Dr. Cameron Turtle: the future of immunotherapy is bright!

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Expert's introduction

Dr. Cameron Turtle (*Figure 1*) currently serves as the Associate Professor at the Washington University School of Medicine and an Attending Physician on the Fred Hutch Bone Marrow Transplant Program and the Immunotherapy Service at the Seattle Cancer Care Alliance (SCCA). Dr. Turtle researches into the development of therapies that redirect immune T cells to attack cancer cells. He also examines the approaches to boost recovery of the immune system and to fight cancer using T cells after hematopoietic stem cell transplantations and chemotherapy.

Dr. Turtle's Fred Hutch laboratory is formulating approaches to engineer T cells genetically to target components of the cancer cells. He superintends clinical trials of CAR-modified T cell therapies for patients with hematologic malignancies that aim at learning how to control cancer using the immune system and improving the T cell immunotherapy.

Figure 1 Dr. Cameron Turtle receiving our interview at Hong Kong International Oncology Symposium (HKIOS) 2017.

Figure 2 Dr. Cameron Turtle: the future of immunotherapy is bright (1).
Available online: http://www.asvide.com/article/view/25921

Editor's note

Cancer is obstinate. As early as a hundred years ago, the medical community first advocated the use of the body's immune system to fight this tenacious disease. Till modern days, immunotherapy has gradually arisen to be one of the important approaches to manage cancer. As a hematology oncologist, Dr. Cameron Turtle is harnessing immunotherapy, with the use of T cells—a type of white blood cells, to effectively and consistently combat cancer.

Interview (*Figure 2*)

ATM: What makes you interested in developing therapies that redirect immune T cells to kill cancer cells?

Dr. Turtle: It's been recognized many years that the immune system plays a role in controlling cancers. Over 100 years ago, there were reports of the immune system being used to actually treat cancers. The history is one of the big things. My works constantly involve hematopoietic stem cell transplantation for patients with leukemia. Some studies that were done 20–30 years ago showed that T cells in transplant graft played an essential role in controlling disease relapse. That triggered my interest in trying to use T cells to treat cancer.

ATM: What is the significance of your latest findings about the CAR-modified T cell therapies?

Dr. Turtle: Working with the Fred Hutchinson Cancer Research Center, we have done clinical trials in patients

with acute lymphoblastic leukemia, non-Hodgkin lymphoma and chronic lymphocytic leukemia. They are all B cell malignancies that express a molecule code CD19 on their surface, with which we target with the CAR-T cells. We found that patients with acute lymphoblastic leukemia have very high complete response rate with clearance of disease in the bone marrow (over 90%). The figures for patients with non-Hodgkin lymphoma and chronic lymphocytic leukemia are lower. Elimination of lymph node disease is more difficult than acute lymphoblastic leukemia with about 70–80% of patients responding and complete responses being approximately 40–50%.

ATM: What challenges did you encounter during the study?

Dr. Turtle: The biggest challenge has been in developing a new therapy. We have had to learn how to manufacture the cells, regrow the cells around the arteries, the logistics of manufacturing the cells and how we deliver the cells to patients. Timely manner in working at how that fits in with other treatments is another major issue. All in all, these therapies have some significant side effects, like releasing neurological toxicity in the vast majority of patients, which are almost completely reversible, but it has taken some time for us to work out the best and safest ways in giving the T cells. Fortunately, in the past few years, we have learned a lot and the therapy is now a lot better than we first started.

ATM: How do you see the development of immunotherapy in the next decade?

Dr. Turtle: I think the future of immunotherapy is bright. We are at this point in time that new drugs like checkpoint blockade came out in the last decade, and that immunotherapies like CAR-T cell therapy are showing significant effects. Over the next decade, I think we should look at how we can improve the use of these therapies. We are now at the first generation of effective CAR-T cell therapy. In the next group of trials, we will be looking at strategies in improving the way CAR-T cells work, how they deliver, the combination therapies of CAR-T cells, checkpoint blockade and other drugs. Even though there is still a long way to go in order to maximize the potential of immunotherapy, I think the future of it is very bright.

ATM: As an active oncologist, professor and researcher, how do you strike a balance between them?

Dr. Turtle: I am very fortunate that the institution I work in is in favor of the style of treating patients and running lab research at the same time combining the two-in-two translational mechanism. We have the institutional support by getting grant to do the research. For many years, it's been difficult to get papers in doing translational research, but there is increasing interest in that now, as people start realizing the value of bench to bed and bed to bench methods of research.

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Footnote

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