



World Stem Cell Summit 2018

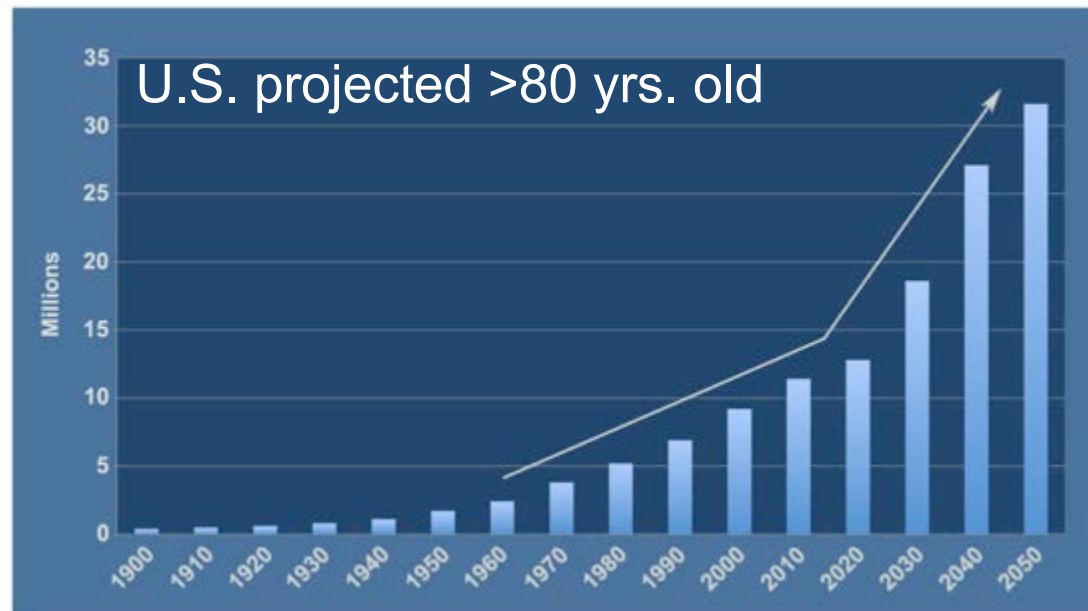
January 25, 2018

Safe Harbor Statement

The matters discussed in this presentation include forward looking statements which are subject to various risks, uncertainties, and other factors that could cause actual results to differ materially from the results anticipated. Such risks and uncertainties include but are not limited to the success of AgeX Therapeutics and its affiliates in developing new stem cell products and technologies; results of clinical trials of such products; the ability of Agex and BioTime and its licensees to obtain additional FDA and foreign regulatory approval to market products; competition from products manufactured and sold or being developed by other companies; the price of and demand for such products; and the ability of Agex to raise the capital needed to finance its current and planned operations. Any statements that are not historical fact (including, but not limited to statements that contain words such as "will," "believes," "plans," "anticipates," "expects," "estimates") should also be considered to be forward-looking statements. Forward-looking statements involve risks and uncertainties, including, without limitation, risks inherent in the development and/or commercialization of potential products, uncertainty in the results of clinical trials or regulatory approvals, need and ability to obtain future capital, and maintenance of intellectual property rights. As actual results may differ materially from the results anticipated in these forward-looking statements they should be evaluated together with the many uncertainties that affect the business of Agex and BioTime and its other subsidiaries, particularly those mentioned in the cautionary statements found in BioTime's Securities and Exchange Commission filings. BioTime and AgeX disclaim any intent or obligation to update these forward-looking statements.

The Market

Aging: The demographic trend of our time



- 80% of \$2.5T health care costs associated with chronic disease.
- Age-related chronic degenerative diseases typically have few effective drug targets.

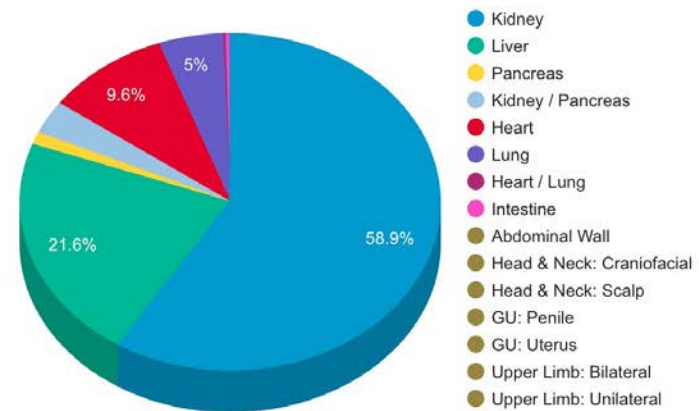
Tissue Transplantation Risk Profile

National data

Transplants By Organ Type January 1, 1988 - November 30, 2017
Based on OPTN data as of January 4, 2018

- **1yr Survival**
- Kidney >95%
- Liver >90%
- Pancreas >95%
- Kidney/Pancreas >95%
- Heart >85%

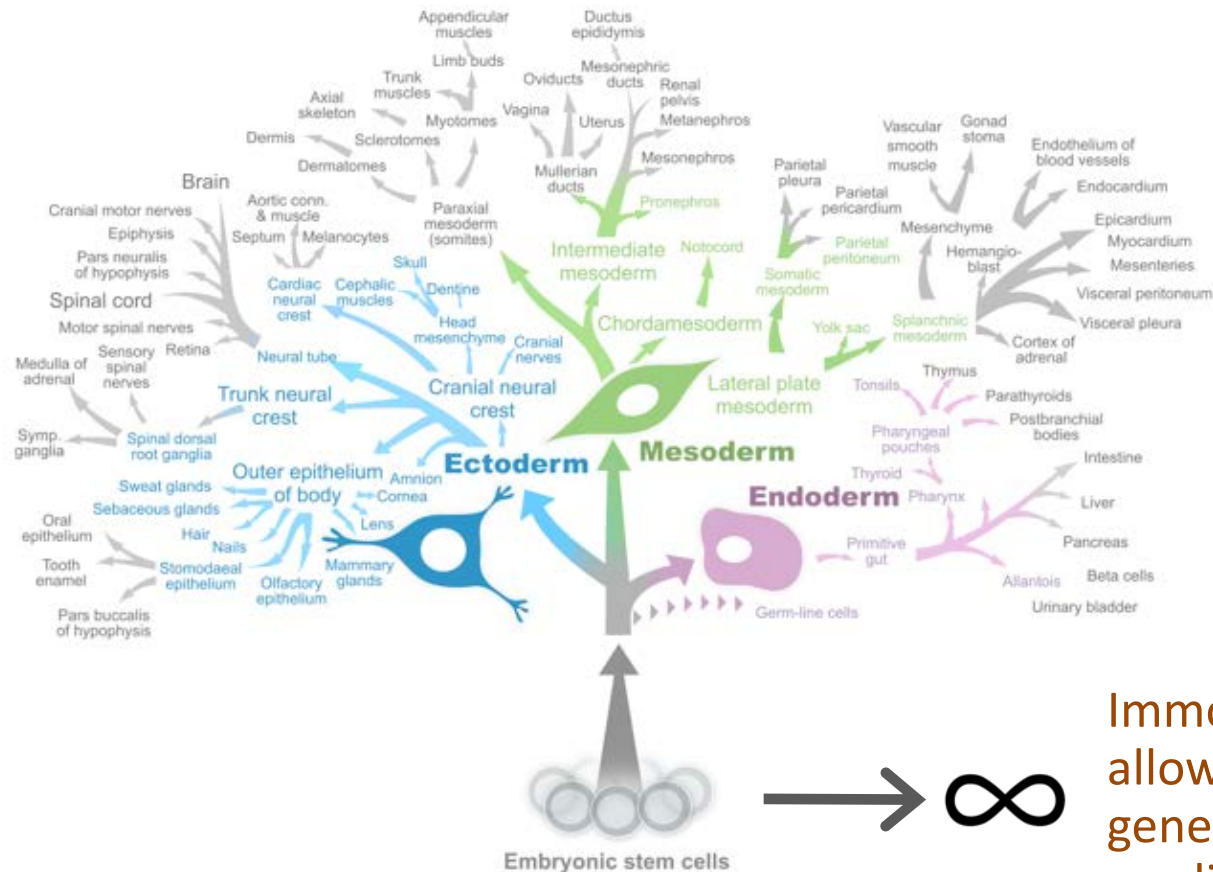
Organ	Transplants
Kidney	423,480
Liver	155,252
Pancreas	8,544
Kidney / Pancreas	22,852
Heart	68,677
Lung	35,606
Heart / Lung	1,227
Intestine	2,906
Abdominal Wall	1
Head & Neck: Craniofacial	5
Head & Neck: Scalp	1
GU: Penile	1
GU: Uterus	10
Upper Limb: Bilateral	6
Upper Limb: Unilateral	4
Total	718,572



