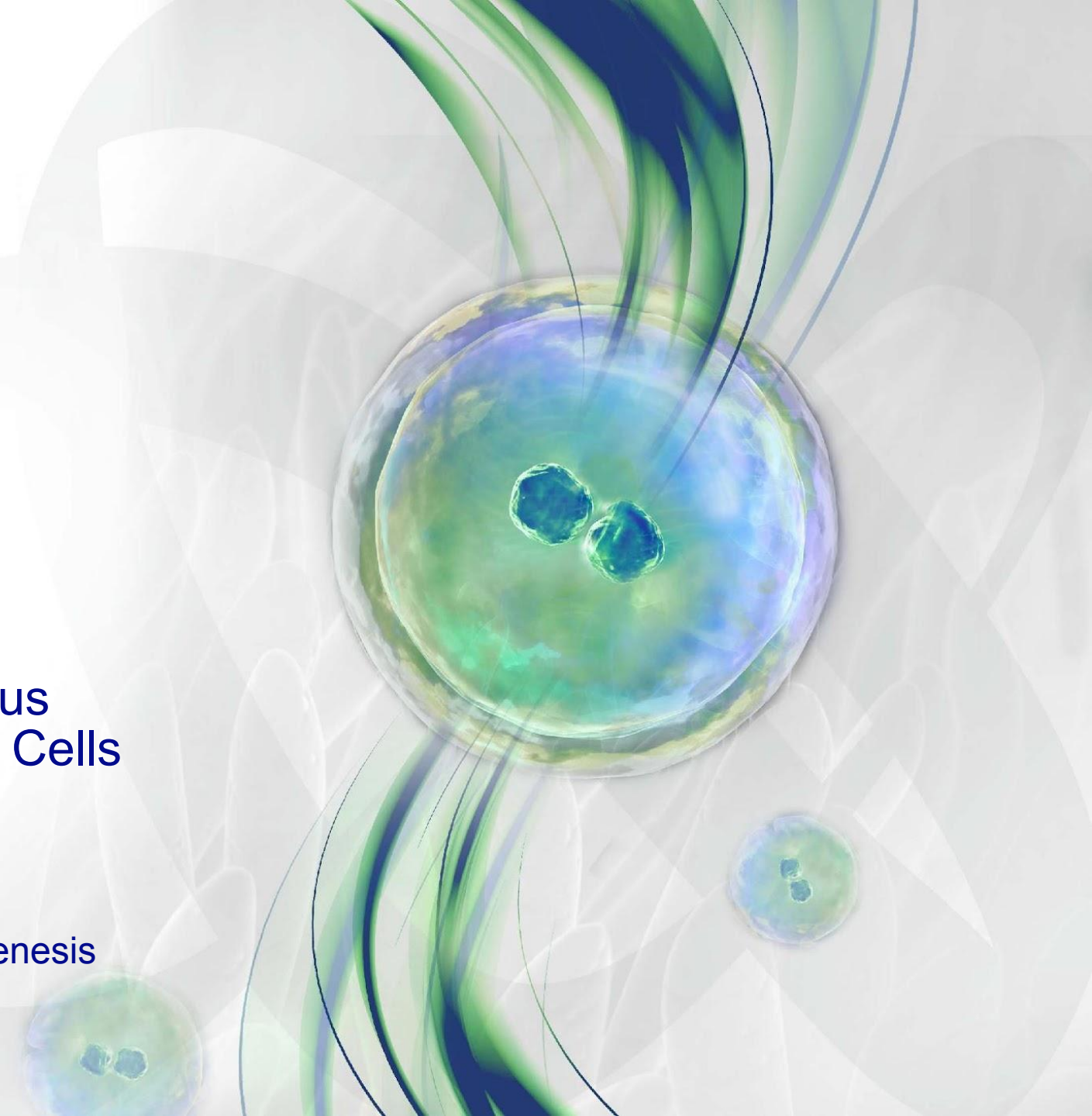




# The Mygotic Process<sup>TM</sup>

The Next Advancement in Autologous  
Totipotent Stem Cells from Somatic Cells

Arthur Sagoskin, MD, FACOG  
Chief Scientific Development Officer of MygoGenesis  
LLC<sup>TM</sup>



# 3 MODELS for Cell Therapies and Regenerative Medicine

- Embryonic Stem Cells – **ESC**
- Induced Pluripotent Stem Cells – **IPSC**
- **Now**  
Mygotic Process Cells – **MPC**



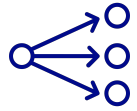
# MygoGenesis™

The Mygotic Process™ is an alternative, more robust, safer, and more efficacious method of producing Totipotent stem cells. It appears this is “**the Holy Grail**” for **Stem Cell Medicine**

# WHERE IT STARTED

## Embryonic Stem Cells

### THE GOLD STANDARD



Pluripotent nature, i.e. the ability to replicate indefinitely & differentiate into cells of all three germ layers.



**Ethically and politically controversial – human embryos**



The potential for **rejection** by the recipient's immune system –  
Not AUTOLOGOUS



**Funding has been limited**

# WHERE IT EVOLVED

## IPSC's INDUCED pluripotent stem cells

- **Forced over expression of genes (REPROGRAMMING)**

- Great option for producing cells for research and **great advance**
- Viral vectors, mRNA , plasmids or other **unnatural methods** to deliver transcription factors to accomplish this purpose
- **Changes to the underlying DNA and chromosomal structure. Introduces genetic changes and likely persistent over expression of certain genes**
- Therefore. is difficult to develop **reliable, autologous, robust, safe therapeutic cells and tissues for regenerative medicine.** which makes them **wholly unsuitable for human therapeutic application**

# WHERE IT IS NOW

## Mygotic Process™

Involves the *natural* transformation of somatic cells to Naïve Totipotent cells

Natural development of embryonic genes

Autologous

No Vectors



- **No transcription factors, no introductory process** –viral, mRNA or others
- Efficiency of **40-70%** of cells to a totipotent state
- **Use of physical principles allows** a cascade of removal of the epigenetic factors
- DNA surrounded by a membrane in **30- 60 minutes**. In **12 – 24 hours** the cells contain **2 pronuclei**, we term a **Mygote = a laboratory produces Zygote**
- May meet **minimal manipulation FDA standard for cell therapy**
- **Clonal cell colonies can be established in 3-5 days** for further expansion and characterization

# WHERE IT IS NOW

## Mygotic Process™

Involves the *natural* transformation of somatic cells to Naïve Totipotent cells

Natural development of embryonic genes

Autologous

No Vectors

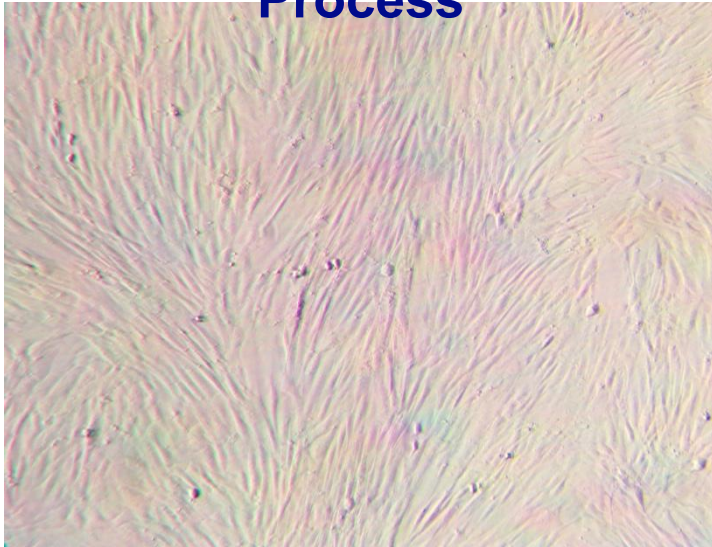
# AND compared to ESC

Pluripotent nature, i.e. the ability to replicate indefinitely & differentiate into cells of all three germ layers.

