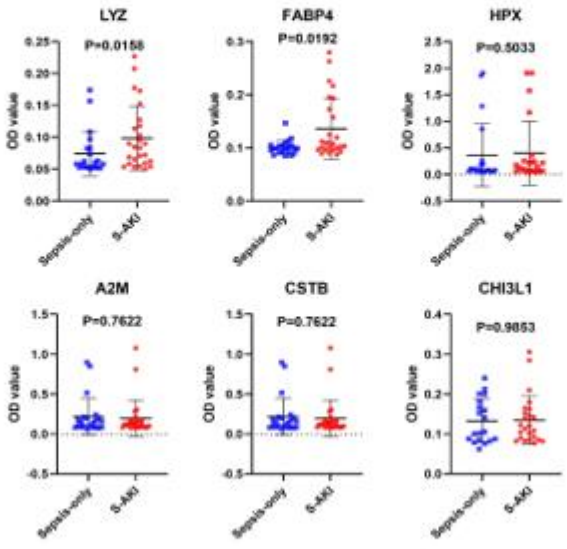
Early AKI / AKD biomarker

Gene name	Fold change (S-AKI/ Sepsis-only) (D)	p value (D)	Fold change (S-AKI/ Sepsis-only) (F1)	p value (F1)	Fold change (S-AKI/ Sepsis-only) (F2)	p value (F2)
FABP4	2.52(↑)	0.0175	45.35(↑)	0.0067	8.88(↑)	0.0100
MYOC	3.03(↑)	0.0183	12.39(↑)	0.0382	10.54(↑)	0.0494
LYZ	9.65(↑)	0.0212	48.28(↑)	5.5125E-4	7.07(↑)	0.0038
PFN1	2.25(↑)	0.0420	4.27(↑)	1.0306E-4	3.80(↑)	0.0126
CFD	16.56(↑)	0.0468	69.76(↑)	0.0228	87.13(↑)	0.0021

Urine EV, proteomics analysis, DEP (differentially expressed proteins)

Under review

Early AKI / AKD biomarker

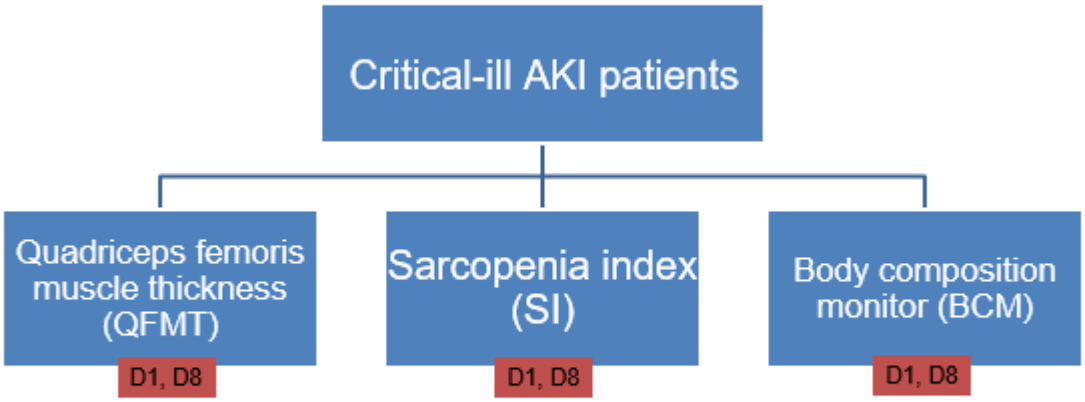


Under review

Project 2

Sarcopenia change in Critical-ill AKI patients

IRB 112/12/13已通過，到114/5/20為止、已收案63個病人

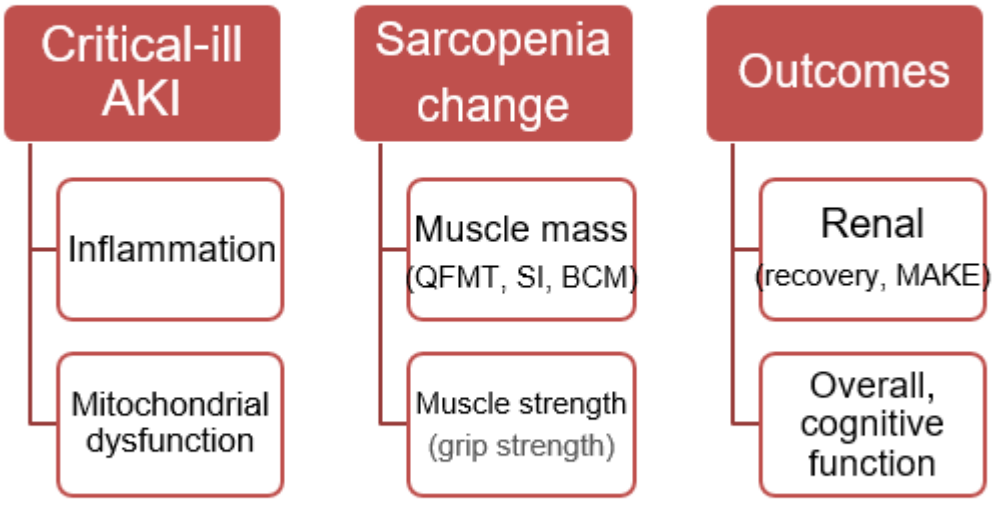


* Gold standard for muscle mass: paraspinal muscle surface area at L4 (CTMSA)

