



OPEN SCIENCE BIG IMPACT



The Allen Institute for Cell Science is a research organization dedicated to understanding and modeling cells: the fundamental units of life.

WHY AN ALLEN INSTITUTE FOR CELL SCIENCE?

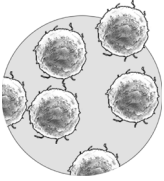
- There are currently no integrated, predictive models of cell behavior.
- The Allen Institute for Cell Science is generating comprehensive, dynamic image data on cellular behavior and creating functional models of how cells perform their roles.
- This will improve our understanding of human cell behavior in health, and ultimately disease.

HOW ARE WE DOING IT?

- We select key proteins representing important cellular processes and generate human iPSC lines with fluorescent tags for those proteins.
- We put our engineered lines through rigorous quality control before making them available to the community.
- We use large scale cutting-edge technologies to generate dynamic high-resolution 3D images of live cells and conduct image analysis and predictive model-building.
- We provide a user interface, the **Allen Cell Explorer**, to access and interrogate our image and cell line data.

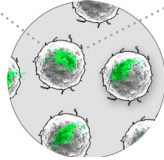
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Our process



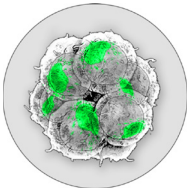
hiPSCs

We start with an established human induced pluripotent stem cell line (hiPSC)



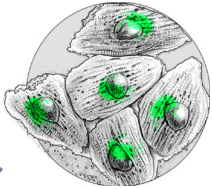
Gene editing

Introduce a fluorescent protein (FP) at endogenous genomic locus of the gene of interest



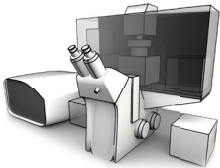
Clonal line generation

Create a stable cell line expressing the FP with rigorous QC



Differentiating

Differentiate the edited line into cardiomyocytes



Live cell imaging

Image both the undifferentiated (hiPSC) and the differentiated (CM) cells

Modeling & analysis

Analyze quantitative image-based data to build models of cell organization and behavior

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