

GelCel

Soft Gel Cell Culture System

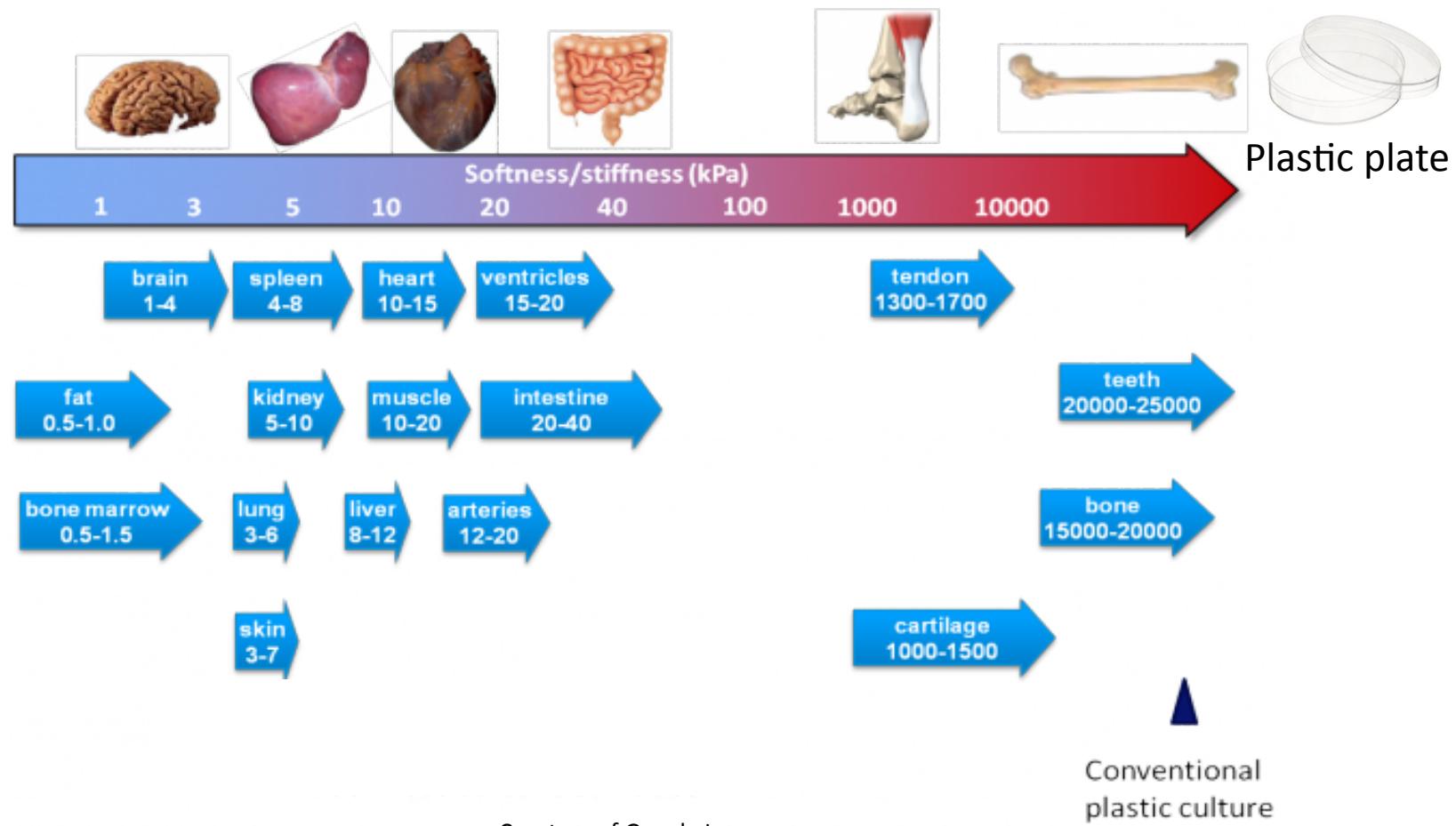
Ruqayyah Malik

Mithil Chokshi

Kaori Ihida-Stansbury

Problem to Solve

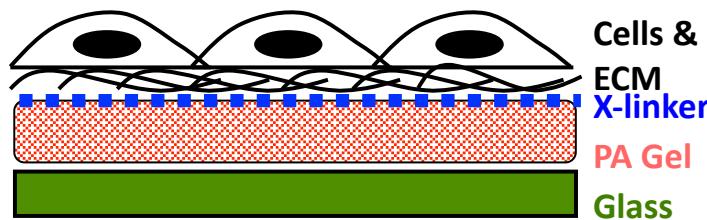
- Plastic culture dish is too far from *in vivo* physiological condition (extremely stiff surface) – difficult to translate the results to actual human body
- There is a fundamental need for a better culture system with physiological condition to reduce animal use and more efficient drug development



