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平成 30 年度研究助成（海外渡航費）研究成果報告書

平成 30 年 12 月 4 日

公益財団法人遺伝学普及会 代表理事 殿

貴財団より助成のありました研究の成果を下記のとおり報告します。

海外渡航者氏名 高田 望

出席学会等名称	Frontiers in Organoid Medicine Symposium
開催場所	Cincinnati Ohio, USA
開催期間	平成 30 年 10 月 18 日 ～ 平成 30 年 10 月 19 日
渡航期間	平成 30 年 10 月 17 日 ～ 平成 30 年 10 月 20 日

研究成果の概要

Frontiers in Organoid Medicine Symposium held in Cincinnati Ohio, USA is a first international conference specific for accelerating academic-industry collaborations in fields relevant to stem cells, organoids, and bioengineering. The participants including presenters from worldwide are working on mammalian organoid models, especially that of the human and patients. Backgrounds they have, for instances, are stem cell biology, bioengineering, biochemistry, molecular biology, and genetics. The best advantage of this conference is that the findings they presented in there will be immediately shared with people from biotech and pharmaceutical companies to make new ideas come true for the applicable science and clinical setting. That being said, their motivation is to facilitate the three dimensional (3D) organ technologies to better understand specific pathogenesis in individual organs, using pancreas, kidney, lung, cardiac, neural and gastro-intestinal organoids. Ultimately, a risk of difficult human diseases to treat will be minimized or those diseases can be cured in the future.

A title I presented in one of the oral presentations is “Molecular identification and cell-type specific signatures of optic vesicle primordium at a single cell resolution”. In Guillermo Oliver lab I belong to, one of our major goals is to understand cellular and molecular events behind a retina specification and morphogenesis. We have an in vitro stem cell model to probe essential mechanisms as well as an in vivo model to use powerful mouse genetics. This genetic model can be used to validate in vitro discoveries and compensate some other factors that lack in vitro. The talk I gave is about a specific project to identify novel cells in optic tissues, particularly the mouse retina at the molecular and cellular level, and reveal their function in the formation of the mammalian retina. An approach we used was the combination of eye organoid technology and single-cell RNA sequencing to highlight genes from individual cell types. There are quite a few questions from the audiences about what we discovered as follows: what are the specific function of subtypes? how do specific genes generate them? how do we control those cells in vitro and in vivo to be able to apply to the clinical application? These feedbacks gave me useful hints to move my project forward. Hopefully, our team including our collaborators will provide some key mechanisms common in the other organ models if our team can solve some of the questions raised by the participants. And, expected findings will have an impact on our understanding of the formation of the eye tissues and related organs, and knowledge studied in the project can be useful for people working on the other fields.

The other good things I experienced as follows: before and after the conference, I was able to attend a speaker’s reception and visit a couple of labs to see their working environment in Cincinnati children's hospital. Additionally, I could reach out to many researchers who are working on the same fields and talk about future collaboration by sharing preliminary data. It gives me many thoughts for my future directions in science. Overall, I experienced much in there to facilitate my ideas and projects. I wouldn't make it in the conference without a support from Association for Propagation of the Knowledge of Genetics, Japan. I appreciate the support.