United Network for Organ Sharing

Pluripotency

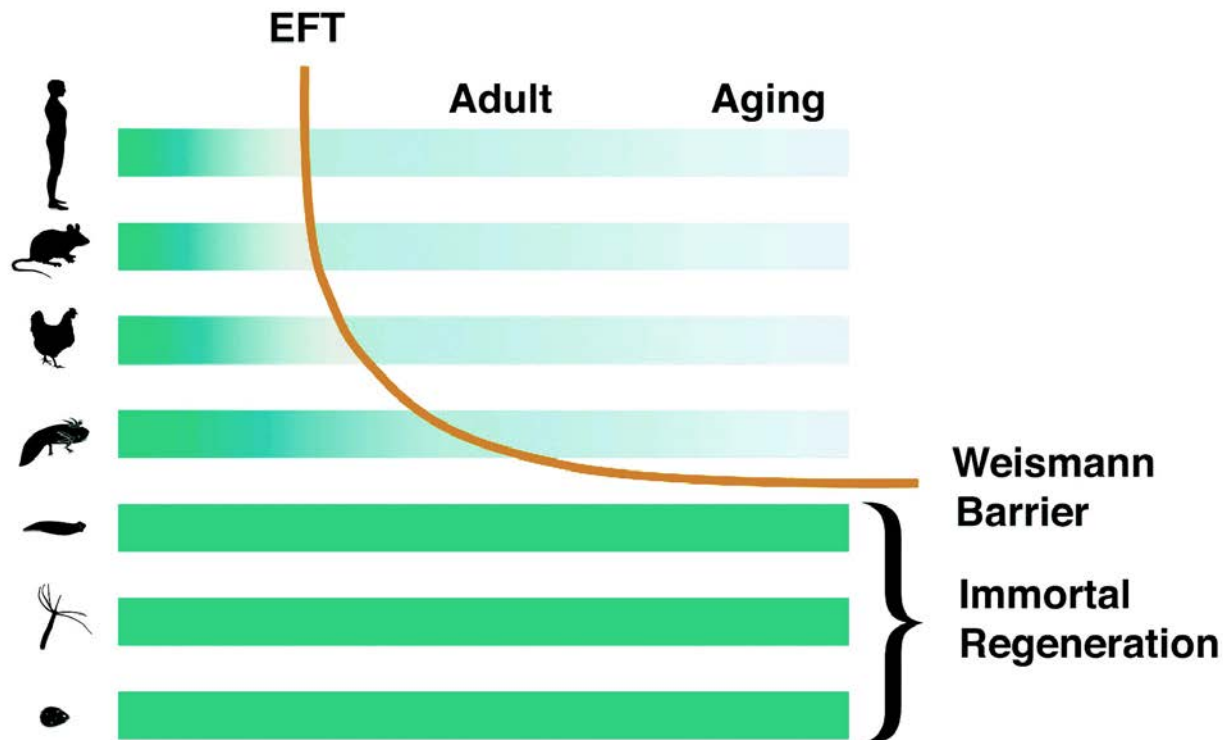
- Scalable source of all human cell types
- Regen phenotype



