



## CELL DESIGN LABS' SCIENTIFIC FOUNDER CO-AUTHORS REVIEW ARTICLE ILLUSTRATING POWER AND POTENTIAL OF ENGINEERED HUMAN CELLS TO TREAT CANCER

### ***-- Authors Discuss the Opportunities and Challenges of Using Living Cells as Therapeutic Devices to Intelligently Sense and Treat Complex Diseases --***

EMERYVILLE, Calif. – February 9, 2017 – Cell Design Labs, Inc. today announced that its scientific founder, Wendell Lim, Ph.D., co-authored a comprehensive review article on engineered cell therapies entitled, “The Principles of Engineering Immune Cells to Treat Cancer” in the current issue of the peer-reviewed journal *Cell*.

In the article, Dr. Lim, Professor and Chair of the Department of Cellular and Molecular Pharmacology at UC San Francisco (UCSF) and an Investigator of the Howard Hughes Medical Institute and co-author Carl H. June, M.D., Richard W. Vague Professor in Immunotherapy at the University of Pennsylvania Perelman School of Medicine, summarize the lessons from clinical experience with engineered immune cells to date and lay out a roadmap for the development of next generation therapeutic cells.

“While engineered immune cells are poised to revolutionize the field of cancer therapy, excitement for T cell therapeutics remains tempered by some fundamental challenges: safety, durability, and a lack of clinical efficacy in solid tumors,” commented Dr. Lim. “However, rapid advances in the fields of synthetic biology and genome engineering are now providing the toolkit we need to engineer smart T cells that can comprehensively address the diverse challenges in effectively attacking tumors. T cells, thus, have the potential to be the first true systems therapeutics – agents that tackle the multifaceted problems posed by cancers.”

The article highlights the lessons learned from pioneering clinical studies using tumor infiltrating lymphocytes (TILs) and CAR-T cells. This experience shows that multidimensional challenges must be addressed to develop T cell therapies that are effective against solid tumors: the precision of tumor recognition improved to avoid toxic cross reaction with normal tissues; T cell persistence and proliferation boosted; efficient trafficking to tumors improved; mechanisms to overcome the immunosuppressive tumor microenvironment developed; and user control over the T cells improved. Importantly, the authors lay out a roadmap for how an expanding synthetic biology toolset for programming immune cells could be utilized to address these challenges, leading to the next generation of therapeutic T cells. The full review article can be found [here](#).

“Wendell and Carl are pre-eminent leaders in the field of CAR-T and engineered immune cell therapies,” said Brian Atwood, Co-Founder, President and CEO of Cell Design Labs. “With technology exclusively licensed from UCSF, Cell Design Labs is assembling the first comprehensive cell engineering toolkit that allows us to program T cells that can be precise, powerful, and safe.

Key modules in this toolkit include our proprietary Throttle™ switch and synNotch™ receptor technology platform that allows us to flexibly engineer what T cells sense and how they respond.”

Mr. Atwood continued, “We are advancing our first engineered CellBot™ therapy through preclinical studies and expect to begin a Phase 1 study in 2018. We believe our therapies, engineered to elicit very precise cellular responses, have the potential to be significantly more potent, specific and safe than the current generation of T cell therapeutics.”

### **About Cell Design Labs, Inc.**

Cell Design Labs is a biotherapeutics company pioneering breakthrough science to develop disruptive cell-based therapies. Based on innovative research from Dr. Wendell Lim’s lab at the UCSF, Cell Design Labs leverages the power of the body’s immune system to develop smart, living therapies with the capability to treat our most challenging diseases with unprecedented power, precision, safety and durability. Using its proprietary technology platform for custom cell engineering, Cell Design Labs will develop its own portfolio of anticancer therapies as well as create partnerships with leading oncology companies. Initially focused on cancer, including both hematologic and solid tumors, this broad technology may also have applications in other complex diseases such as autoimmune and degenerative disorders. To learn more about Cell Design Labs, please visit our web site at: [www.celldesignlabs.com](http://www.celldesignlabs.com).

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