# Mygotic Process™ PLATFORM

follows the natural order of embryogenesis

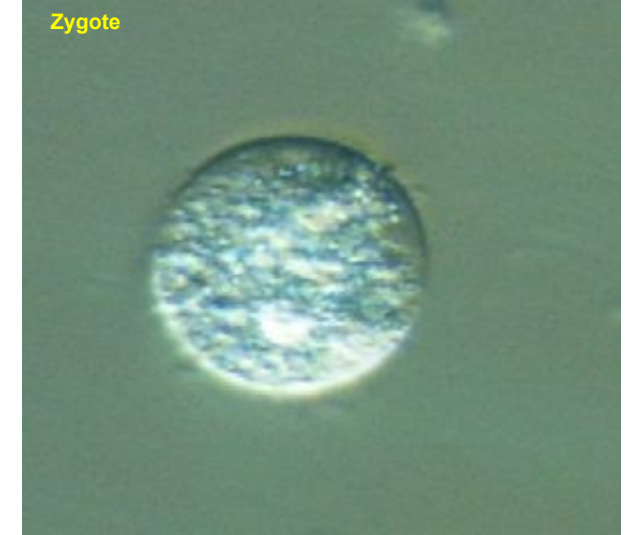
Fibroblasts  
pre-Mygotic  
Process



30-60 Minutes  
Post Mygotic  
Process



Mygote 12-24 Hours  
Post Mygotic  
Process



**ZYGOTES= MYGOTES (Autologous Master  
Blueprint)**



**REPLICATIO  
N**



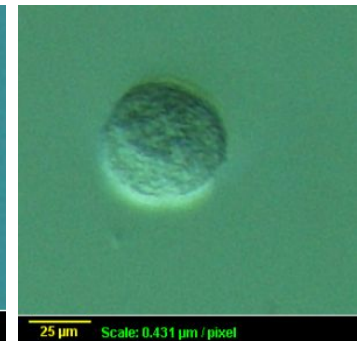
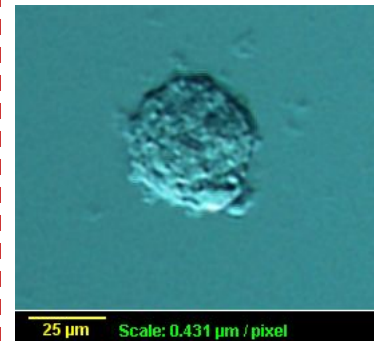
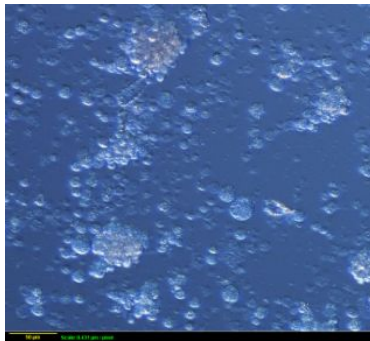
**SPECIFICATIO  
N**

# Pluripotency

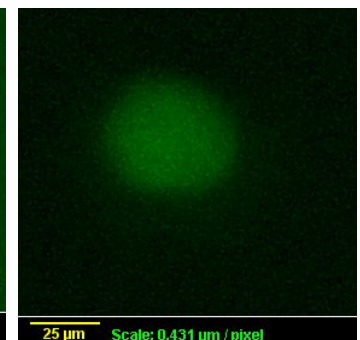
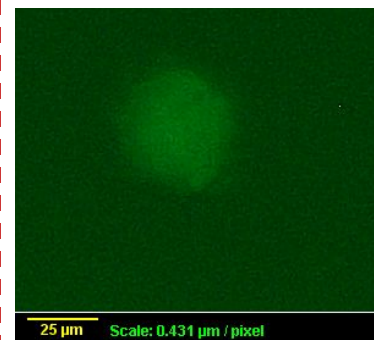
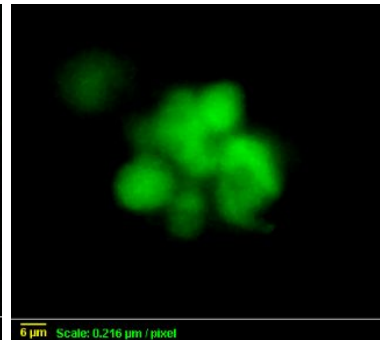
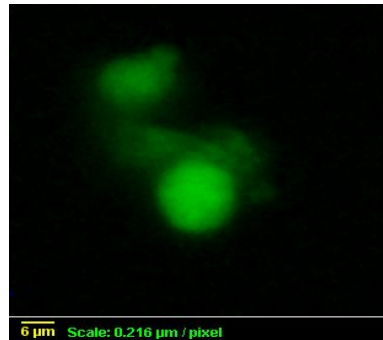
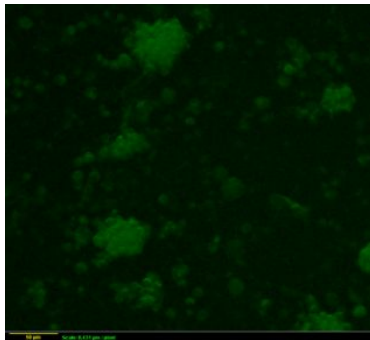
# Demonstrated