Immortal cells
allow sophisticated
genetic
modification

The Biology of Regeneration

Innate Regeneration in Humans Restricted to Embryonic Development



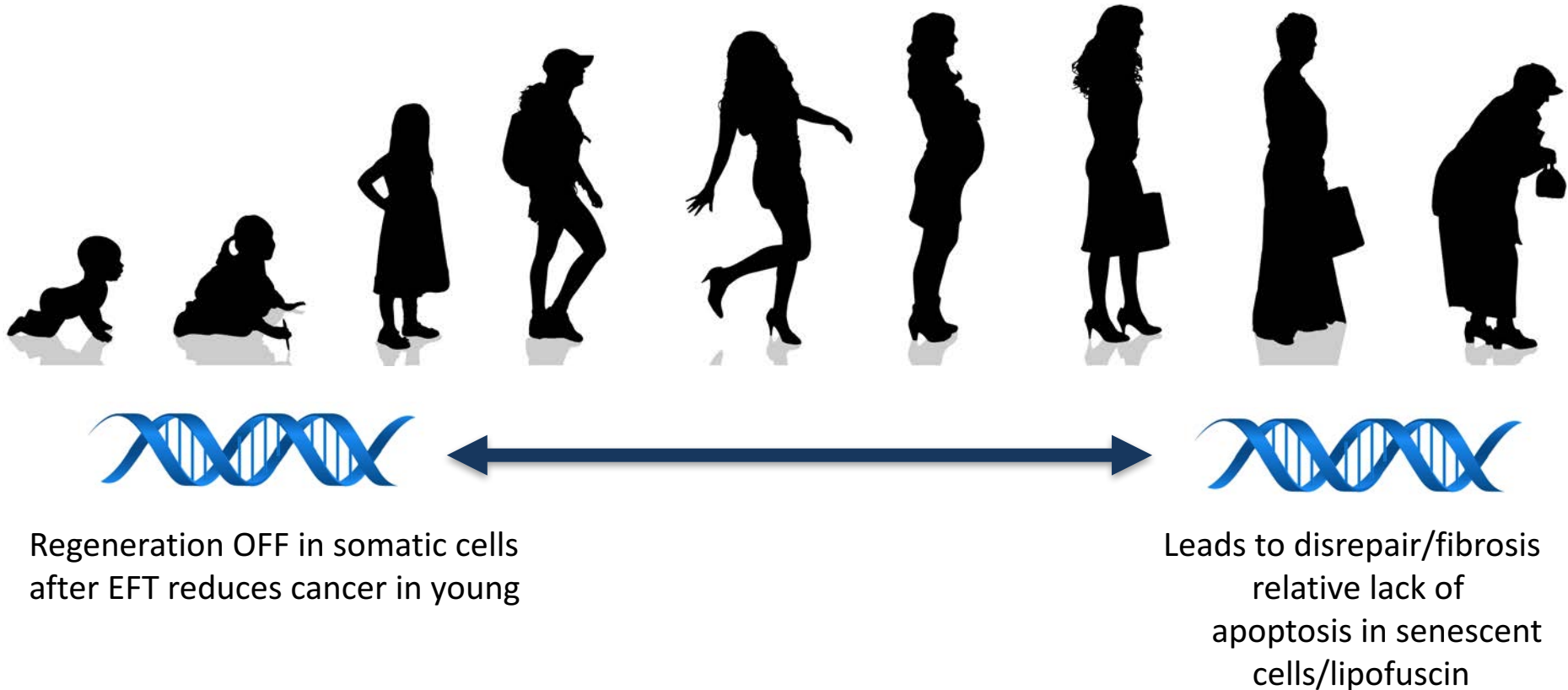
The Biology of Regeneration

Planaria regeneration

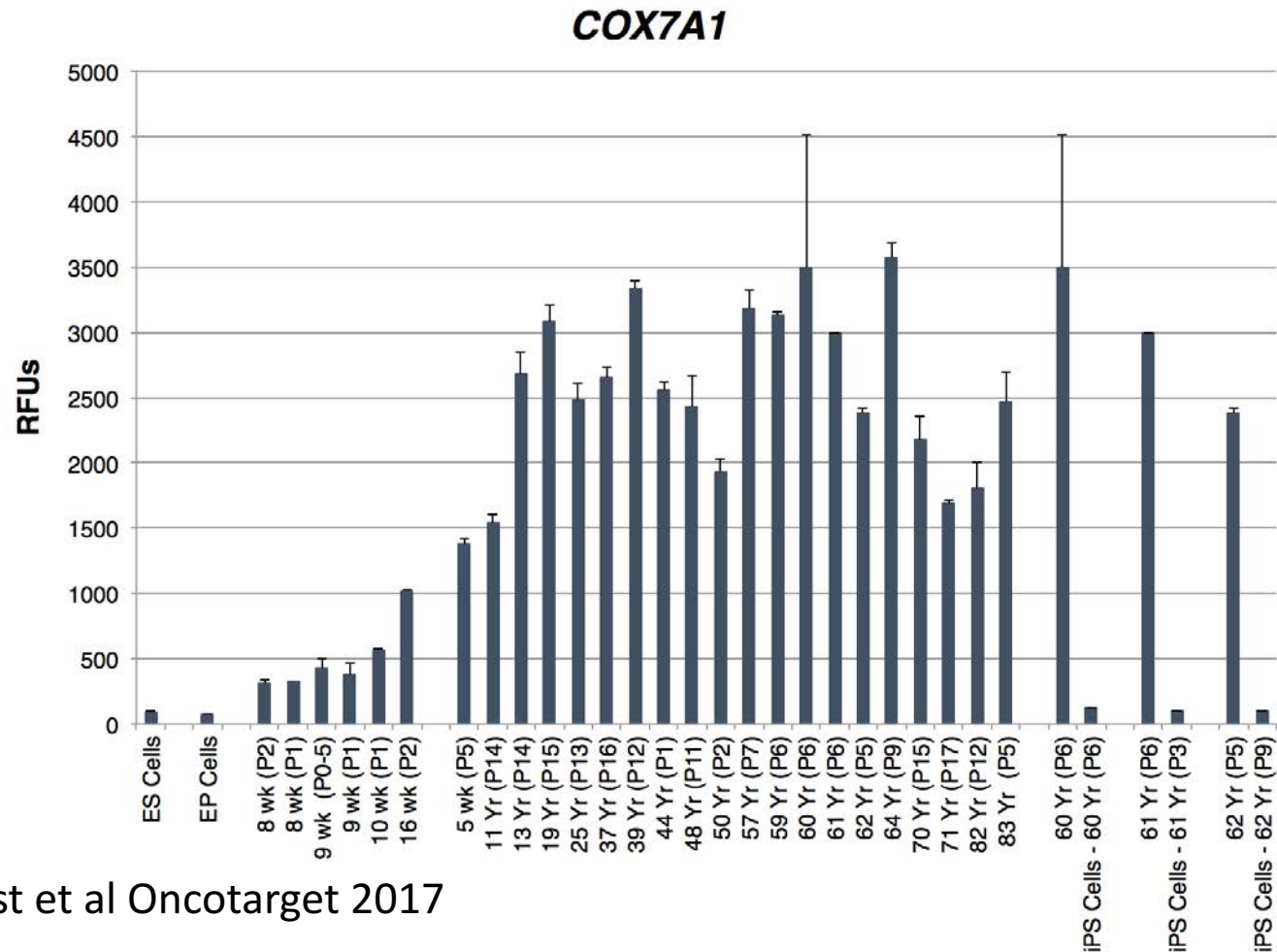


The Biology of Regeneration

The Nature of the Antagonistic Pleiotropy



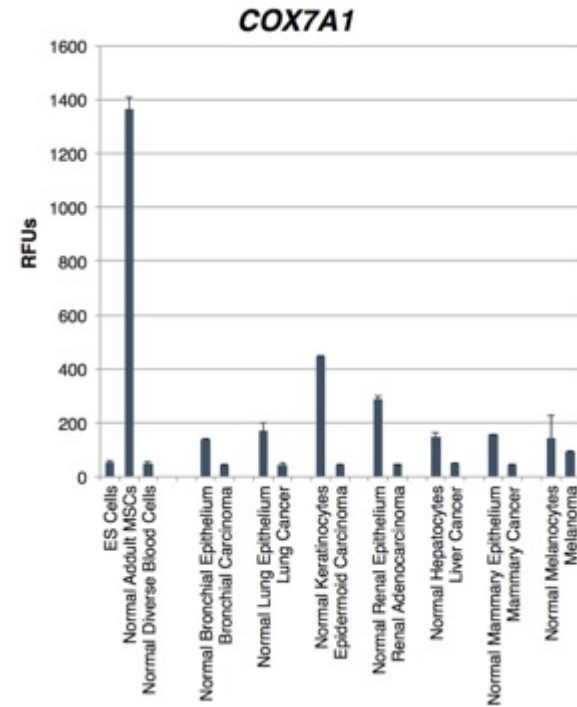
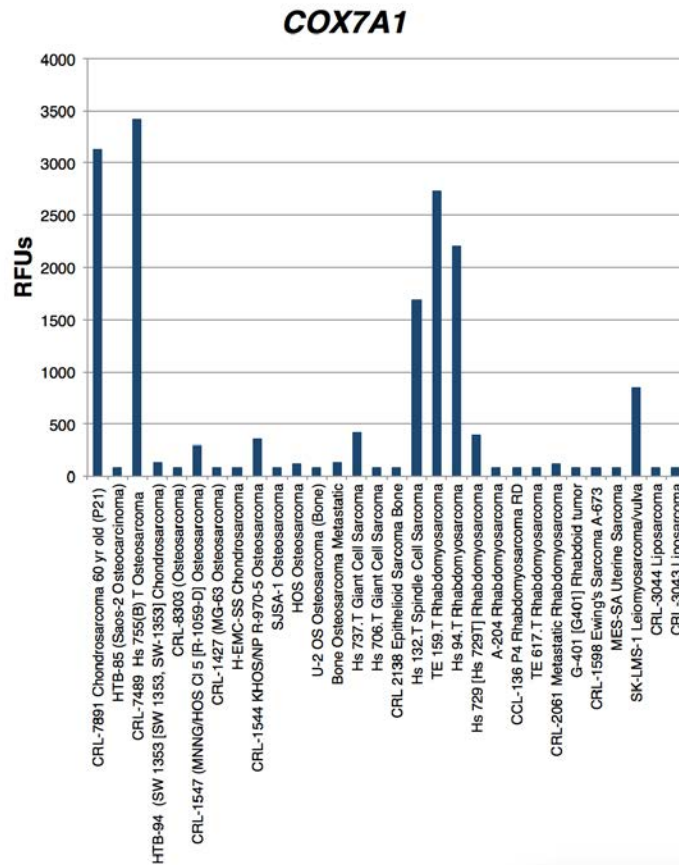
A Marker of EFT



