

## COLLABORATIVE AGREEMENT

This Collaborative Agreement (the "Agreement") is made on **1 JUL 2024**

### **BETWEEN**

- (1) **THE HONG KONG POLYTECHNIC UNIVERSITY**, a university established under The Hong Kong Polytechnic University Ordinance having its principal office at Hung Hom, Kowloon, Hong Kong ("**PolyU**");

### **AND**

- (2) **VINCENT RENALCAN MEDICAL TECHNOLOGY COMPANY LIMITED**, established under the Companies Ordinance in the Companies Registry of Hong Kong, having its principal office at Units 1604-07A, 16/F, Two Harbourfront, 22 Tak Fung Street, Hung Hom, Kowloon, Hong Kong ("**VRMT**").

### **WHEREAS:**

The Parties wish to set out the terms upon which they will cooperate in relation to project entitled "**Exploratory Study on Biochip-based Infection Detection in Peritoneal Dialysis**" (the "**Project**").

### **IT IS AGREED AS FOLLOWS:-**

#### **1. Definitions and Interpretation**

- 1.1 In this Agreement, the following words and expressions shall carry the following meanings save where the context indicates otherwise:

<b>Affiliates</b>	means with respect to any person, any other person directly or indirectly Controls, is Controlled by, or under the common Control of such first person, and shall include subsidiaries and parent companies of the first person and subsidiaries of the parent;
<b>Agreement</b>	means this agreement between PolyU and VRMT;
<b>Appendix</b>	means the appendix of this Agreement;
<b>Business Day</b>	means any day of the year on which banks are open for business in Hong Kong, other than Saturdays, Sundays, public holidays in Hong Kong, and any day on which a tropical cyclone warning signal no. 8 or above is hoisted or remains hoisted in Hong Kong between 9:00 a.m. and 12:00 noon and is not lowered at or before

12:00 noon or on which a "black" rainstorm warning signal is hoisted or remains in effect in Hong Kong between 9:00 a.m. and 12:00 noon and is not discontinued at or before 12:00 noon (all referring to Hong Kong time);

<b>Commencement Date</b>	means 01 July 2024;
<b>Completion Date</b>	means 30 Jun 2026, unless otherwise agreed by the Parties in writing;
<b>Confidential Information</b>	means all information and materials relating to the Project and/or exchanged between the Parties other than information explicitly declared non-confidential by the disclosing Party, and information falling under the provisions of Clause 12.2;
<b>Control</b>	the power of a person to secure that the affairs of another person are conducted in accordance with the wishes of that person: (a) by means of the holding of shares or the possession of voting power; or (b) by virtue of any powers conferred by the constitutional or corporate documents, or any other documents, regulating that or any other person;
<b>Force Majeure Event</b>	means such events as the outbreak of diseases (e.g. SARS), epidemic, pandemic, death of or serious injury to any key member of the research team, acts of God, riots and insurrection, war, acts of terrorism and fire, judicial or government action, acts of civil or military authority, each of which is beyond the reasonable control of the Party whose performance of its obligations hereunder is prevented or delayed by such event;
<b>Intellectual Property</b>	means any copyright, patents, utility models, trademark, design, database right, topography right, trade, business or company names, trade secrets or other propriety rights or any other rights including the registration of such rights and, including any rights or confidential information, trade secrets, know-how, innovation or data;
<b>Inventions</b>	means all discoveries, improvements, inventions, concepts, theories, processes and ideas conceived, invented, created, discovered or developed in the course of or as a result of the Project together with

all related results and information;

**Parties** means the Parties hereto and the expression “Party” shall be construed as any one of them as the case may be; and

1.2 In this Agreement, except where the context otherwise requires:

1.2.1 headings to Clauses are for convenience only and do not affect the interpretation of this Agreement;

1.2.2 a person includes a corporate or unincorporate body;

1.2.3 a reference to any statute or statutory provision shall be construed as a reference to the same as it may have been, or may from time to time be, amended, modified or reenacted; and

1.2.4 words denoting the singular shall include the plural and vice versa and words denoting any one gender shall include all genders.