# MygoGenesis™ Primordial Germ Cell Confirmation

PGC colonies & individual cells

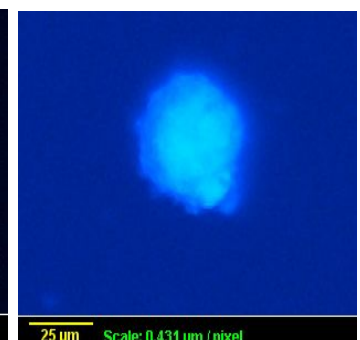
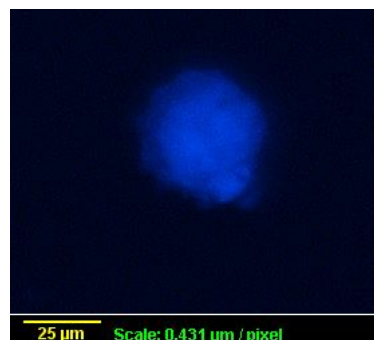
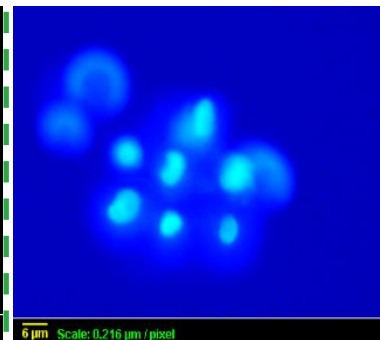
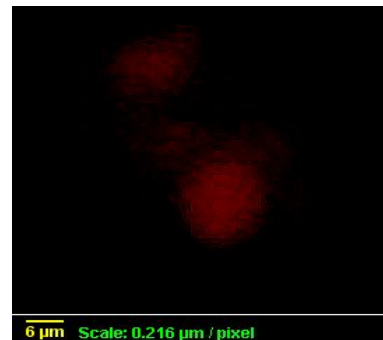
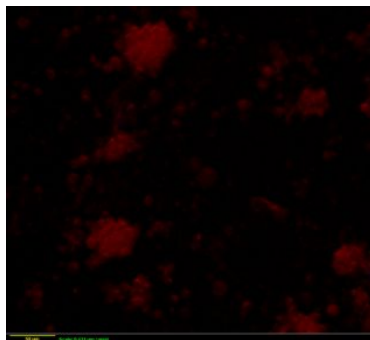