West et al Oncotarget 2017

A Marker of EFT

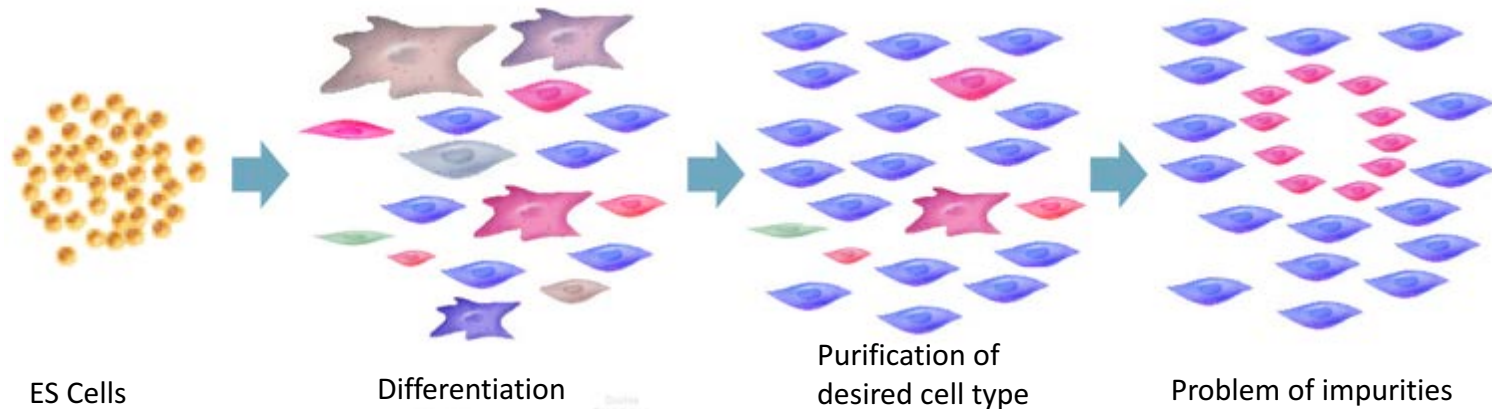
Reversed in the Majority of Cancers



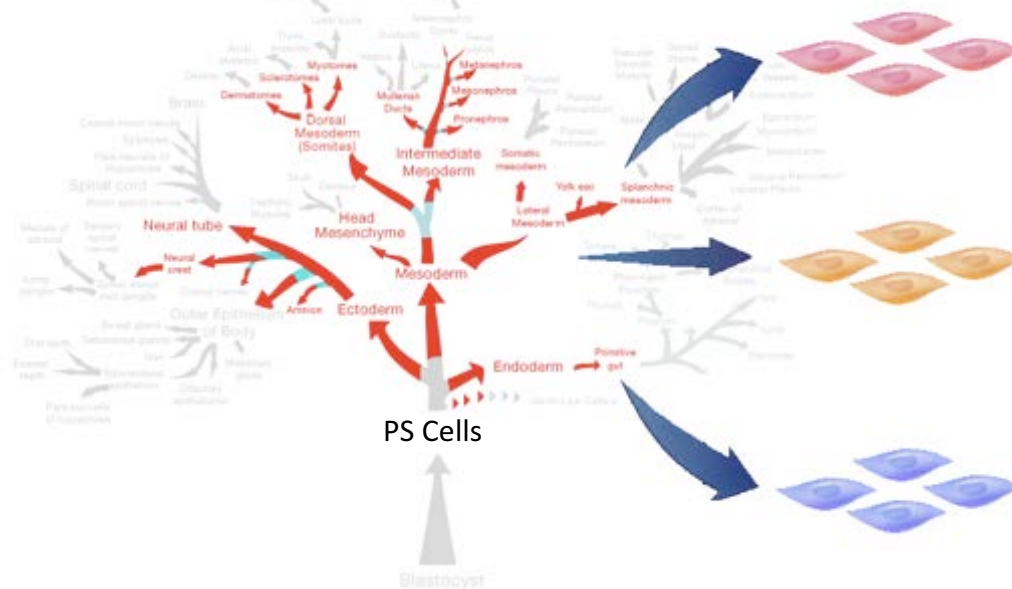
West et al Oncotarget 2017

2nd Generation - Universal *PureStem*TM Technology

Traditional Manufacture

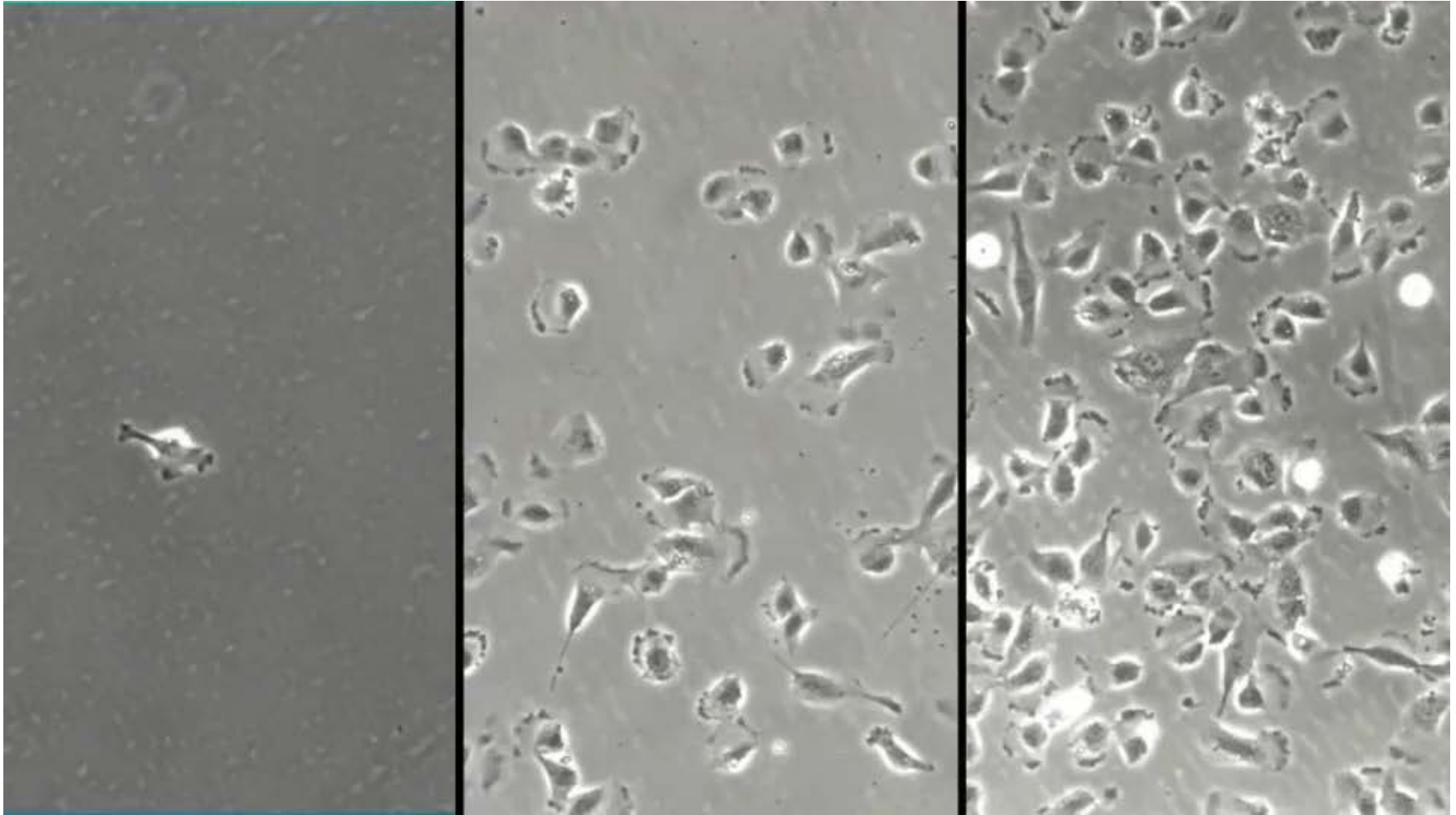


PureStem Technology

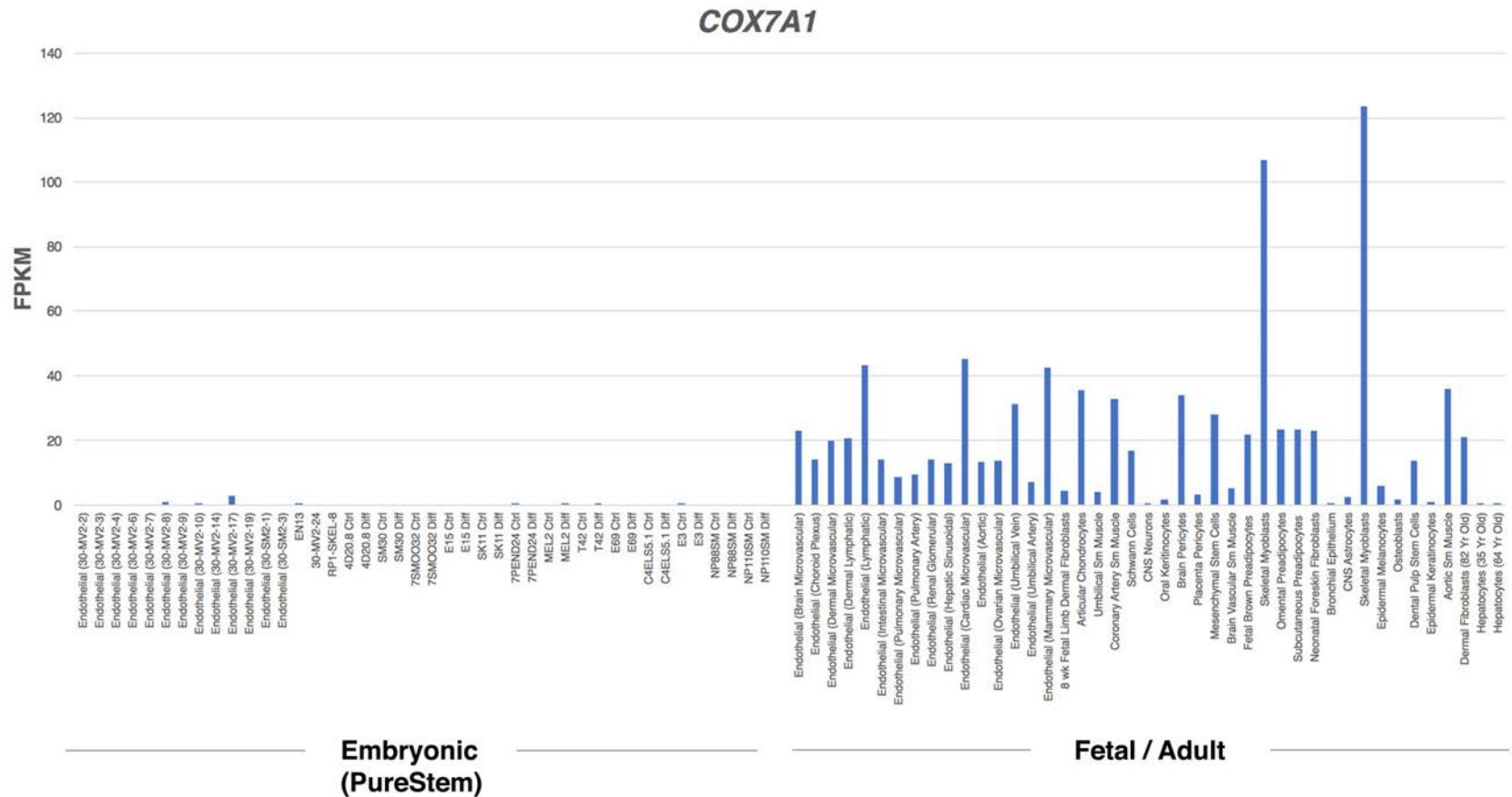


**>200-fold diversity
Scalable, monoclonally-
purified regenerative
progenitors**

2nd Generation - Universal *PureStem*TM Technology



Regenerative Phenotype of hESC-Derivatives



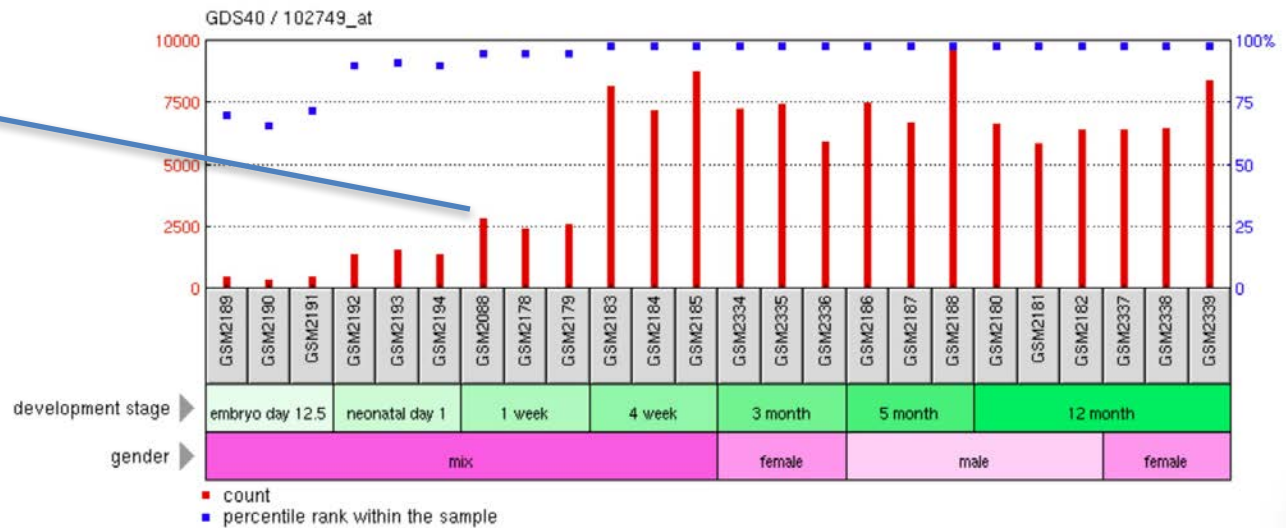
Example of Heart Regeneration:

- Some amphibians regenerate heart throughout life
- Embryonic mammalian heart can regenerate but that capacity is lost shortly after birth

COX7A1 Data in GEO

Profile GDS40 / 102749_at
Title Cardiac development, maturation and aging
Organism Mus musculus

*Note
low
levels
even
post-
natal*



The Biology of Regeneration

The Heart Model:

SCIENTIFIC REPORTS

OPEN

Epigenomic Reprogramming of Adult Cardiomyocyte-Derived Cardiac Progenitor Cells

Received: 13 March 2015

Accepted: 14 October 2015

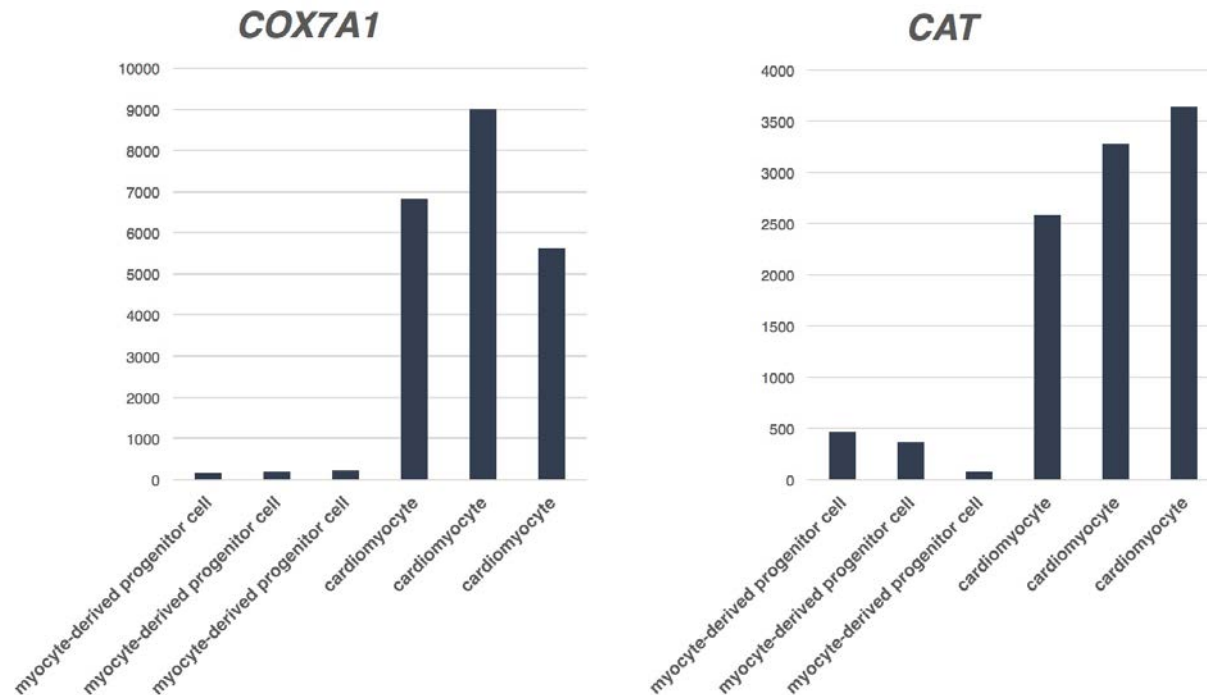
Published: 14 December 2015

Yiqiang Zhang^{1,2}, Jiang F. Zhong³, Hongyu Qiu⁴, W. Robb MacLellan¹, Eduardo Marbán² & Charles Wang⁵

