【Section 1】

NTU principle investigator	
Name (last name, first name)	Hou, Yung-Te
Position	Associate professor
Faculty/Department	Department of Biomechatronics Engineering

KU principle investigator	
Name (last name, first name)	Osafune, Kenji
Position	Professor
Faculty/Department	Center for iPS Cell Research and Application (CiRA)

Type(s) of funding applied
☐ Funding Type 1 (General Funding) only
☐ Funding Type 2 (ECR Funding) only
☐■Both Funding Type 1 (General Funding) and Type 2 (ECR Funding)

【Section 2】

Project title

Application of HGF/heparin-DLM patch onto APAP/CCl_4 induced hepatocytes and iPSC-derived non-alcoholic fatty liver cells.

Period of project

From dd/mm/yy to dd/mm/yy	**ECR1:** From 28/06/2023 to 17/12/2023

Summary of the project (approx. 100 words)

The objective of this project is to apply HGF/heparin-DLM patch and DLM-based nanoparticles with tannic acid onto iPSC-derived non-alcoholic fatty hepatocytes. During the NTU-KU joint program, the ECRs are first taught how to maintain and induce iPSCs. Once the iPSCs have become hepatocytes, the ECRs were then taught how to induce them into fatty hepatocytes to achieve a NAFLD in vitro model. The hepatic functions of the hepatocytes were investigated once the HGF/heparin-DLM patch and the nanoparticles were applied. From the results, the nanoparticles seem to have a better therapeutic effect on fatty hepatocytes, but further investigations should be done in future studies. Currently, we are inviting Professor Osafune to visit Taiwan, and give us an introduction on iPSCs and the field of his studies. Because most people in Taiwan may not be familiar with iPSCs, we believe that this seminar/workshop would be very informative for students as well as professors. Thus, a lot of professors are welcomed to join this seminar to exchange valuable ideas and research outcomes.

In conclusion, we believe that this project corresponds well with the program's focus on promoting cooperation between Taiwan and Japan in liver-related research. Moreover, we anticipate substantial opportunities for making significant progress in public health within both nations through this initiative.

Photographs with captions

*Please submit digital files (such as JPEG or GIF files) of the photographs used in your report as attachments. The size of each image should be at least 4MB, so that it can be used for printed materials. Please ensure that none of the photographs submitted will cause any issues relating to portrait rights.

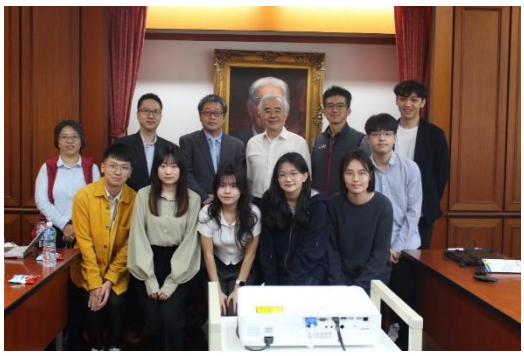

Figure1. The photos were taken during the Joint Symposium between National Taiwan University (BIME) and Kyoto University (CiRA), which was held at NTU (BIME) on December 13th, 2023.

URL at which project outcomes can be viewed (Optional)

*E.g. workshop notifications/programs/reports, evidence of academic papers published or otherwise made available, etc.

URL: https://reurl.cc/j3y9r1
(joint-symposium-booklet)

【Section 3】

Visiting ECR1*	
Name (last name, first name)	Lin, Yong-Heng
Position	Master candidate
Faculty/Department	Department of Biomechatronics Engineering
Period of Stay (From dd/mm/yy to dd/mm/yy)	**ECR1:** From 28/06/2023 to 23/08/2023

Visiting ECR2*	
Name (last name, first name)	Wu, Ting-Yi
Position	Master candidate
Faculty/Department	Department of Biomechatronics Engineering
Period of Stay (From dd/mm/yy to dd/mm/yy)	**ECR2:** From 28/06/2023 to 23/08/2023

Host researcher*	
Name (last name, first name)	
Position	
Faculty/Department	

*Please complete if the host researcher is different from the KU principal investigator.