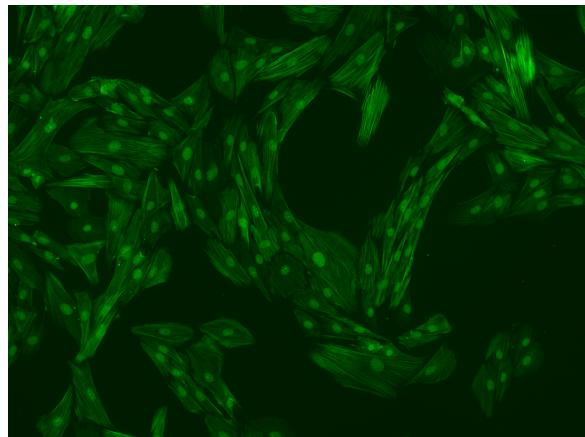
Courtesy of Google Images

Solution

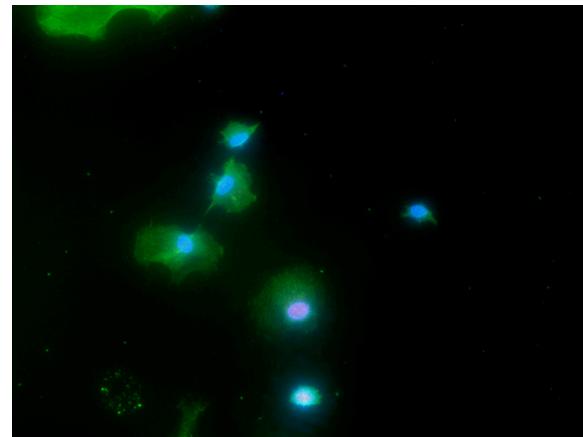
- Can mimic the physiological stiffness by utilizing the device from GelCel
 - Wide range of stiffness can be tuned from 0.1 kilo-Pascals (kPa) to 100 kPa
 - Large surface area for cell culture, controlled stiffness, easy imaging, environment-friendly, cost-efficient



Vascular Smooth Muscle Cells (PAC1 cell line example)