Zhang Y et al *Sci Rep* 2015 Dec 14;5:17686

The Biology of Regeneration

The Heart Model:



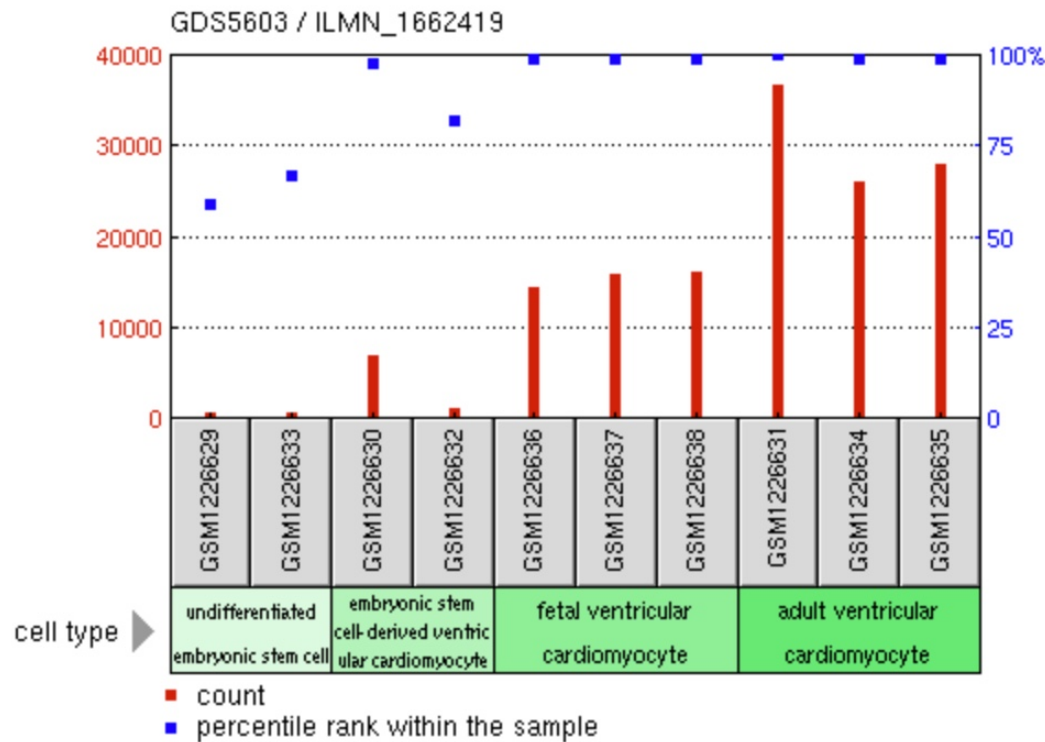
Zhang Y et al *Sci Rep* 2015 Dec 14;5:17686

COX7A1 Data in GEO

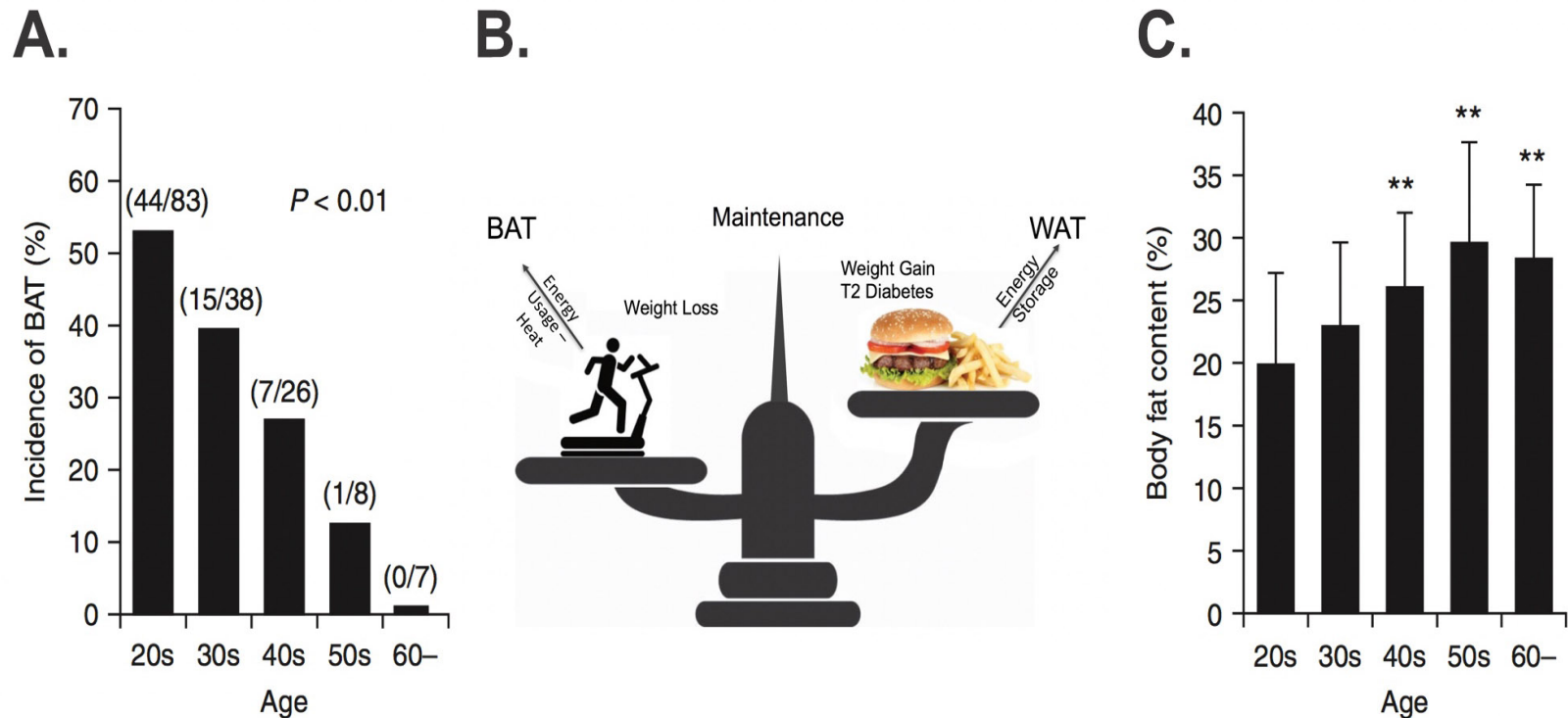
Profile GDS5603 / ILMN_1662419

Title Ventricular cardiomyocytes generated in vitro from embryonic stem cells

Organism Homo sapiens



Brown Adipose Cells Regulate Metabolism



Obesity (2011) **19**, 1755–1760. doi:10.1038/oby.2011.125

Brown Adipose Cells Regulate Metabolism

New Powers of Brown Fat: Fighting the Metabolic Syndrome

Jan Nedergaard,^{1,*} Tore Bengtsson,¹ and Barbara Cannon¹

¹The Wenner-Gren Institute, Stockholm University, Stockholm 106 91, Sweden

*Correspondence: jan@metabol.su.se

DOI 10.1016/j.cmet.2011.02.009

ORIGINAL ARTICLE

Reversal of Type 1 Diabetes in Mice by Brown Adipose Tissue Transplant

Subhadra C. Gunawardana and David W. Piston

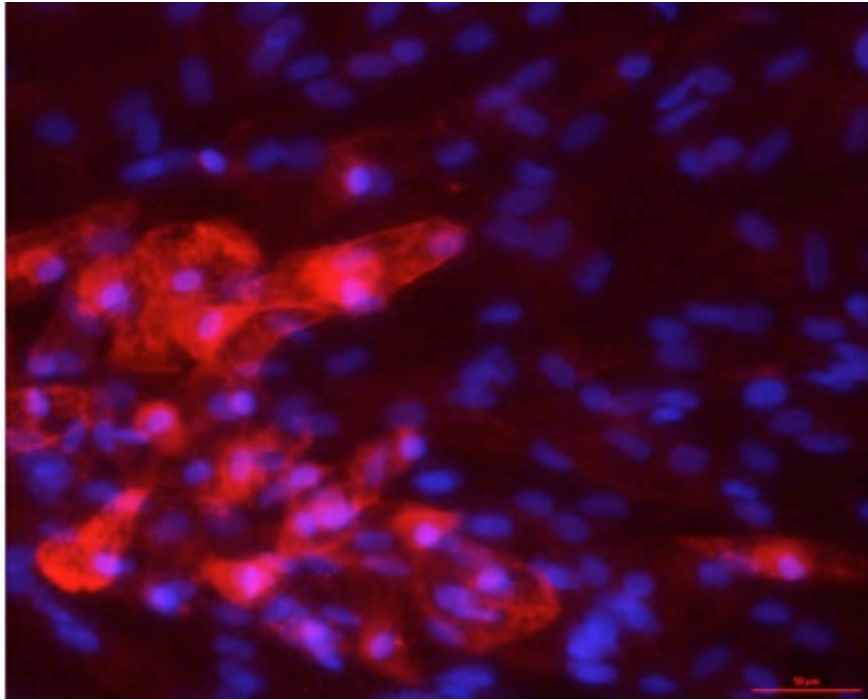
Brown adipose tissue regulates glucose homeostasis and insulin sensitivity

Kristin I. Stanford, Roeland J.W. Middelbeek, Kristy L. Townsend, Ding An,
Eva B. Nygaard, Kristen M. Hitchcox, Kathleen R. Markan, Kazuhiro Nakano,
Michael F. Hirshman, Yu-Hua Tseng, and Laurie J. Goodyear