## **2. Term of Project and Agreement**

The Project shall commence on the Commencement Date and shall be completed on the Completion Date subject to any early termination as provided herein.

## **3. Collaboration Plan**

Subject to the terms of this Agreement, the Parties agree to cooperate in the Project as detailed and mutually agreed in the collaboration plan attached hereto as the Appendix (the “**Collaboration Plan**”) which shall form part of the terms and conditions of this Agreement.

## **4. Management of the Project**

4.1 Both Parties shall appoint the persons set out in Paragraph 1(b)(1) of the Collaboration Plan who shall be responsible for the overall management of the Project and who shall make any final decisions with respect to the direction of the Project as may be necessary from time to time (the “**Project Leader**”).

4.2 PolyU shall not remove or replace the Project Leader appointed without prior written consent from VRMT. Should the Project Leader be unable to continue with the Project for any reasons, PolyU must inform VRMT within seven (7) Business Days from the moment they ascertain this situation and PolyU may appoint another Project Leader with prior written consent from VRMT.

**5. Deliverables of the Project**

The deliverables of the Project shall include those items set out in Paragraph 4(b) of the Collaboration Plan (the “**Project Deliverables**”).

**6. Project Cost**

- 6.1 The estimated cost of the Project and the funding commitments of each of the Parties are set out in Paragraph 3 of the Collaboration Plan.
- 6.2 Any further finance required in order to complete the Project may be raised by such means as the Parties in writing from time to time.
- 6.3 PolyU is not required to return any unspent balance of the Project (“Unspent Balance”) to VRMT after completion of the Project.
- 6.4 Subject to Clause 6.3 above, if PolyU retains the unspent balance, such balance can be spent for research purpose.

**7. Share of Benefits from the Project**

Both parties shall be entitled to exploit the Project Deliverables or any inventions for commercial gain with prior written approval from the other party. Notwithstanding the foregoing, any commercial gain derived from such exploitation shall not be subject to sharing or distribution between the Parties.

**8. Intellectual Property**

- 8.1 Each Party shall retain the sole ownership of the Intellectual Property rights over the materials, information and technology supplied by that Party for the Project. The items so provided shall be used only for the purpose for which they are provided but not otherwise and they together with all copies made therefrom shall remain the property of the Party supplying the same and shall be returned to that Party immediately upon the termination of this Agreement or expiration of the term of this Agreement or expiration of any renewal period.
- 8.2 Both Parties shall jointly own the Intellectual Property rights in the Project Deliverables and Inventions. Each party shall not license or sub-contract the use or assign the Project Deliverables and the Inventions to any third party without prior approval from the other Party.
- 8.3 Both Parties agree to execute all further documents and assignments and do all such further things as may be necessary to register both Parties as the joint owners of any registrable rights.

**9. Representations and Warranties**

Each Party hereto warrants and covenants that:

- 9.1 it has the full right, power, and authority to enter into this Agreement and to render the performance and to grant any rights as set forth herein;
- 9.2 its representative whose signature is affixed to this Agreement has full capacity and authority to bind it to the terms hereof;
- 9.3 the implementation of the Project does not and will not violate any applicable law, rule or regulation, or any proprietary, or other right of any third party;
- 9.4 the committee member(s) or person(s), including the Project Leader, who are appointed and mutually agreed upon both Parties, shall possess the necessary qualifications, competence, and experience; and
- 9.5 both Parties shall use its best endeavors to complete the project stages as set out in Paragraph 4 of the Collaboration Plan before the project completion date.

#### **10. Indemnity**

- 10.1 VRMT and its Affiliates shall indemnify PolyU, subject to the total project cost, and keep PolyU fully and effectively indemnified from and against any and all losses, claims, damages, costs, reasonable charges, expenses, liabilities, demands proceedings and actions which PolyU may sustain or incur, or which may be brought or established against PolyU by any person and which arise out of or in relation to any willful, unlawful or negligent act or omission of VRMT under this Agreement.