Evaluate sarcopenia in critical-ill to predict outcomes

Project 2

Sarcopenia change in Critical-ill AKI patients



-MAKE (major adverse kidney events)
-QFMT (quadriceps femoris muscle thickness)
-SI (sarcopenia index)
-BCM (body composition monitor)

Project 2

Sarcopenia change in Critical-ill AKI patients

- P: critical-ill AKI patients
- I: sarcopenia (+)
  - SARC-F量表(>=4, <4)
  - Quadriceps femoris muscle thickness (QFMT) D1 D8; Change of QFMT
  - Sarcopenia index (serum Cr / cystatin C)
  - CT→ lumbar skeletal muscle area
- C: sarcopenia (-)
- O: mortality, renal outcomes, CV outcomes

Demographics

	Total (N = 58)	Sarcopenia (N = 27)	Non-sarcopenia (N = 29)	P value
Age, years (mean ± SD)	75 ± 15	82 ± 15	69 ± 11	<0.01
Male (n, %)	36 (62%)	14 (52%)	20 (69%)	0.19
APACHE II score	26 ± 10	28 ± 9	22 ± 10	0.04
SOFA score	8 ± 5	9 ± 6	7 ± 4	0.14
CFS score	5 ± 3	7 ± 2	3 ± 2	<0.01
QFMT (mean ± SD) D1 D8	 2.6 ± 1.1 2.6 ± 1.3	 2.5 ± 1.0 2.4 ± 1.0	 2.6 ± 1.0 2.5 ± 1.1	 0.80 0.83
BMI	23.8 ± 5.0	22.3 ± 4.4	25.1 ± 5.3	0.03
Creatinine	1.9 (1.0-3.0)	2.2 (1.9-3.1)	3.0 (1.6-4.5)	0.44
eGFR	34 (20-66)	25 (16-33)	25 (14-41)	0.89
Albumin	3.1 ± 1.0	3.1 ± 0.5	3.1 ± 0.5	0.89
Lactate	16 (12-39)	17.6 (13.4-67.5)	13.4 (9.1-25.9)	0.02
Outcomes In-hospital mortality	 17 (29%)	 11 (41%)	 6 (21%)	 0.10

Project 3

洗腎病人感染 COVID-19 後使用 Clexane 的安全性與療效分析

研究背景

- COVID-19 is associated with high risk of micro- and macrovascular thrombosis and raised incidence of anticoagulation failure
- Unlike conventional sepsis, anticoagulation plays a key role in management of COVID-19 with a positive impact on survival
- 洗腎病人感染 COVID-19後有較高的血栓與死亡風險, 使用 Clexane預防血管通路阻塞及可能增加出血風險

Blood Rev. 2021: 47: 100761

研究背景

Table 1. Difference in coagulation parameters between COVID-19 and conventional sepsis.

Variable	COVID-19 sepsis	Conventional sepsis
aPTT	N/↑	↑↑/↑↑↑
PT	N/↑	↑↑/↑↑↑
Fibrinogen	↑↑↑/↑↑/↓	↑↑↑/↑↑/↓
Thrombocytopenia	N/↓	↓↓/↓↓↓
FSP	↑/↑↑	↑↑/↑↑↑
D-Dimer	↑↑/↑↑↑	↑/↑↑
Schistocytes on peripheral blood smear	Not present	Frequent

Blood Rev. 2021: 47: 100761

研究目的

- 探討洗腎病人感染 COVID-19使用Clexane對：
  - 血色素變化的影響
  - 血管通路阻塞風險
  - 出血事件風險
- 比較使用與未使用Clexane病人的臨床outcome差異

研究設計與方法

- **研究設計：** retrospective study
- **研究期間：** 2020年05月～2024年12月
- **對象：** 確診COVID-19洗腎病人有/無使用 Clexane
- **資料來源：** 三院臨床資料庫/大同透析資料系統

- P: COVID19(+) hemodialysis patients
- I: IV Clexane
- C: Non-heparin or heparin (during dialysis)
- O: Hb, vascular access failure, bleeding risk

資料收集項目

基本資料	年齡、性別、共病、透析方式
COVID-19資料	住院天數、有無ICU、疾病嚴重程度 (SOFA score)
抗凝血藥物	Clexane使用劑量與天數
抽血數值	連續血色素、血小板、D-dimer、INR
Outcome	出血事件、通路阻塞、死亡率

預期貢獻

- 提供COVID-19疫情下，洗腎病人抗凝策略之安全性資料
- 建立使用Clexane在洗腎病人的臨床參考依據
- 有助於未來面臨高凝血疾病的延伸應用