OCT4 nuclear stain

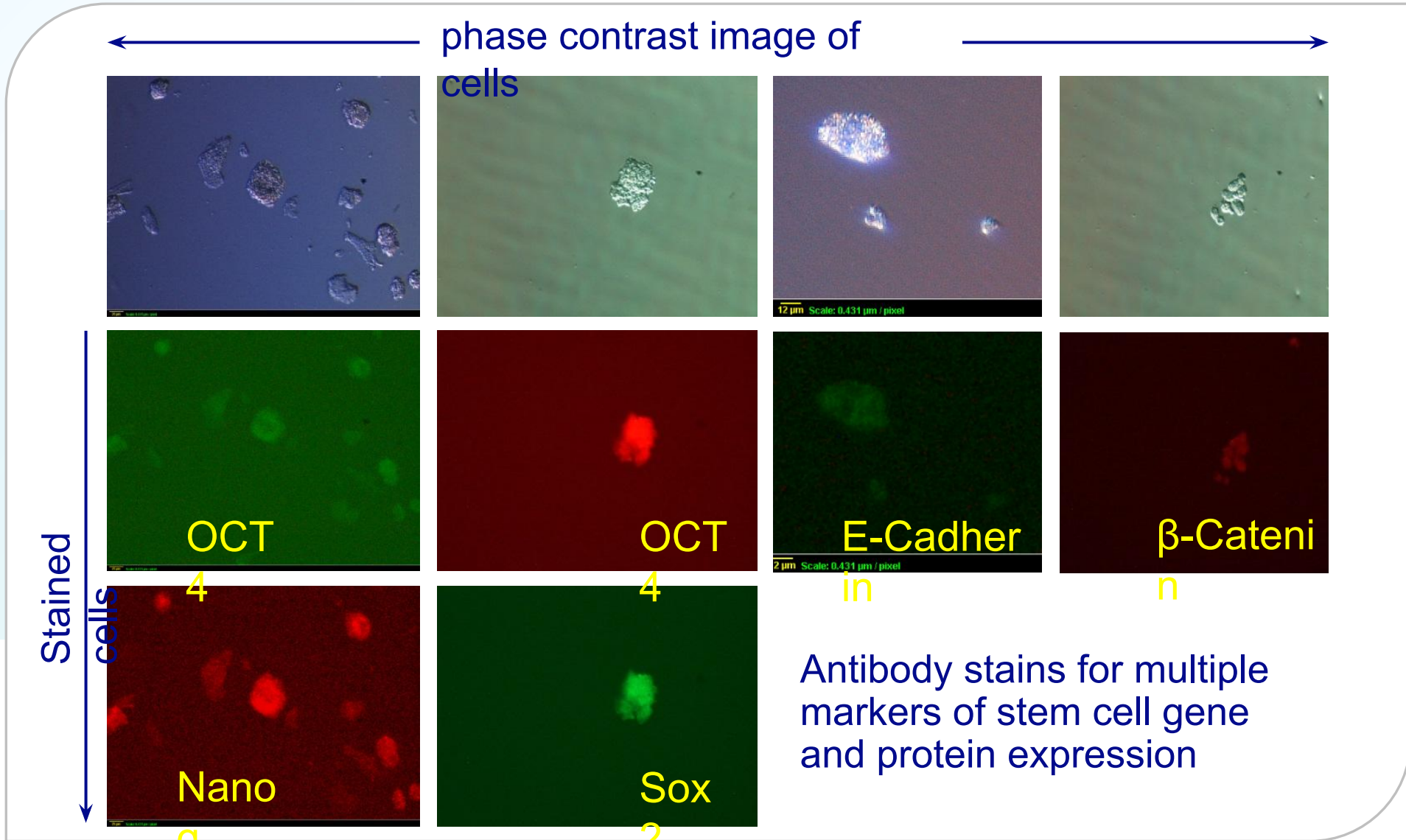


Stella

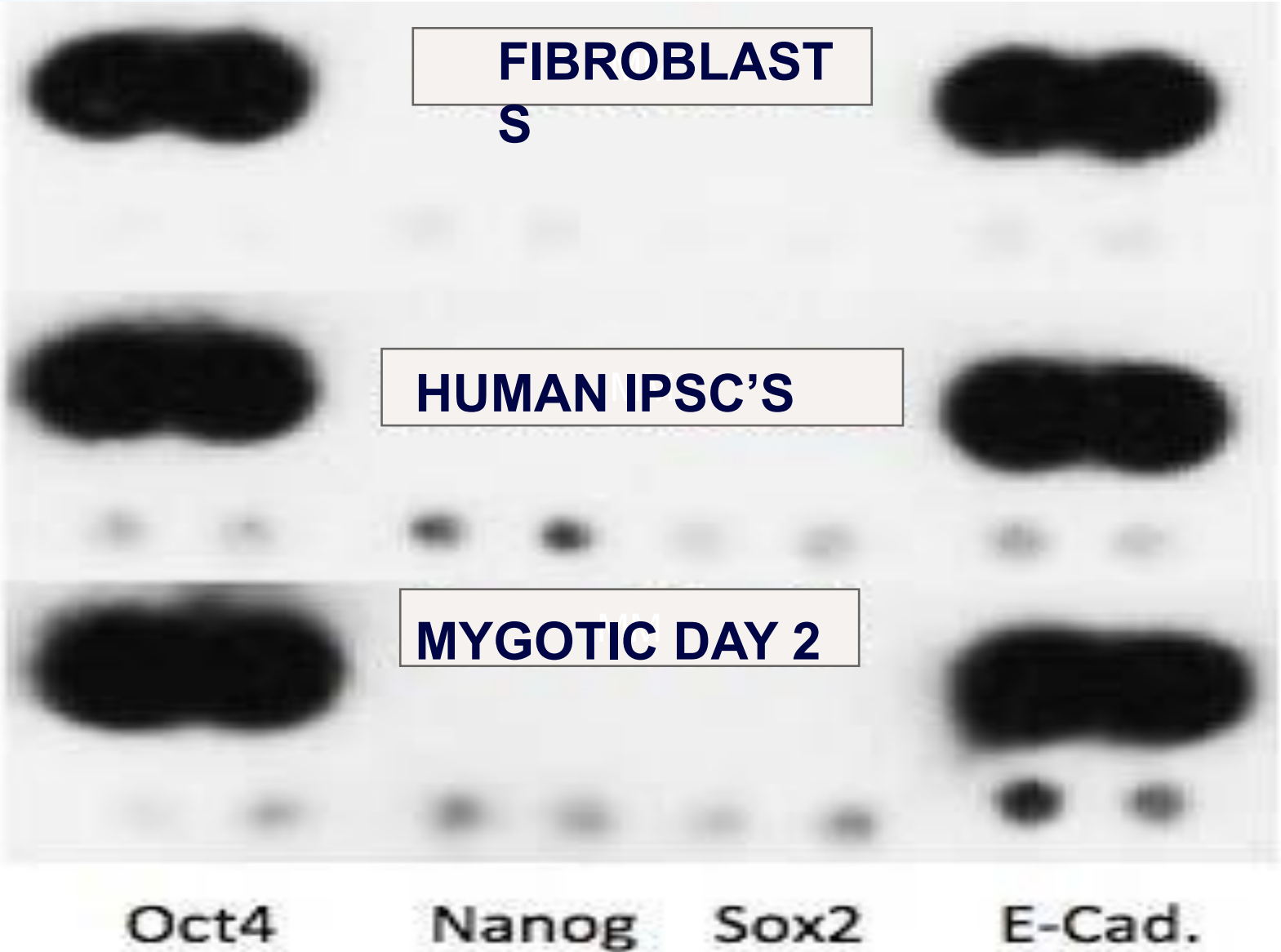
Nanog nuclear stain



DAPI counter stain

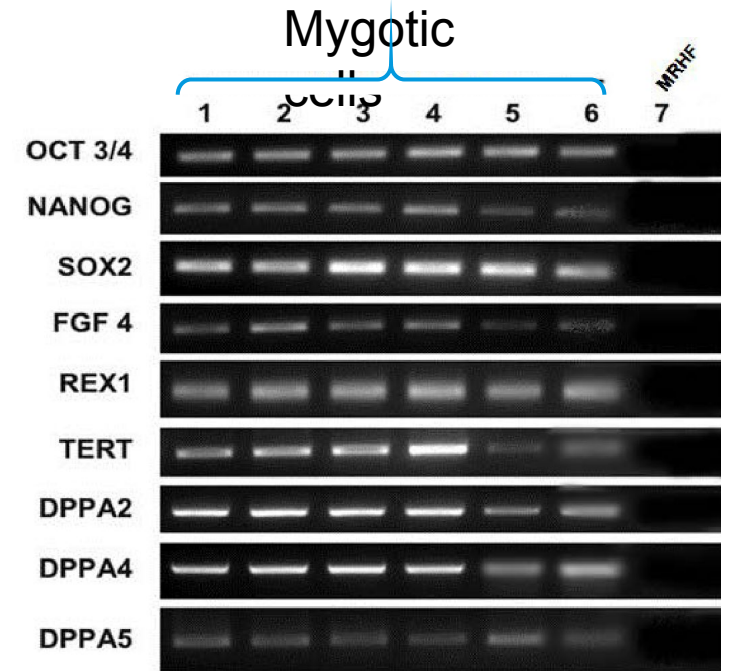
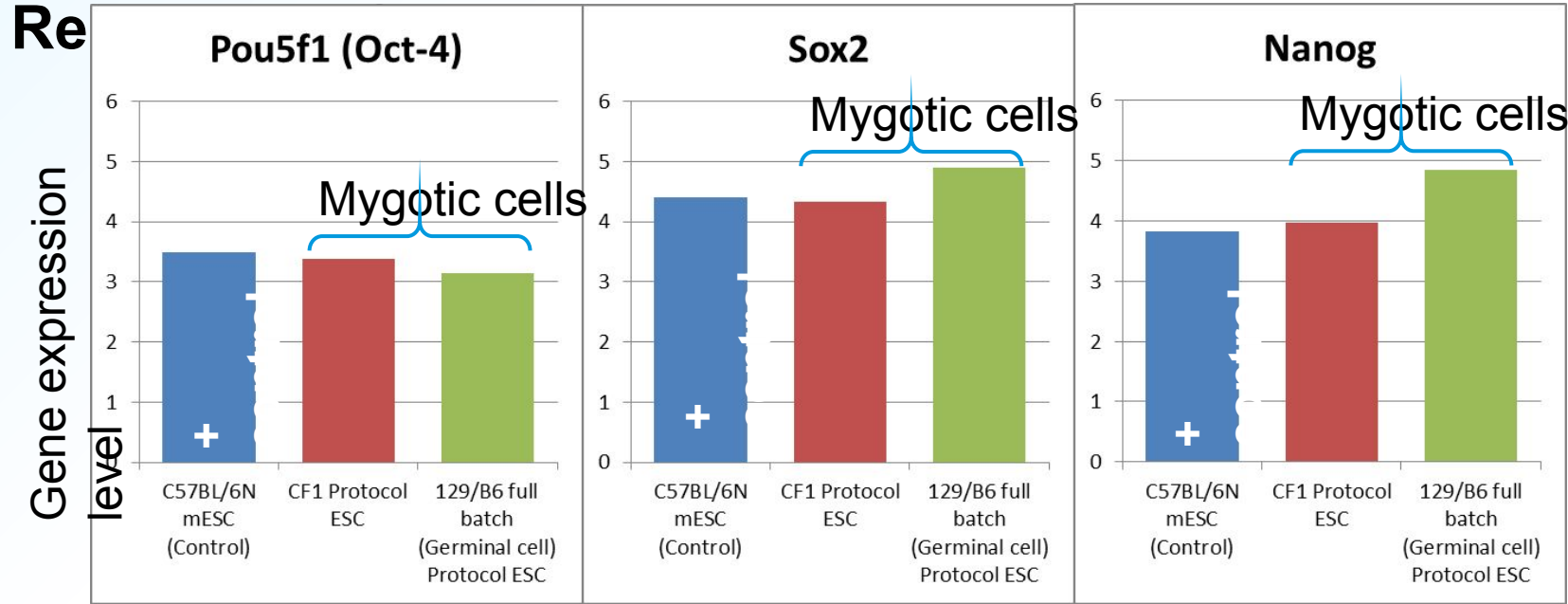


# Oct4, Nanog, and Sox2 Detection by Immuno Blots



# Mygotic Clone Validation

## TaqMan Mouse Stem Cell Pluripotency Plate



ESC = embryonic stem cells

Mygotic cells express similar levels of stem cell genes as mouse ES cells in TaqMan PCR plates or PCR gels