#### **11. Infringement**

- 11.1 VRMT warrants and undertakes that VRMT or its Affiliates are the sole owner of all Intellectual Property rights subsisting in all materials, information and technology supplied by it for the Project under this Agreement. VRMT further warrants and undertakes that all materials, information and technology provided by VRMT pertaining to this Agreement will not infringe or violate any copyright, patent, trade secret, trademark, or other proprietary right of any third party. VRMT and its Affiliates shall indemnify PolyU, subject to the total project cost, and keep PolyU fully and effectively indemnified from and against any and all cost, expense or liability whatsoever arising from any claim, action at law or legal proceeding whatsoever that the use of any of the materials, information and technology supplied by VRMT infringes (whether threatened or actual) any Intellectual Property rights of any third party or constitutes unfair competition or passing off, including by reason of any prior rights acquired by such third party.

- 11.2 PolyU shall immediately give notice in writing to VRMT of any challenge to VRMT's Intellectual Property subsisting in all materials, information and technology supplied by VRMT for the Project under this Agreement, or any inadvertent disclosure or unauthorised use of such Intellectual Property which comes to its knowledge. PolyU shall give such assistance as is reasonably requested by VRMT to assist VRMT in the prevention of and enforcing its rights against any such infringement, challenge or unauthorised use.
- 11.3 VRMT shall immediately give notice in writing to PolyU of any challenge to PolyU's Intellectual Property subsisting in all materials, information and technology supplied by PolyU for the Project under this Agreement, or any inadvertent disclosure or unauthorised use of such Intellectual Property which comes to its knowledge. VRMT shall give such assistance as is reasonably requested by PolyU to assist PolyU in the prevention of and enforcing its rights against any such infringement, challenge or unauthorised use.

## **12. Confidentiality**

- 12.1 The Parties acknowledge that the conduct of the Project may require the disclosure of Confidential Information (as defined in Clause 1) between the Parties. It is therefore agreed that each Party shall at all times maintain the secrecy and confidentiality of, and not disclose to any third party or use for its own purpose the Confidential Information. Neither Party shall use such Confidential Information for any purpose except as permitted in this Agreement and shall not disclose such Confidential Information to any third party, except with the prior written consent of the disclosing Party. The directors, officers, employees, consultants and representatives shall be informed by the receiving Party of the confidential nature of such Confidential Information and shall be directed by the receiving Party to treat such information confidentially, and the receiving Party will be responsible for such confidentiality and the consequences of any breach of such confidentiality obligation.
- 12.2 As used in this Clause 12, Confidential Information shall not include information or materials:
- 12.2.1 which were/are in the public domain at the time of disclosure;  
or
  - 12.2.2 which, after disclosure, have become part of the public domain through publication or otherwise, except by breach of this Agreement; or
  - 12.2.3 which the recipient can demonstrate based on written records was already in its possession prior to its disclosure under this Agreement; or



- 12.2.4 which the recipient receives from an independent third party which has the right to disclose it to such Party; or
  - 12.2.5 which are subsequently and independently developed by employees of the receiving Party (as evidenced by the receiving Party's written records) who had no knowledge of the disclosed information.
- 12.3 The obligations of confidentiality set forth herein shall not apply to any information or materials to the extent that:
- 12.3.1 such information or materials are required to be disclosed by order of a court of law, appropriate government agency, or the Hong Kong Exchanges and Clearing Limited and other stakeholders to fulfill the disclosure requirements under the Securities and Futures Ordinance, provided that the recipient informs the disclosing Party as soon as possible and the disclosing Party be given the opportunity, if time permits, to make appropriate representations to such court or authority or take such action as it feels necessary, at its cost, to attempt to secure the information is kept confidential; or
  - 12.3.2 disclosure of such information or materials had been approved in advance in writing by the Parties.
- 12.4 Without prejudice to Clause 12.3, The Parties agree that they shall not make any public announcements, press releases or otherwise publicise, the terms of this Agreement and the Project Deliverables, without first obtaining prior written approval of the other Party (which approval shall not be unreasonably withheld or delayed), provided that nothing herein shall prevent a Party from making use of the Project Deliverables following their publication other than for commercial benefit. Neither Party shall use the name of the other Party in any form of publicity, advertising or promotion without the written approval of that Party (which approval shall not be unreasonably withheld or delayed). Save that nothing in this Clause 12.4 shall prevent a Party from using the other Party's name when properly referencing it in the publications or parts thereof. This Clause 12.4 shall remain in force for a period of seven (7) years after the Completion Date or termination of this Agreement or expiration of any subsequent renewal, whichever is earlier.