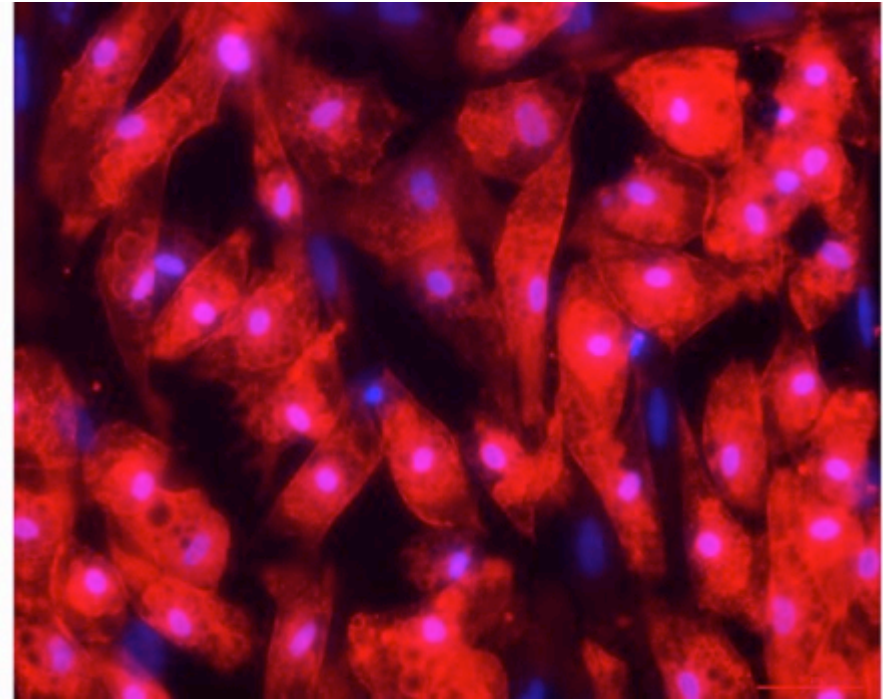
Section on Integrative Physiology and Metabolism, Joslin Diabetes Center, Harvard Medical School, Boston, Massachusetts, USA.

Industrially-Scalable AgeX-BAT1

Stained for Brown Adipocyte Marker UCP1



Tissue-Sourced Brown Adipocytes

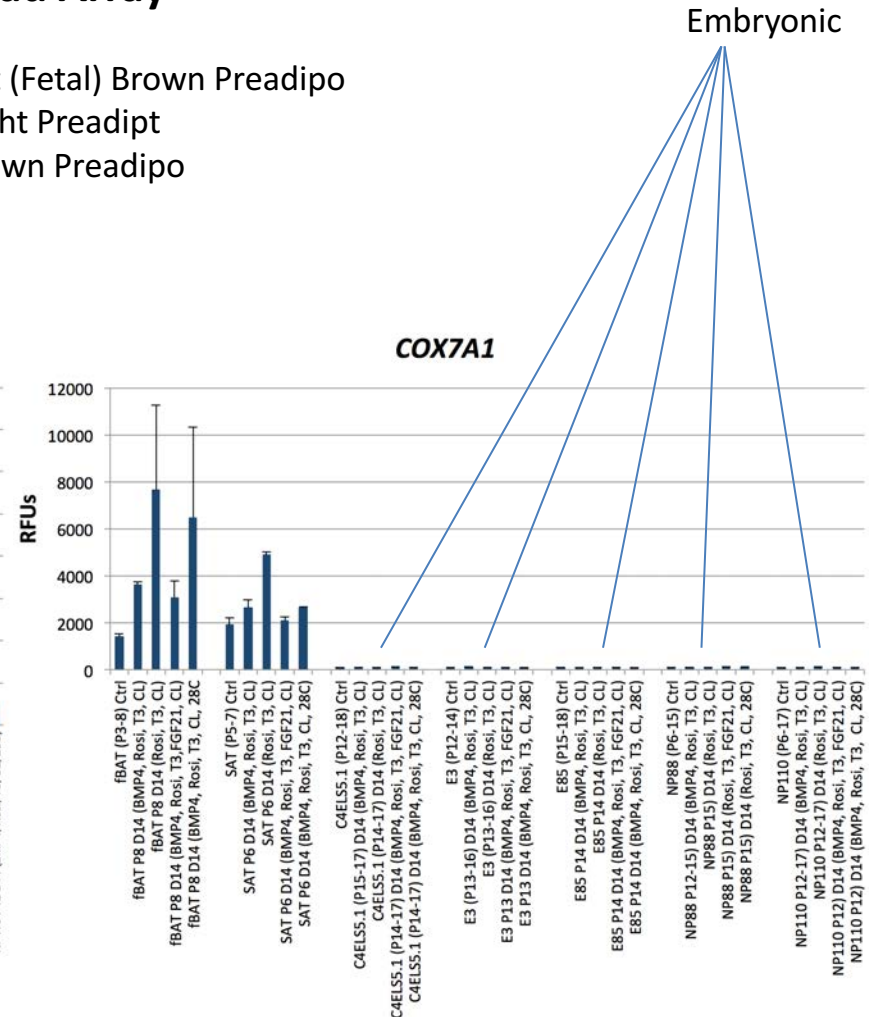
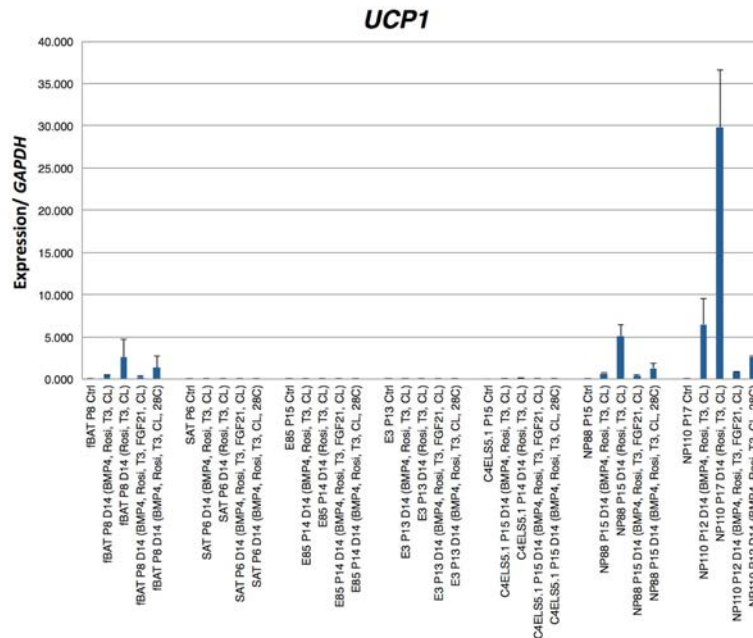


PureStem Brown Adipocytes

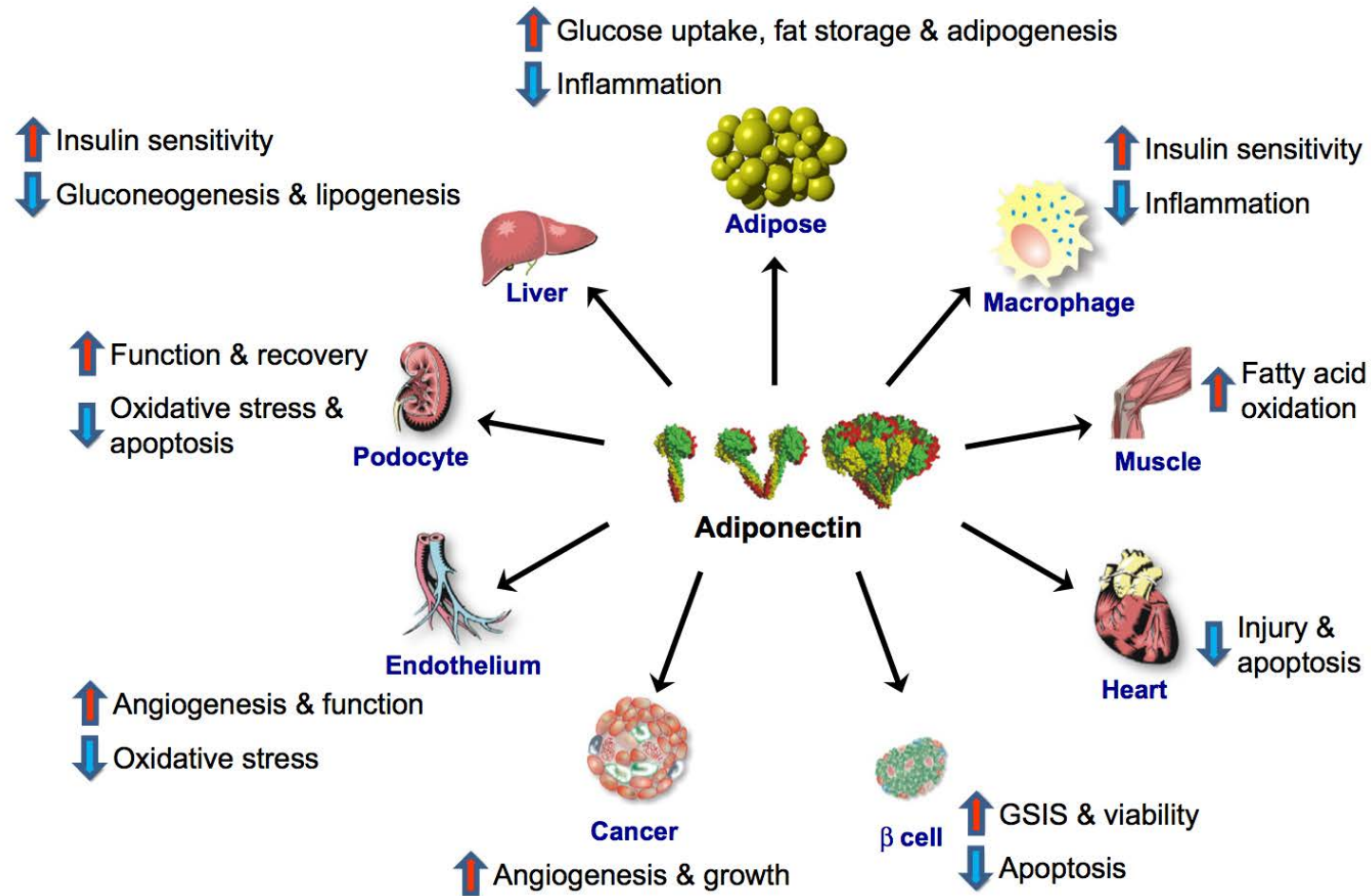
Industrially-Scalable AgeX-BAT1

COX7A1 Gene Expression by Illumina Bead Array

SAT – Adult Subcutaneous Wht Preadipo; fBAT – Adult (Fetal) Brown Preadipo
 C4ELS5.1 Embryonic Beige Preadipo. ;E3 Embryonic Wht Preadipt
 E85 Embryonic Progenitor Ctrl; NP88 – Embryonic Brown Preadipo
 NP110 - Embryonic Brown Preadipo

