

**CIRM Scientific and Medical Research Funding Working Group
Biographical information of candidates nominated to serve as
Alternate Scientific Members of the Working Group**

Chad A. Cowan, PhD

Dr. Chad Cowan is an Assistant Professor in the Department of Stem Cell and Regenerative Biology at Harvard University. He is a Principal Faculty at the Harvard Stem Cell Institute, and was named a Stowers Medical Investigator in 2006. Dr. Cowan received his BA and BS, with honors, from Kansas University in 1995 and 1996 and a PhD from the University of Texas Southwestern at Dallas. He subsequently completed a postdoctoral fellowship with Professor Douglas Melton at Harvard University.

Dr. Cowan's research is focused on understanding the contribution of environmental and genetic factors in the development of disease, using recent innovative technologies in human embryonic stem cells. It has been extremely difficult to discern the contribution of either genetic or environmental factors in the development of the more common complex diseases, such as type-1 diabetes, Parkinson's and cardiovascular disease. Complex interactions between genes and the environment have made it particularly difficult to develop accurate models for the sporadic and so called multifactorial forms of human disease. While animal models exist for several diseases, they usually represent a rare, 'single-hit', genetic form of a disease that may not completely or accurately reflect the human disorder nor recapitulate the influence of environmental factors in the development of the pathological state. To help overcome these technical difficulties and expand our understanding of these and other complex diseases, Dr. Cowan's lab is building *in vitro* models using human embryonic stem cells and human induced pluripotent stem cells, in which genetic and developmental aspects of the disease can be controlled.

Joel Voldman, PhD

Dr. Joel Voldman is an Associate Professor of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology. He received a BS in Electrical Engineering at the University of Amherst, and an SM and PhD in biological and cellular MEMS (microelectromechanical systems) at MIT. Following post-doctoral work with Dr. George Church at Harvard Medical School, Dr. Voldman was recruited to the Electrical Engineering and Computer Science Department at MIT in 2002.

Dr. Voldman's laboratory develops and prototypes technologies to characterize biological systems, using techniques in electrical engineering, bioengineering, surface science, fluid mechanics and mass transport. Current technologies being developed in his laboratory include microscopy-based systems to sort cells based on complex phenotypes, and unique microfluidic cell culture systems that will examine how extrinsic factors control stem cell phenotype. Dr. Voldman's interdisciplinary research aims to enhance scientists' ability to extract new information from cellular processes.