dvancing Regenerative Medicine with The Boston University Induced Pluripotent Stem (iPS) Cell Bank

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iPS Cell Bank

- What is it?
- Why is it important?
- How far off are we from using the Bank for Regenerative Medicine applications?

Embryonic Stem Cells - ESC

Fertilized egg



5-6 days

Blastocyst





ES cell colony

Endoderm



, Mesoderm

Ectoderm



ESC Major Limitations for Regenerative Medicine



'Reprogramming'

The Discovery of Induced Pluripotent Stem (iPS) Cells

Takahashi and Yamanaka. Cell 2006.

> Differentiated Skin Fibroblasts



сМус





'Reprogramming' with STEMCCA





Boston University iPS Cell Bank

- What is it?
 - A repository of human iPS cells generated from individuals affected by diseases treated or studied at BUSM/BMC

•Why is it important?

The Potential of iPS Research



Boston University iPS Cell Bank

What is it?

- A repository of human iPS cells generated from individuals affected by diseases treated or studied at BUSM/BMC
- •Why is it important? -Model disease/development -Develop cell-based therapies

•How far off are we from using the Bank for Regenerative Medicine applications?

ARC Structure



Disease-Specific Human iPS Cell Lines

Cystic Fibrosis



Scleroderma

Amyloid (TTR)



Emphysema (AAT Deficiency)



JC Jean Aba Somers Chris Ford Amel Omari Brenden Smith George Murphy Cesar Sommer Bob Lafyatis

Long QT Syndrome



Sickle Cell Dz



<u>Regenerative Medicine ARC</u>



Darrell Kotton Lab



<u>Gustavo Mostoslavsky Lab</u>



George Murphy Lab



Joyce Wong Lab



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