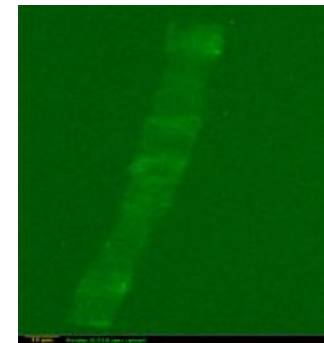
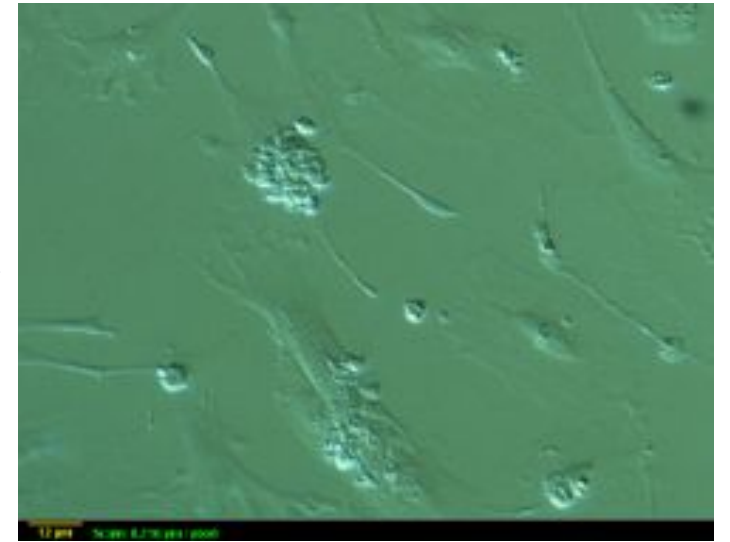
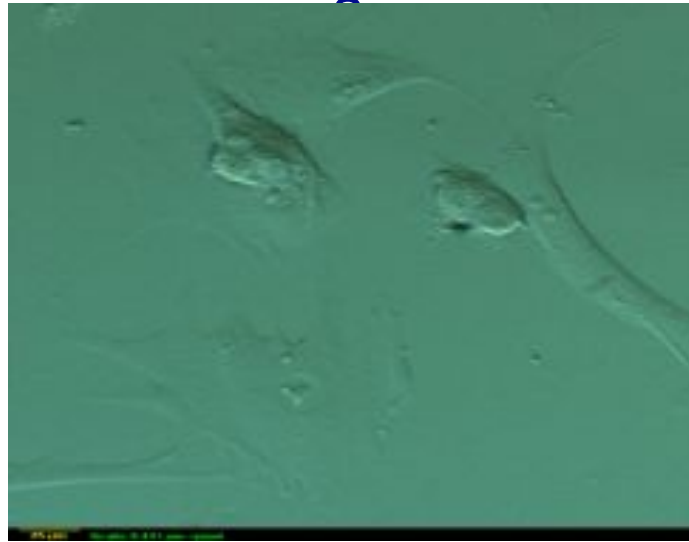
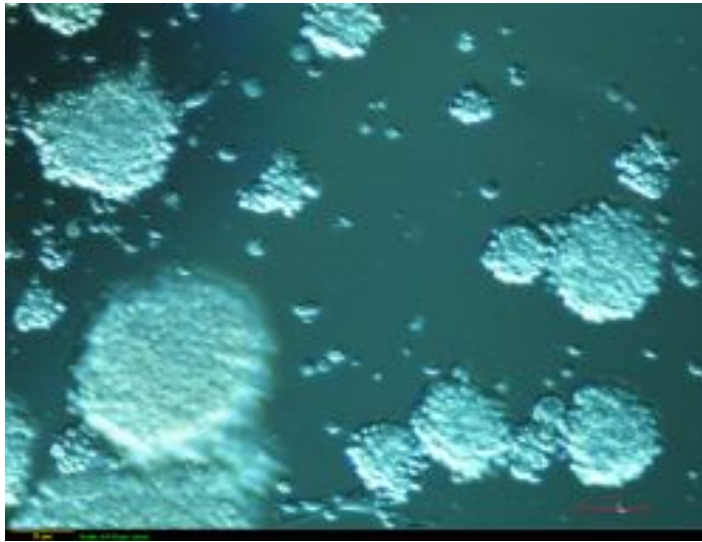


# MygoGenesis™

ALL data demonstrates that by the standard of today's testing the Mygotic Process Cells are equivalent to Embryonic Stem Cells

# MygoGenesis™ - Directed Differentiation Examples

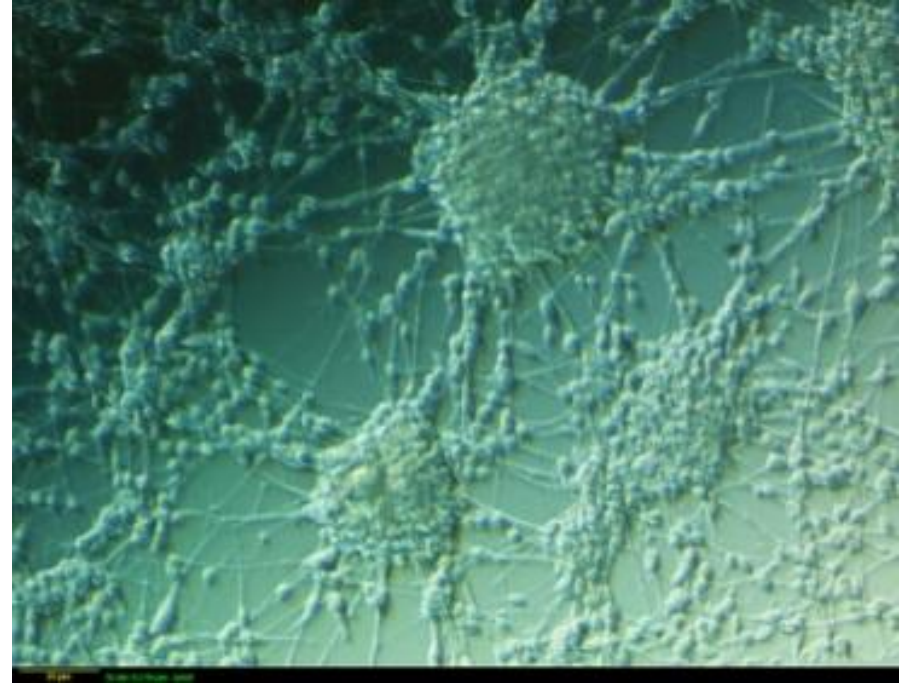
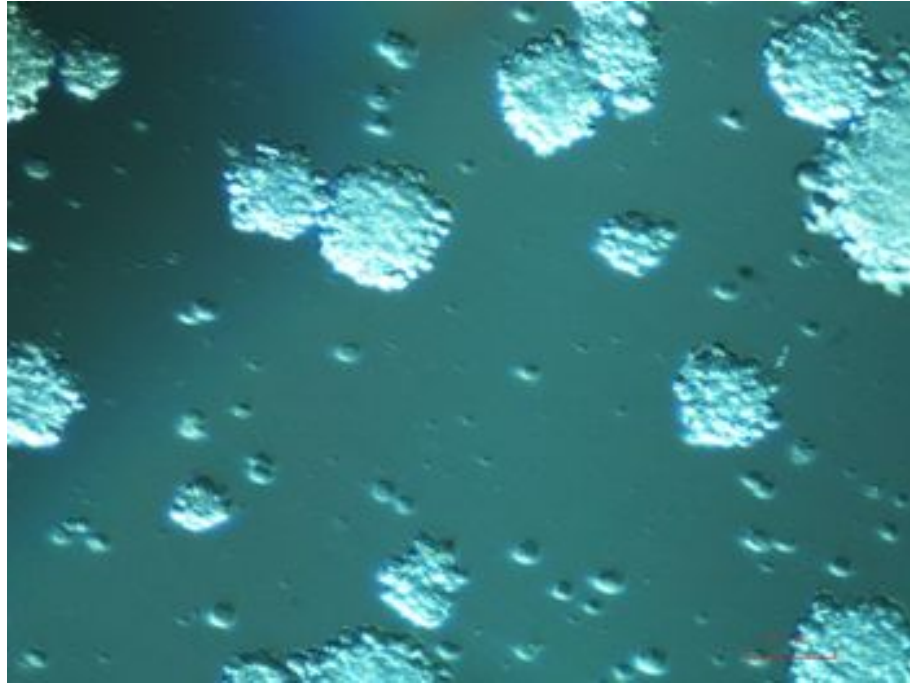
## Cardiomyocyte