Achievements and outcomes of ECR stay (approx. 100–250 words)

ECR1:

During my research exchange at Kyoto University, I had the unique opportunity to delve into the realm of stem cell biology, specifically focusing on the cultivation of induced pluripotent stem (iPS) cells and their differentiation into fatty hepatocytes. The experience was both enriching and intellectually stimulating as I worked alongside accomplished researchers who guided me through the intricate processes involved in manipulating these versatile cells. Kyoto University's state-of-the-art facilities provided an ideal environment for hands-on learning, allowing me to master the techniques required for the successful culture of iPS cells. Witnessing the transformation of these cells into hepatocytes, particularly those with a fatty phenotype, provided valuable insights into the potential applications in regenerative medicine and the study of liver diseases. The collaborative and innovative atmosphere at Kyoto University not only expanded my technical skills but also broadened my understanding of the ethical considerations and societal implications associated with stem cell research. Overall, my research exchange at Kyoto University was an unforgettable journey that deepened my appreciation for the intricacies of cellular biology and inspired a lasting passion for advancing scientific knowledge in this dynamic field.

ECR2:

It was a tremendous honor to participate in an exchange program within CiRA, an exceptional laboratory renowned for its pioneering work with iPSCs. Throughout this program, I had the privilege of witnessing firsthand the marvels of iPSCs, from inception to completion. CiRA is equipped with advanced equipment and resources, providing the researchers a supportive and innovative environment to conduct their researches. Not to mention, the people in CiRA were all academically accomplished, highly educated, yet humble and passionate about their studies. It is such a unique experience to work along these scholarly peers, and this made me realize that there are a lot of people in the world who are very passionate and determined in saving people's lives through these researches. To be able to get into close touch with iPSCs definitely broaden my understanding on cellular studies. By observing how iPSCs differentiate into different cells just by adding different substances to the medium made me realize that this definitely deserves a Nobel prize. The times in CiRA were surely inspiring, and it definitely would be an experience I'll never forget.

Photographs with captions

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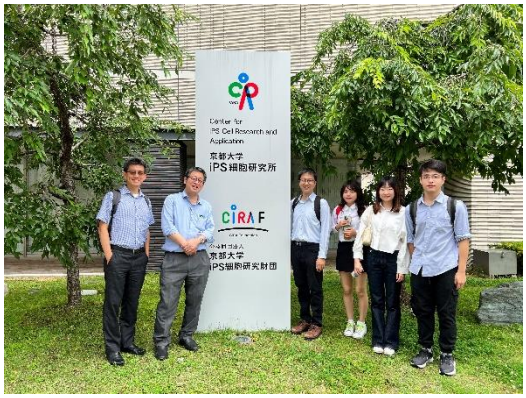

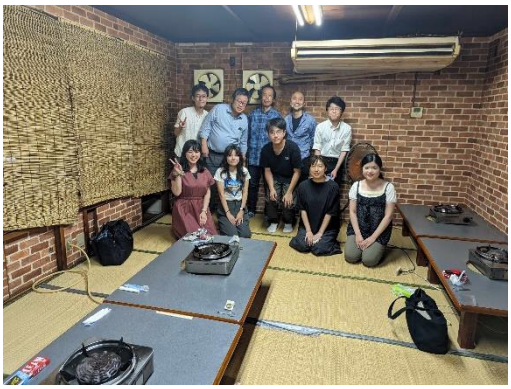

Figure2. The photos were taken during the visit in Kyoto Univesity (CiRA) from June 27-30th, 2023.

URL at which project outcomes can be viewed (Optional)

*E.g. workshop notifications/programs/reports, evidence of academic papers published or otherwise made available, etc.

URL:

***If there are multiple ECRs, please copy and paste this section and complete them for each ECR.**