### **13. Termination**

- 13.1 Either Party may terminate this Agreement immediately by notice upon the first to occur of the following events:
  - 13.1.1 the other Party commits a material breach of the terms of this Agreement and does not take steps to remedy the breach (if

capable of remedy) within thirty (30) days of notice from the Party specifying the breach and stating the Agreement will terminate if the breach is not remedied; or

13.1.2 the other Party compounds or makes arrangements with its creditors or goes into liquidation (voluntarily or otherwise) other than for the purpose of a bona fide reconstruction or a receiver or manager is appointed in respect of the whole or any part of its business or if any analogous event occurs; or

13.1.3 a Force Majeure Event (as defined in Clause 1) persists or its effects cannot be remedied for a period of more than sixty (60) days.

13.2 Without prejudice to the generality of Clause 13.1, each Party acknowledges and agrees that a material failure to perform the obligations stipulated in this Agreement and the Collaboration Plan shall constitute a material breach of this Agreement.

13.3 Notwithstanding any other provision in this Agreement, this Agreement may be terminated prior to the end of the term of this Agreement at the election of either Party upon the provision of not less than three months' written notice to the other Party.

13.4 Referring to Clause 4.2, If VRMT and PolyU are unable to reach a consensus on the candidate for the Project Leader within fourteen (14) Business Days after PolyU notifies VRMT that the Project Leader is unable to continue with the Project, VRMT has the right to terminate this Agreement.

#### **14. Effect of Termination**

14.1 Upon the expiration or early termination of this Agreement pursuant to Clause 13,

14.1.1 if this Agreement is terminated during any stage of the Project pursuant to Clause 13.3, then the Parties shall be required to fulfil all their respective obligations with respect to the stage of the Project as at the date of notice of termination in accordance with the terms of the Collaboration Plan.

14.1.2 if this Agreement is terminated, monies owed by one Party to another Party in respect of the work done up to the completion of the stage of the Project at the time of termination shall become due and payable within thirty (30) days of the date of termination of the Agreement.

14.1.3 if this Agreement is terminated pursuant to Clause 13, such termination shall not affect any rights or obligations of the Parties which may have accrued prior to termination, nor shall



it affect the continuance in force of any provisions of this Agreement which are expressly intended to continue in force after termination.

14.1.4 notwithstanding anything herein to the contrary, in the event of termination of this Agreement pursuant to Clause 13:

- (a) all the materials, information and technology supplied by PolyU for the Project shall be the property of PolyU and shall promptly be delivered to (if not already in the possession of) PolyU.
- (b) all the materials, information and technology supplied by VRMT for the Project shall be the property of VRMT and shall promptly be delivered to (if not already in the possession of) VRMT.

## **15. General**

- 15.1 None of the provisions of this Agreement shall constitute or be deemed to constitute a partnership between the Parties hereto or any of them and save as provided herein, none of them shall have any authority to bind any of the other Party hereto in any way or to contract in the name of and create a liability against the other Party.
- 15.2 This Agreement shall be governed by and construed in accordance with the laws of Hong Kong and the Parties irrevocably submit to the jurisdiction of the Hong Kong courts for the purpose of enforcing any claim arising hereunder.
- 15.3 This Agreement, and any documents referred to in it, constitute the whole agreement between the Parties and supersede any arrangements, understanding or previous agreement between them relating to the subject matter they cover.
- 15.4 In the event of any conflict between this Agreement and the Collaboration Plan, the terms of this Agreement shall prevail.
- 15.5 Save as otherwise expressly provided in this Agreement neither Party shall subcontract, delegate or assign any of its rights or obligations under this Agreement without the prior written consent of the other Party.
- 15.6 This Agreement may only be amended in writing signed by the duly authorized representative of each of the Parties.
- 15.7 This Agreement, including its Appendix, sets out the entire agreement between the Parties relating to its subject matter and supersedes all prior oral or written agreements, arrangements or understandings between them relating to such subject matter.