Intercalated discs, nuclei, and banding are visible

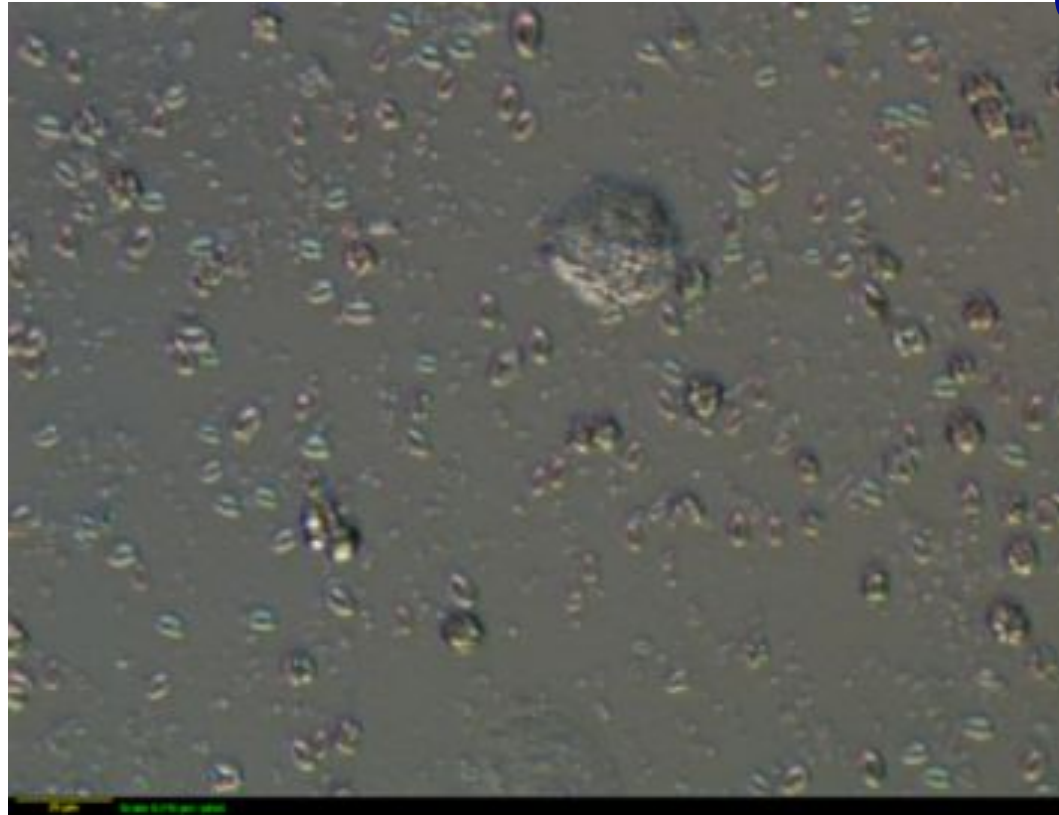
# MygoGenesis™ - Directed Differentiation Examples

Neuronal  
Cells



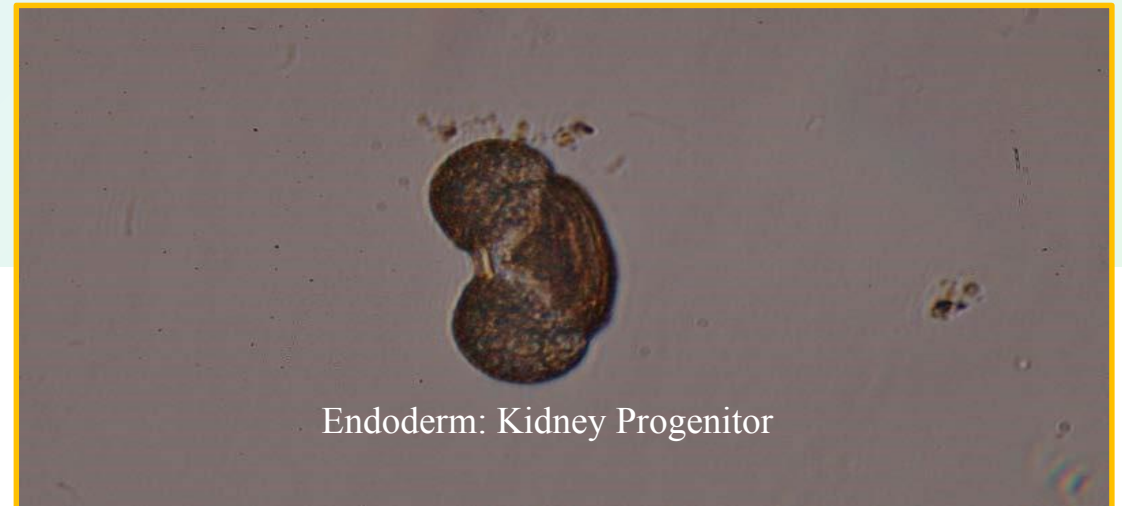
# MygoGenesis™ - Directed Differentiation Examples