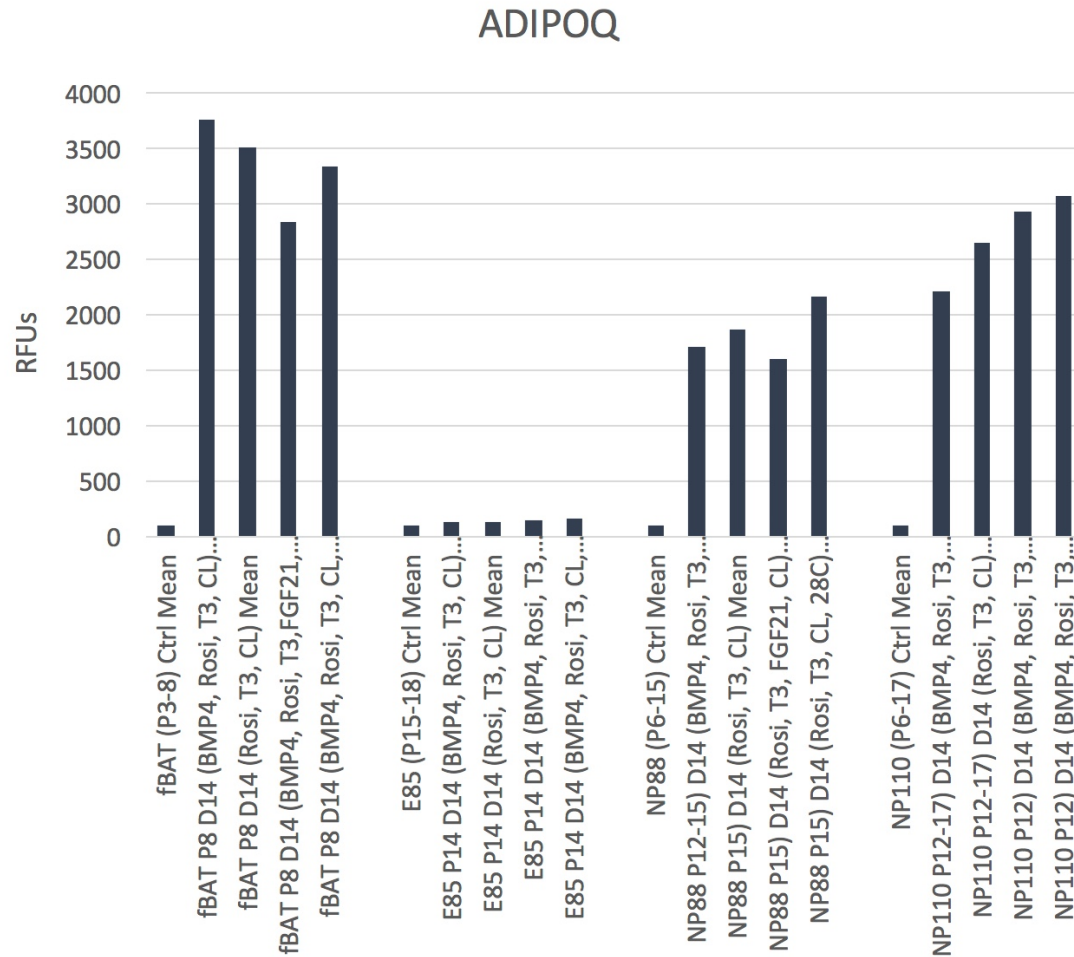


Industrially-Scalable AgeX-BAT1



MOLECULAR METABOLISM 2 (2013) 133–141

Industrially-Scalable *AgeX-BAT1*



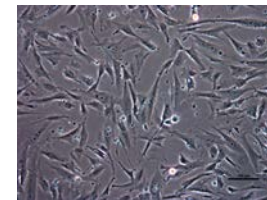
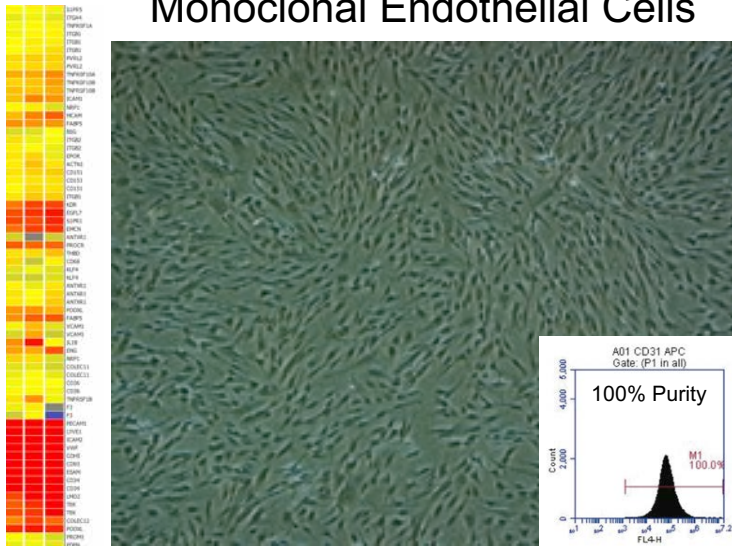
Obesity/T2D Market

- 30M Americans have diabetes¹ 1:3 Americans will have diabetes by 2050
- The global market for diabetes mellitus and obesity is set to rise from \$70.8 billion in 2015 to \$163.2 billion by 2022, at a strong compound annual growth rate of 12.7%, according to business intelligence firm GBI Research.

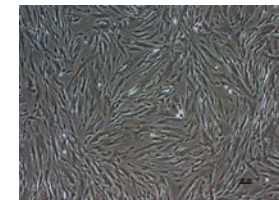
1) Centers for Disease Control and Prevention. National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States. US Department of Health and Human Services; Atlanta, GA: 2014.

Regenerative Vascular Progenitors

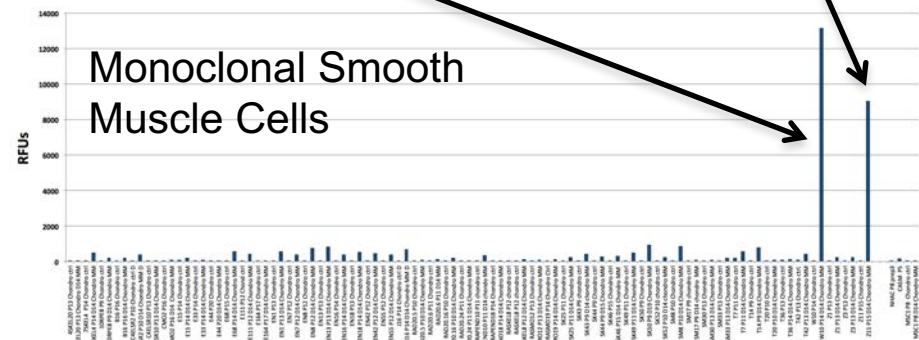
Monoclonal Endothelial Cells



W10



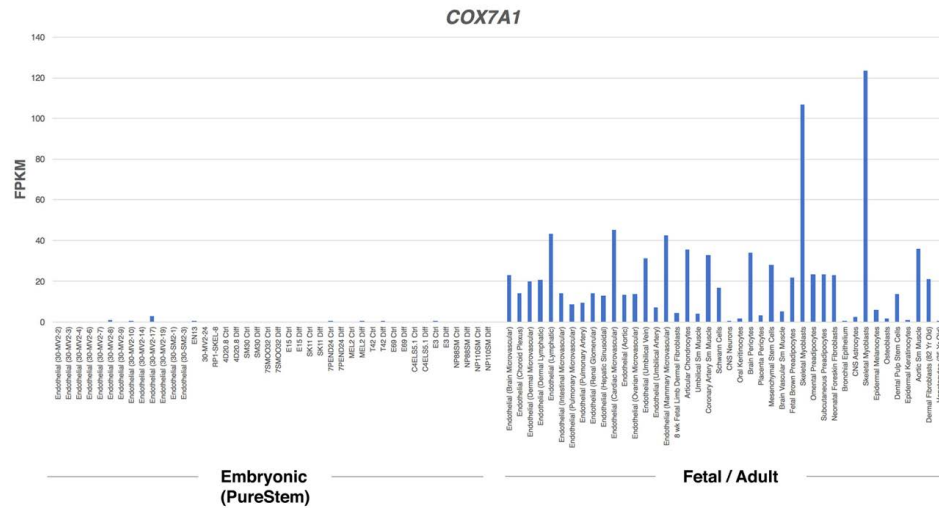
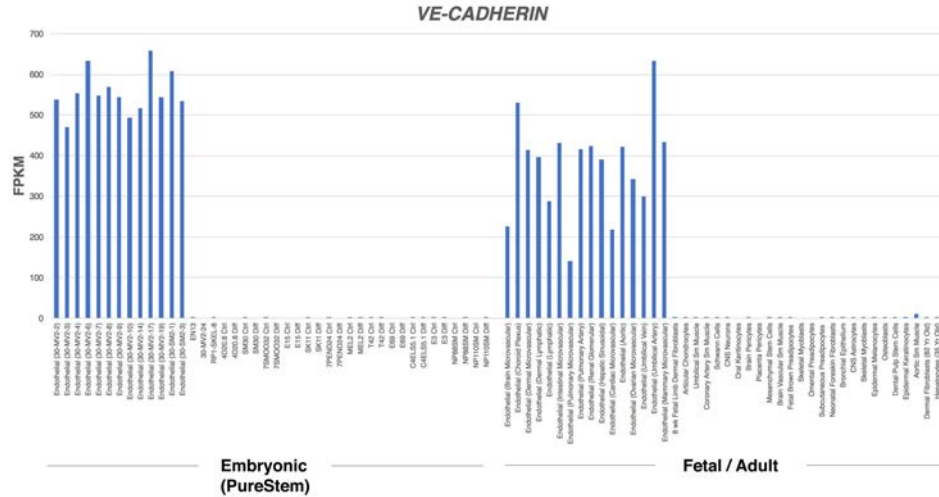
Z11