- 15.8 Nothing in this Agreement, express or implied, is intended to or shall confer upon any person other than the contracting parties hereto any right, benefit or remedy of any nature whatsoever under or by reason of this Agreement. The Contracts (Rights of Third Parties) Ordinance shall not apply to this Agreement.

## **16. Notices**

- 16.1 All official notices relating to this Agreement shall be in writing and shall be sent by registered mail or by fax or by e-mail to the address of the Party set out as follows:

VRMT:

Attention: Raymond Fu Fu Kwok

Mailing address:

Units 1604-07A, 16/F, Two Harbourfront, 22 Tak Fung Street, Hung Hom, Kowloon, Hong Kong

Tel number: +852 2155-0561

E-mail address: [raymond.fu@vincentmedical.com](mailto:raymond.fu@vincentmedical.com)

PolyU:

Attention: James Cheung Chung Wai

Mailing address:

Room GH137, 1/F, GH Wing, Department of Biomedical Engineering, Faculty of Engineering, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

Tel number: +852 2766-7673

E-mail address: [james.chungwai.cheung@polyu.edu.hk](mailto:james.chungwai.cheung@polyu.edu.hk)

- 16.2 All notices sent in accordance with Clause 16.1 above shall be deemed to have been received four (4) business days after the day of posting if sent by post, or on the next working day after transmission if sent by fax or by e-mail.

Both Parties have executed this Agreement on the date first above written.

SIGNED BY

Director )  
Ir. Raymond Fu Fu Kwok )  
for and on behalf of )  
**VINCENT RENALCAN MEDICAL** )  
**TECHNOLOGY COMPANY LIMITED** )



SIGNED BY

Vice President (Research and Innovation) )  
Prof. Christopher Chao Yu Hang )  
for and on behalf of )  
**THE HONG KONG POLYTECHNIC** )  
**UNIVERSITY** )



## Collaboration Plan for *Exploratory Study on Biochip-based Infection Detection in Peritoneal Dialysis*

### 1. PROJECT DETAILS

#### a. Background

The prevalence of chronic and end-stage kidney diseases has boomed sharply over the decades, driven by the aging population and the rising incidence of diabetes and hypertension. In 2010, the prevalence of receiving dialysis was 296 individuals per million people, while that in Asia was 218 individuals per million people. By 2030, it was estimated that 9.7 million patients worldwide will require renal replacement therapy, resulting in 2.3 million premature deaths because treatments are not accessible.

Peritoneal dialysis replaces some kidney functions by filtering blood inside through the abdomen lining in patients with renal failure. Although patients can do peritoneal dialysis at home, complications, such as infection, fibrosis, and improper fluid exchange are quite common. The infection of the abdominal lining (peritonitis) is a serious complication associated with peritoneal dialysis, which could be due to port-of-entry infection, poor hygiene, or sterile procedure. There were approximately 0.20 cases per patient-year. Frequent screening for these conditions would be necessary to minimize the risk of complications. Nevertheless, there was no instrument or monitoring system that could help track the potential infection or level of microorganism in the dialysis solution in a prompt, remote, and point-of-care setting.

#### b. Personnel

(1) Project Leader: Dr. James Cheung Chung Wai (PolyU)

(2) Committee:

<u>Person</u>	<u>Appointed by</u>	<u>Minimum Weekly Time Commitment to the Project</u>
Duo Wai Chi Wong	PolyU	1
Ling Fung Yeung	Vincent RenalCan Medical Technology Co. Ltd.	1

### 2. PROJECT DESCRIPTION

#### a. Goals and Objectives

- i. Goals
  - To acquire technical skills for designing and producing Biosensor Field-Effect Transistor (Bio-FET) for infection detection.
  - To acquire support from the Hong Kong Government to develop the biochips for infection detection.
- ii. Objectives
  - To review the principles of Bio-FET.
  - To demonstrate feasibility and construct a working prototype of biochip.
  - To conduct preliminary testing on the biochip's performance and reliability.

