



January 16, 2017

**RE: DISC2-09645:** Dynamic scaffolding system to enhance lineage-specific differentiation and downstream functionality of induced pluripotent stem cells

Dear ICOC Members:

This letter respectfully requests that the ICOC members consider and support funding for our resubmitted Discovery Quest proposal DISC2-09645. The proposal received a median score of 84 with a standard deviation of 5, statistically well within the score of 85 that five other "funding-recommended proposals" received.

From the available information, our submission appears to be one of the few that proposed to develop a "tool candidate" to enable the broad use of stem cells for patient care. Our proposal aims to develop/optimize a stem cell culture system to improve currently inefficient stem cell differentiation methods thereby enabling the production of various types of therapeutic cells in high quality and quantity in a cost-effective manner. Our preliminary data showed an impressive 8-fold increase in the yield of differentiated pancreatic endodermal cells from human pluripotent stem cells, even when our bioengineering approach was not optimized. We expect to achieve even greater improvement in differentiation efficiency with the proposed system.

We appreciate that the reviewers from the past two cycles regarded our proposal to be transformative and innovative with comments such as "The biomaterials aspect is state-of-the-art," and "The proposal presents high quality bioengineering." As technological advances have been driving forces for breakthroughs in stem cell research, the strongest merit of our proposal lies in the development of a novel technology that is applicable to the treatment of various diseases/syndromes, currently pursued in other "therapeutic candidate" grants. We anticipate that the success of our "tool candidate" proposal would enable therapeutic studies to enhance their efficacy by overcoming a major bottle-neck in the shortage of clinically relevant cells for treatments. Therefore, our project aligns well with the agency's mission to accelerate the development of stem cell treatments in an efficient manner for the cure of many diseases/syndromes.

Thank you for considering this proposal for funding.

Sincerely,

A handwritten signature in black ink that reads "Jin Nam".

Jin Nam, PhD  
Assistant Professor, Department of Bioengineering  
University of California – Riverside