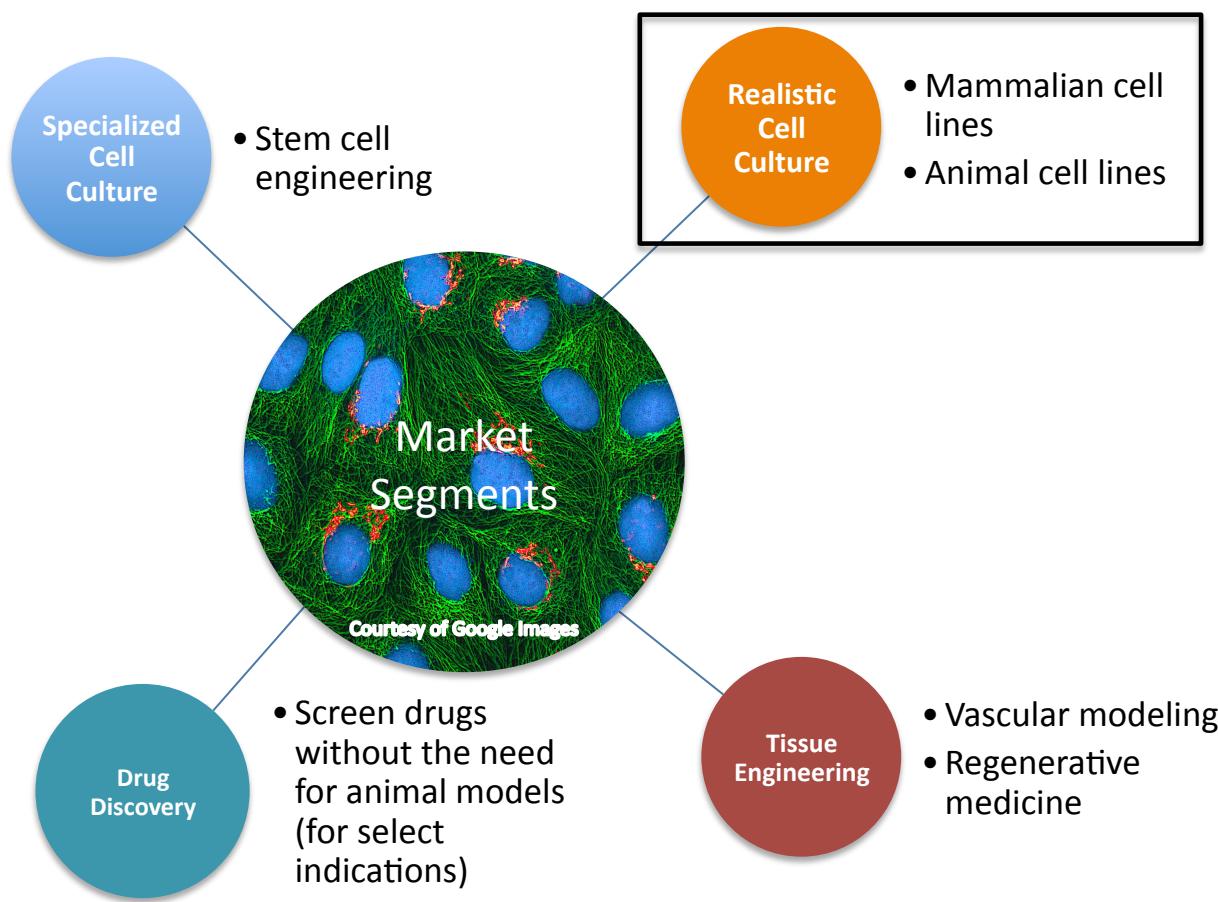
Cell growth on plastic



Cell growth on 1 kPa gel

} Significant differences that often go unnoticed

Market & Customers



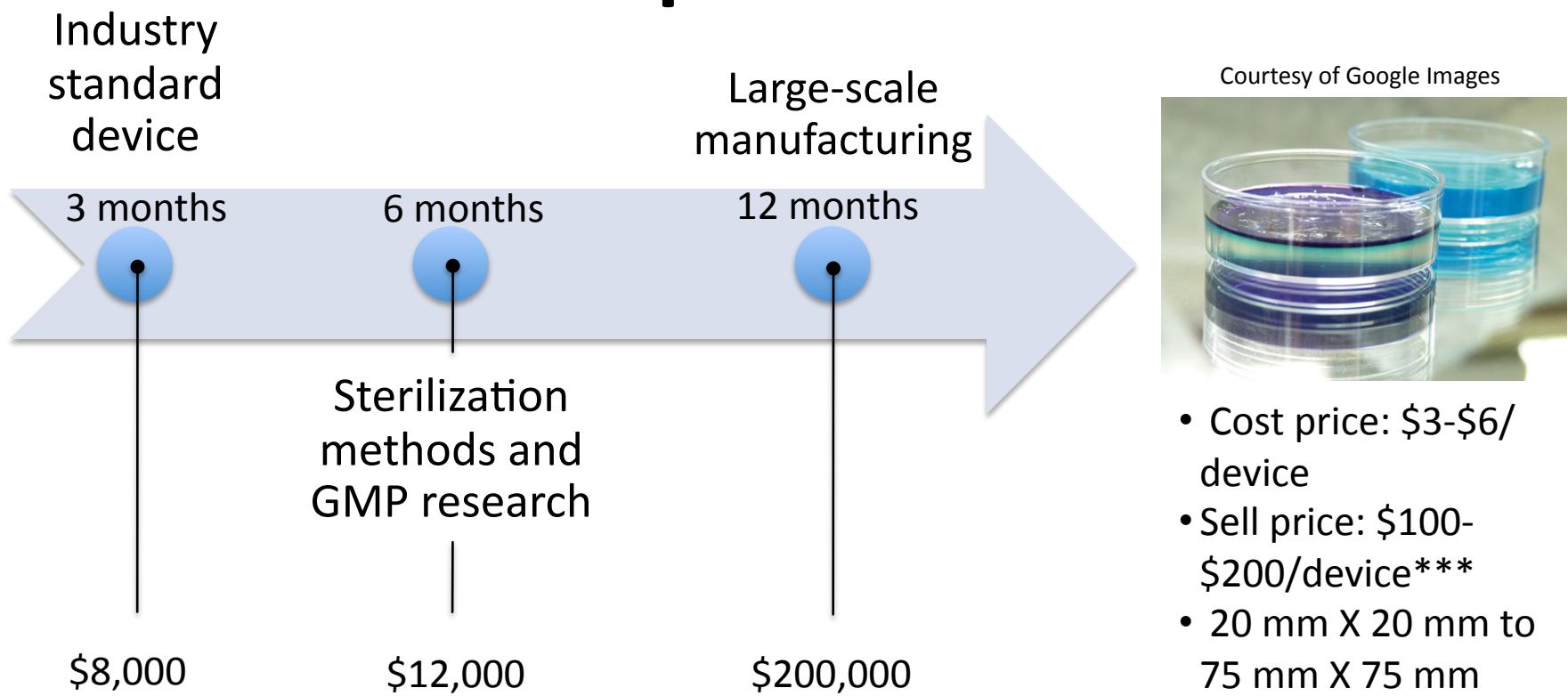
Primary Target:

- 3D cell culture market is valued at \$438.1 million
- Growth expected to about \$2.2 billion in 2019
- Compound annual growth rate at 30.1%

Potential Customers:

- Industry and academia laboratories
 - ✓ Biotechnology
 - ✓ Tissue engineers
 - ✓ Stem cell engineers
 - ✓ Regenerative medicine
 - ✓ Systems biologists
 - ✓ Neuroscience

Development Plan



Current Status:

A small scale laboratory-based prototype was made in 2014 and successfully tested with multiple human and animal cell lines

- Cost price: \$3-\$6/device
- Sell price: \$100-\$200/device***
- 20 mm X 20 mm to 75 mm X 75 mm
- 0.1 kPa to higher than 50 kPa surface stiffness
- Fluorescence microscopy compatible

***: For detailed comparison with the existing technologies, please click [here](#)

Team

**Ruqayyah Malik, BA (Biology) GelCel founder:**

Her science background is biology, especially in mechanobiology, studying the effects of substrate stiffness on gene and protein expression.

Role in this project: Research & Development

**Mithil Chokshi, MSE (Bioengineering) GelCel founder:**

His science background is polymer chemistry and bioengineering. He also has a strong knowledge of application of basic science to commercialization.

Role in this project: Research & Development, marketing

**Kaori Ihida-Stansbury, PhD, GelCel founder:**

Her science background is cell biology in cardiovascular system with specific focus on the microenvironmental guidance in progenitor cell development by manipulating synthetic substrates.

Role in this project: Research & Development, scientific consultant