### 3. FUNDING

The cost of the Project (the “**Project Cost**”) is estimated to be HK\$500,000 which will be financed by VRMT. The direct cost of the project is HK\$434,782 and the overhead (15% of the direct cost) is HK\$ 65,218.

The funding of the HK\$500,000 in cash shall be paid by VRMT to PolyU, through a cheque or bank transfer, in accordance with the following payment schedules:

- (a) HK\$170,000 will be paid within 30 days of the project commencement date, as the first instalment;
- (b) HK\$170,000 will be paid within 30 days after the midpoint of the project duration, as the second instalment; and
- (c) HK\$160,000 will be paid within 30 days after the project completion date, as the final instalment.

PolyU can solely decide on the budget items and application of the Project Cost. PolyU can allocate and reallocate the budget items within the Project, without prior approval from VRMT.

### 4. PROJECT PLAN

#### a. Implementation Plan with Timeline

This Project will last for 24 months and will be divided into the following 2 stages:

Stage 1:

- Review the literature and existing biochip technologies (Bio-FET) for infection detection.
- Identify materials and parameters for the biochip.
- Design the biochip layout and circuit.

Stage 2:

- Fabricate working prototypes of the biochip.
- Perform biochip testing and demonstrate feasibility in infection screening.

**b. Deliverables**

The deliverables of the Project shall include project reports (the “**Project Deliverables**”) and other documents as listed below. Both Parties may agree in writing to include additional deliverables prior to the Completion Date.

- A literature review on biochip technology (Bio-FET) in application for infection detection in peritoneal dialysis.
- A working prototype of the biochip for infection detection in peritoneal dialysis.
- Preliminary testing report of the biochip for infection detection in peritoneal dialysis.
- Action plan for medical device product registration and marketing support.

**c. Roles and Obligations of VRMT**

VRMT will provide intellectual input, feedback to the deliverables, consultancy on the feasibility in manufacturing process, and monitor of the research progress against the proposed timeline set out in Clause 4(a) above.

**d. Roles and Obligations of PolyU**

PolyU will provide intellectual input, primarily conduct the research work, complete the deliverables, and report the findings as described in Clause 4(a) above.

**5. PROJECT IMPACT**

**(a) Evaluation**

The impact of this project will be evaluated by the performance and feasibility of the biochip.

**(b) Benefits**

This project will have multiple benefits for various stakeholders, such as: the home-based peritoneal dialysis patients, who will benefit from a convenient, reliable, and timely screening for infection and fibrosis, which can prevent complications and reduce hospital visits; the healthcare providers, who will benefit from a reduced workload, improved efficiency, and enhanced patient management.

**(c) Dissemination/Publicity Method**

The results and findings of this project will be disseminated after patent application through various channels, such as: academic publications in peer-reviewed journals and conferences; presentations and demonstrations at industry events and exhibitions; media releases and interviews with local and international press.



## 6. RELEVANT EXPERIENCE

The research team at the Department of Biomedical Engineering of The Hong Kong Polytechnic University (PolyU) demonstrated proficient in multidisciplinary fields, including biotechnology, bioinstrumentation, biomechatronics, medical imaging, biosensing, AI and IoT. The department was home to the micro-device and biosensor laboratory, nanobiotechnology laboratory, and biomedical instrumentation laboratory, all of which were outfitted with the required tools and equipment to facilitate fabrication, characterization, and testing. The team also received full support from the Industrial Centre of PolyU.

The collaborator Vincent RenalCan Medical Technology Co. Ltd., is a joint venture, jointly established and directed by Vincent Medical Holding Limited (Hong Kong) and RenalCAN Incorporated Company (International, Canada). Vincent Medical Holding Limited (1612.HK) headquartered in Hong Kong and is one of the leading medical device companies around the globe, developing devices on respiratory care, anesthesiology, and rehabilitation. RenalCAN Incorporated Company is one of the largest leading healthcare and biotechnological companies dedicated to the development of innovative products for the treatment of kidney disease, including dialysis machine and drugs. The track record of the collaborator could facilitate the dissemination and upgrade of the current technology.

