
Anti-Notch1, OMP-52M51: A New Cancer Therapeutic to Reduce CSC Frequency

Grant Award Details

Anti-Notch1, OMP-52M51: A New Cancer Therapeutic to Reduce CSC Frequency

Grant Type: Disease Team Therapy Planning I

Grant Number: DR2-05352

Investigator:

Name:	Timothy Hoey
Institution:	OncoMed Pharmaceuticals, Inc.
Type:	PI

Disease Focus: Cancer

Award Value: \$65,120

Status: Closed

Progress Reports

Reporting Period: Year 1

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Grant Application Details

Application Title: [REDACTED]: A New Cancer Therapeutic to Reduce CSC Frequency

Public Abstract:

A important benefit of the tremendous progress in stem cell research has been the recognition that stem cell pathways are frequently re-activated in cancer cells conferring stem cell-like properties on a subset of tumor cells. This understanding is the basis for the emerging field of cancer stem cell (CSC) research.

The cancer stem cell paradigm is a new approach in cancer research that has profound implications for new anti-cancer drug development. It is now widely understood that tumors are comprised of different cell types. Experimental evidence has accumulated from many laboratories indicating that different tumor cells vary dramatically in their ability to grow a new tumor. The tumor cells capable of re-growing a new tumor are the CSCs, whereas the bulk of the tumor cells lack this capacity. This property of seeding new tumor growth is analogous to the growth of distant metastases that is a major cause of mortality in cancer patients. The highly tumorigenic cells CSCs share certain properties with normal stem cells, but have accumulated cancer causing mutations clearly making them abnormal. It is now widely appreciated that many current therapies fail to effectively target the CSC population, and thus the CSCs mediate recurrence of disease after treatment. New drugs that target CSCs to kill them or cause them to differentiate into less dangerous, non-tumorigenic cells have the potential to provide significant benefit to patients and to dramatically improve cancer treatment.

This project is focused on developing a new anti-cancer drug that has been shown to effectively block CSC self renewal in a variety of common types of cancer. New therapeutic agents that are effective in targeting cancer stem cells may reduce metastases and relapse after treatment thus providing a chance for improved long term survival of cancer patients. In the first phase of the project, we will complete the manufacturing of the drug for subsequent use in clinical trial and also execute safety studies that are necessary before initiating clinical trials. Next, we will test the safety of the drug in patients in Phase 1 clinical trials. Lastly, we will determine the efficacy in breast cancer patients in Phase 2 trials. This project will utilize innovative clinical trial designs to identify the patient populations most likely to benefit from treatment with this new treatment. We intend to focus our clinical testing on an important subset of women with breast cancer for whom effective therapies are currently lacking. Our project is a unique partnership of industry and academic researchers and clinicians dedicated to bringing new medicines to patients most in need of effective therapy.

Statement of Benefit to California:

This project will benefit the state of California and its citizens in several significant ways. The goal of the work funded by this grant is to develop a new cancer treatment. This agent attacks cancer stem cells - the most dangerous type of tumor cells because they have the unique ability to resist many current therapies and re-grow and metastasize to distant sites in the body. The funds from this study will be used to support innovative drug development and clinical testing in women with advanced breast cancer. Thus, this therapy will benefit cancer patients with a critical need for new treatment options. We have observed that agents that reduce cancer stem cells in tumors also inhibit the spread of metastatic disease. Patients with advanced cancers which have disseminated to distant organs typically require high cost hospital stays. Our new treatment is intended to ameliorate the incidence and relapse of metastatic cancer, thus reducing the requirement for hospitalization and associated specialized care for this class of advanced cancer patients.

In addition to the medical benefits of this project, funds from this grant will create and maintain high quality jobs in the state of California. California has been a recognized leader in biomedical research over the past several decades because of its excellent academic institutions and innovative companies attracting researchers from all over the country and the world. Many companies have made significant investments in establishing research facilities in California. Thus, biomedical research generates significant economic activity in the state. Continued leadership in the life sciences field relies on being at the forefront of cutting edge fields that are focal points of research interest and investment. Novel anti-cancer therapeutics, in general, and cancer stem cell-based therapeutic approaches, in particular, are excellent examples of important and innovative directions in drug development. CIRM will provide an important source of funding to support cancer stem cell therapeutics which hold the promise of becoming breakthrough medications in cancer treatment.

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