Monoclonal Smooth Muscle Cells

- Highly scalable with high purity & potency
- Extensive IP estate
- Formulated in HyStem

AGEX-VASC1



Cardiovascular Market

> \$Trillion Market Worldwide



	Current	2035
Medical costs up 135 percent	\$318 billion	\$749 billion
Indirect costs up 55 percent (Lost productivity)	\$237 billion	\$368 billion
TOTAL COSTS	\$555 billion	\$1.1 trillion

The Cost Generators: Aging Baby Boomers

As Baby Boomers age, costs for CVD will shift from middle-aged Americans to individuals ages 65 and over. By 2035, Boomers who are 80 and older will be the source of the largest cost increases for CVD.

http://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_491543.pdf

Induced Tissue Regeneration- iTR

Renelon™: Repurposed Drug Formulated in HyStem for Local Delivery

Embryonic → Fetal - Adult → Aging Adult



Highly Regenerative

Construction



Limited Regeneration

Maintenance



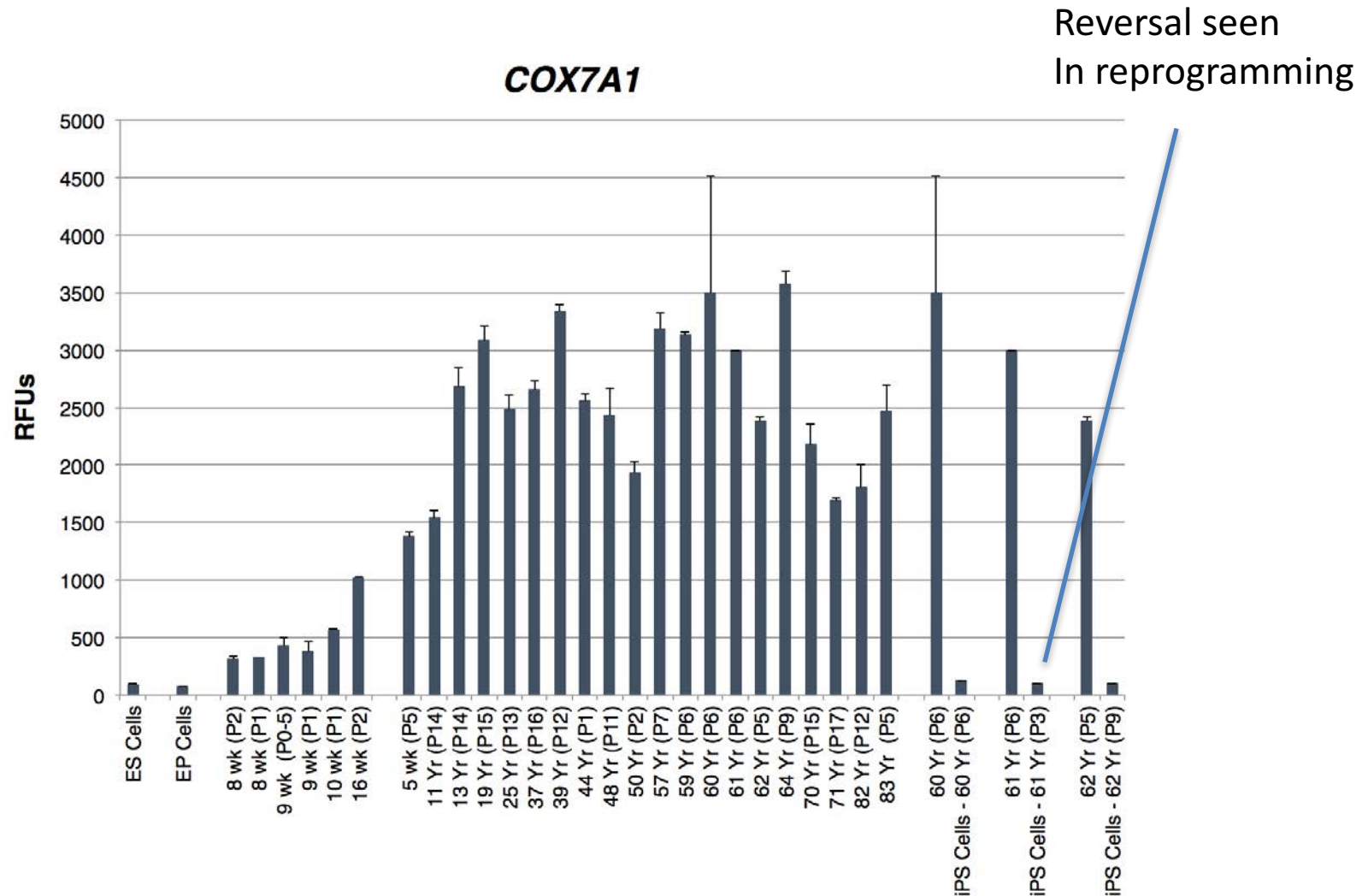
Non-Regenerative

Destruction

iTR: induced Tissue Regeneration

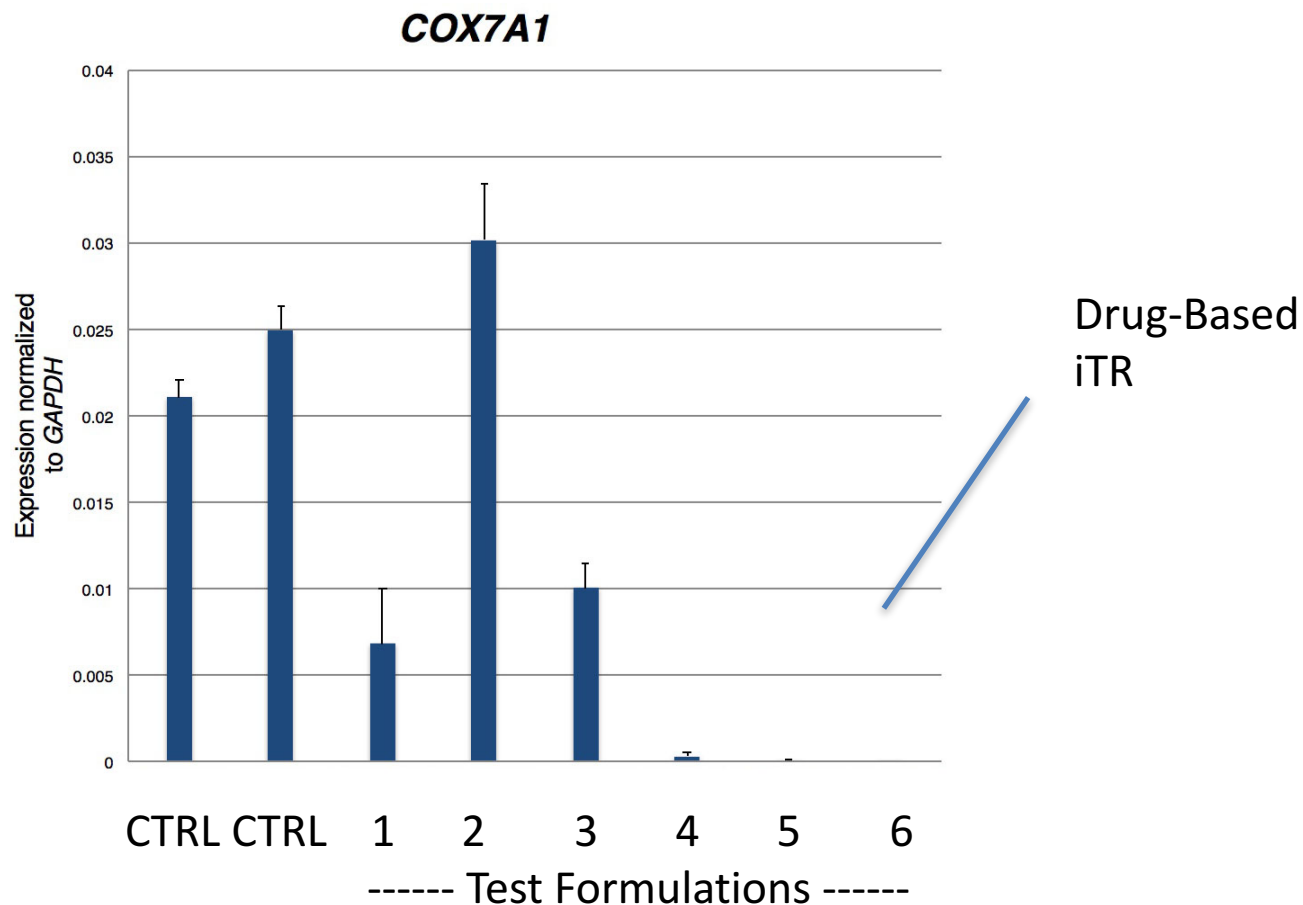
Renelon™

A Marker of EFT



Induced Tissue Regeneration- iTR

Small Molecule-Based iTR



Summary

- Pluripotency offers a means of manufacturing diverse regenerative progenitors to address degenerative diseases of aging: The demographic trend of our time
- AgeX focused on three therapeutic programs with potential to address large causes of mortality in U.S.
 - T2D/Obesity
 - Ischemic Disease: The leading causes of mortality & disability in an aging population
 - iTR1: Repurposed drug targeting the scarless tissue regeneration