Red Blood  
Cells



# MygoGenesis™ - Directed Differentiation Examples

## KIDNEY ORGANOIDS





# AmeboGenesis™

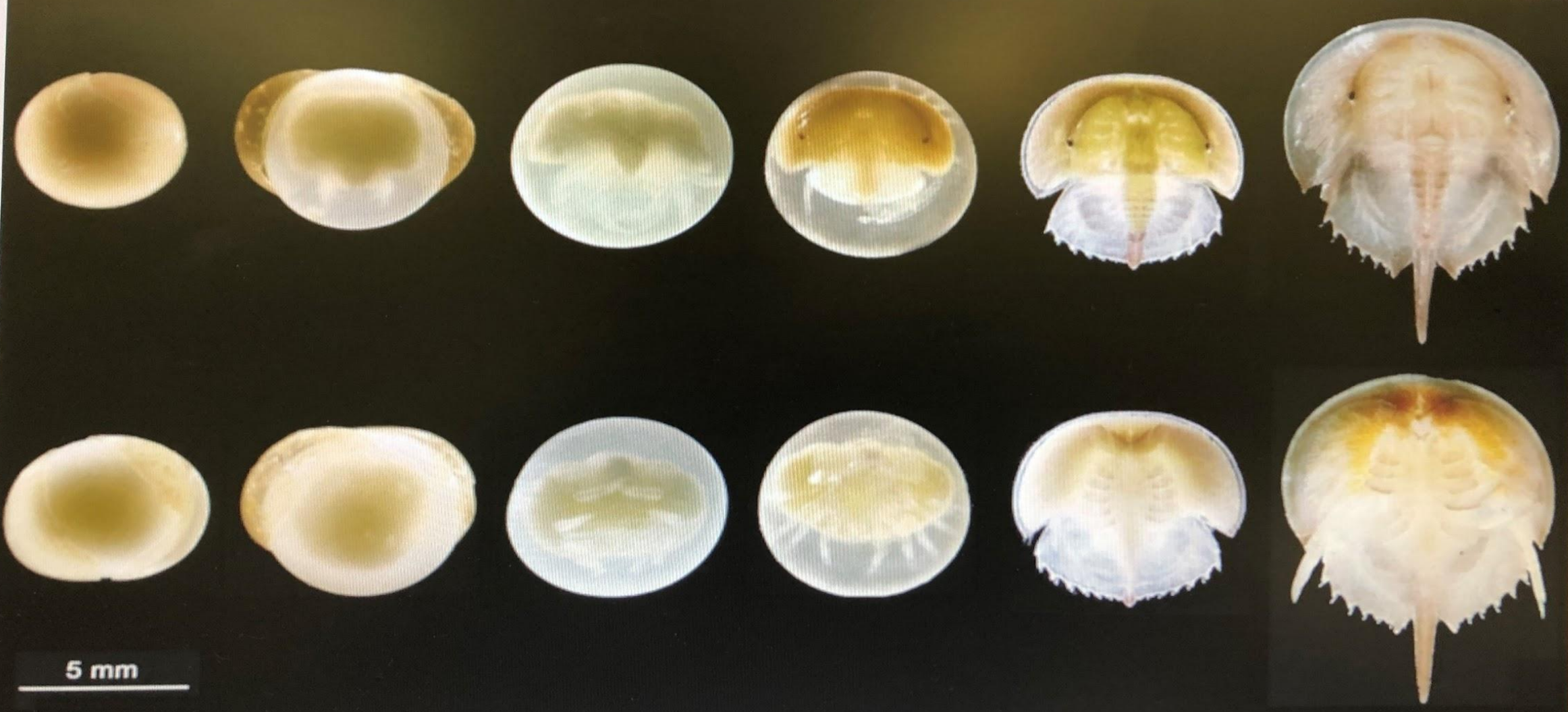
**The Mygotic Process™ is the Future**

***A Revolutionary Breakthrough in Biomedical Testing:***

***AmeboGenesis™ Introduces Sustainable Amebocyte Production for LAL Testing to Detect Bacterial Contamination without changing the DNA***

***LAL Can Now Be Produced Without Harvesting the Blood of more than 1 million Horseshoe Crabs each Year to Restore their Natural Population***

# AmeboGenesis™ Horseshoe Crab Embryos



# Horseshoe Crab Embryos



# The Mygotic Process™ Reverts Cancer Cells to Normal

- Cancerous and tumor cells from Human, mouse, rat and hamster have been treated with the Mygotic Process
- After more than 10 passages - no immunological or morphological change toward tumorigenesis
- Cells derived from the Mygotic Process source are similarly free of testable cancerous traits- abnormal cell size, shape, and nucleus
- **CANCER VACCINES**

# The Mygotic Process™ has Significant Advantages in Safety and Production Efficiency

## MYGOTIC PROCESS VS IPSC'S

	mRNA	Senai or other Viral Vectors	Episomal Vector (i.e. plasmids)	RNA Replicon	Protein	Mygotic Process™
Genetic Integration or Retention	Unknown Risk	Risk	Risk	Risk	Risk	<b>No Risk</b>
Precision Gene Control	Positive	Negative	Negative	Negative	Negative	<b>Positive</b>
Time to Cell Colonies	2 Weeks	4 Weeks	4 Weeks	4 Weeks	4 Weeks	<b>2-5 Days</b>
Time to Usability of Cells	2 Weeks	≥8 weeks	≥8 weeks	4-6 Weeks	4-6 Weeks	<b>5-7 Days</b>
Efficiency	0.5-2%	0.01 – 1%	0.0001%	0.01 – 1%	0.00001%	<b>40 - 70%</b>

# THE MYGOTIC PROCESS™

- The Mygotes™ Function the same as the Gold Standard Embryonic Cells
- These are **ZYGOTIC CLONES - NOT IPSC's**
- Autologous
- No changes in the DNA
- No overexpression and/or continued expression of embryonic genes
- Rapid time to cell colonies and usability of cells
- High efficiency

# The Science of Our Mygotic Process™ Has Been Rigorously Proven

Cells that we have already produced using our proprietary process include:

## Blood Products

- Type O Negative Blood (Universal)
- Red Blood Cells & Platelets

## Human Therapeutics

- Neurons
- Cardiomyocytes
- Chondrocytes
- Pancreatic cells
- And many others

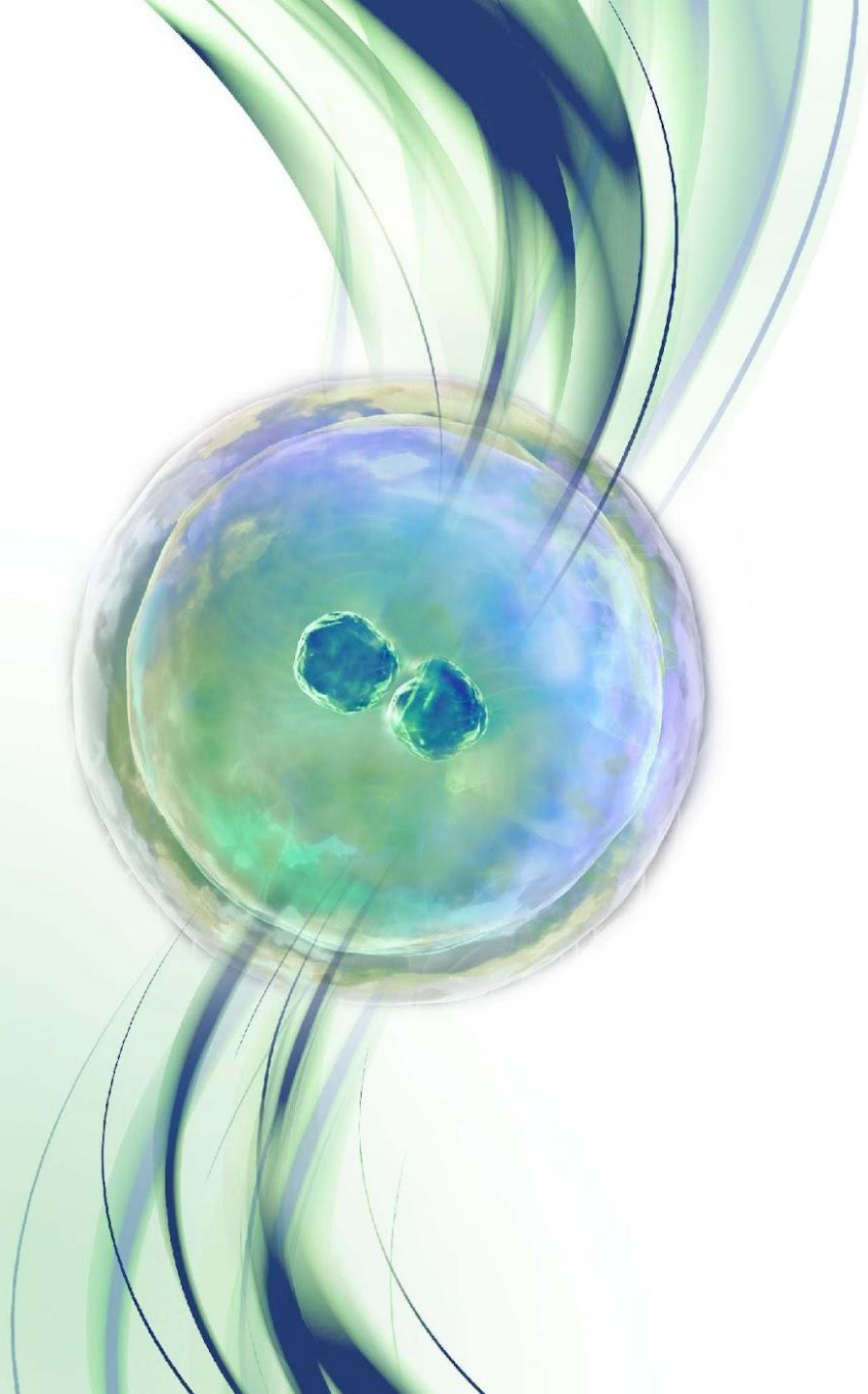
## Amebocytes (non-human)

Medical Testing 



# MygoGenesis™

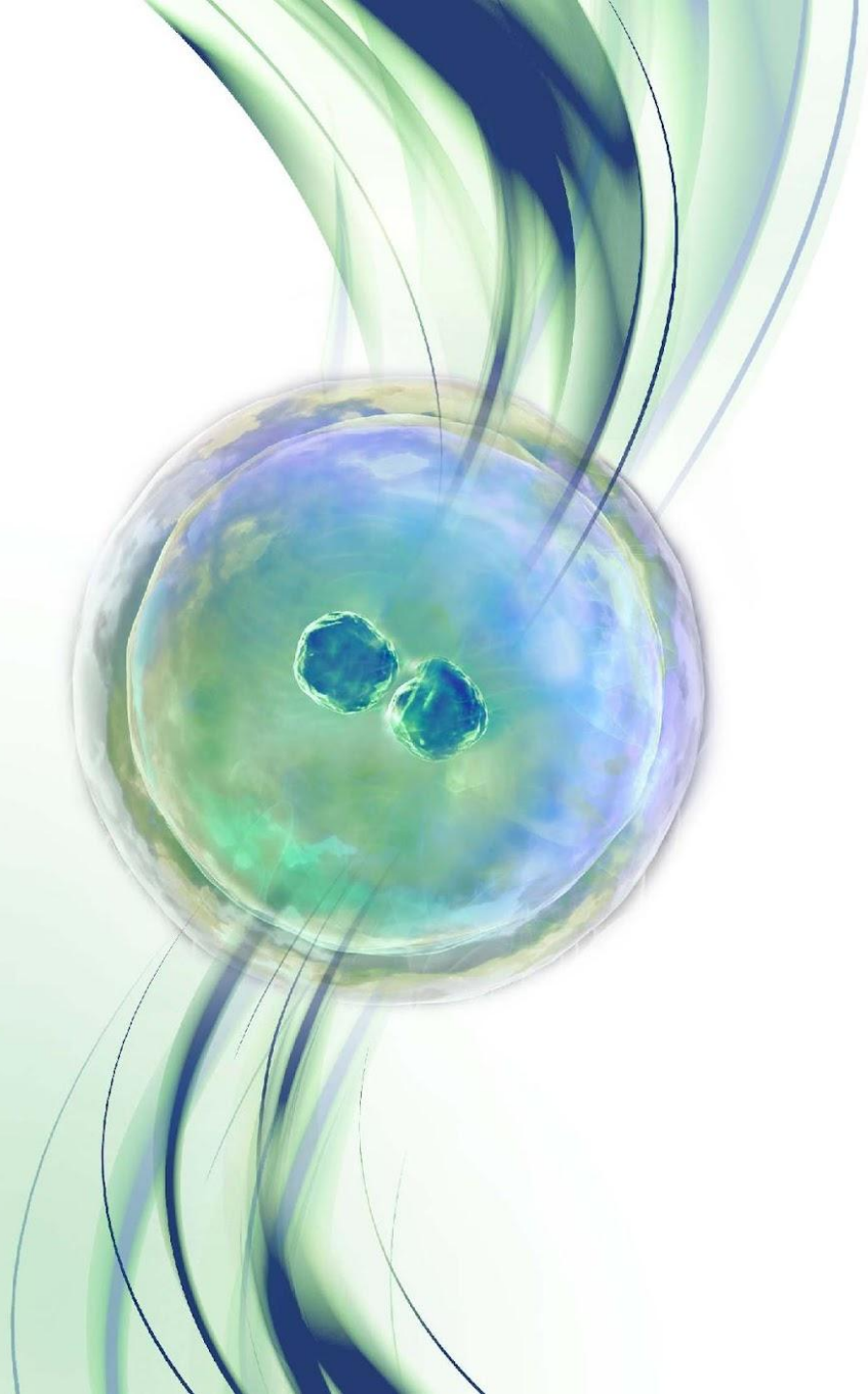
The Mygotic Process™ is an alternative, more robust, safer, and more efficacious method of producing Totipotent stem cells. It appears this is “**the Holy Grail**” for **Stem Cell Medicine**



# THE MYGOTIC PROCESS™

NEXT FRONTIER

# LONGEVITY



“We cannot go to where  
we dream of being  
tomorrow unless we  
change our thinking today”

**Albert Einstein**

Thank You

