

京都大学若手人材海外派遣事業 スーパージョン万プログラム
研究者派遣プログラム

英文報告書

提出日：平成 27 年 9 月 29 日

1. 渡航者（日本語）			
氏 名	園下 将大	採択年度	平成 25 年度第 1 回、平成 26 年度
部 局	医学研究科	電 話	
職 名	准教授	メー ル	
研究課題名	副作用を大幅に低減した次世代抗がん薬の創出		
海外渡航期間	平成 25 年 9 月 1 日～ 平成 27 年 8 月 30 日		
渡航先 (英語表記)	国名：アメリカ合衆国 大学等研究機関名：マウントサイナイ医科大学 研究室名等： Department of Developmental and Regenerative Biology 受入研究者名： Dr. Ross Cagan		
2. 渡航の報告（英文）			
渡航先の研究環境、研究者との交流、研究発表の状況等、渡航中の滞在経験について英語(500～1000語)で記述して下さい。受入研究者と撮影した写真や研究発表で用いた図等について、可能な範囲で別添として提出して下さい。ページ数については増加してもかまいません。			
I have been involved in cancer research at Kyoto University for about twelve years, particularly focusing on the mechanisms of cancer development in digestive organs. After finding out some druggable targets, I got interested in developing therapeutics based on those information. In this program, I joined the Ross Cagan' s lab at Icahn School of Medicine at Mount Sinai, New York. The lab has been working on the development of anticancer drugs for a decade using <i>Drosophila</i> (fruit flies). One of my particular interests during this stay was to create a novel platform to develop anticancer drugs with negligible toxicity. This is because one of the biggest problems in treating cancer patients has been the toxicity that can interfere the treatment for the patients. Ross granted the idea and supported me a lot in promoting this project for the entire period of my stay. For instance, soon after the project started I realized that the project could be further accelerated if I could work together with specialists who had expertise such as organic chemistry and computation that I did not have. Ross immediately coordinated a meeting to start a collaboration with such scientists at Mount Sinai; Dr. Arvin Dar, a great medicinal chemist, and Dr, Avner Schlessinger, a leader in the computation chemistry. Thanks to the collaboration, we were able to get a lot of inspiring, impressive data based on which we are preparing three manuscripts to be published. In one of them, we are going to describe a novel rational way to make a novel anticancer drug with much better therapeutic profile due to lower toxicity than existing drugs. We chose Sorafenib, a multikinase inhibitor that has been already approved for several types			

of cancers, as a starting drug to be derivatized. It has been known that Sorafenib has lots of side effects such as diarrhea and skin rash with only limited efficacy. Eventually we could make a novel effective compound using fly genetics combined with organic chemistry and in silico prediction (Sonoshita et al). In another paper, we will show several ways to figure out novel chemical space that shows anticancer activity (Ung, Sonoshita et al). Through this collaboration I learned that we could promote our research much quicker and more fruitful by bringing different expertise together.

I also had a chance to see how Ross was running the lab. He was also a dean in the department and a director of CPCT (Center for Personalized Cancer Therapeutics), an institution at Mount Sinai, meaning that he had only limited amount of time to spend in the lab. He was trying to talk with people in the lab as much as possible whenever he was available. By doing it, he could understand what problems we had and make suggestions for us how to solve such issues. I was sure that these conversations were helping both Ross and us a lot keep the lab a great place to concentrate on research.

Overall, I believe that these experiences were really helpful for me to learn how to stimulate science in the lab. They should be immediately useful for my research carrier at Kyoto University hereafter, which contributes to the development of Kyoto University. I would really appreciate that the program and the Graduate School of Medicine had given me such a wonderful and valuable opportunity.



With Dr. Ross Cagan, an amazing mentor (June, 2014).