



# CMaT

NSF Engineering Research Center  
for Cell Manufacturing Technologies

Become an integrated partner of the Cell Manufacturing Technologies (CMaT) research center, and join industry leaders, practitioners, and stakeholders to transform healthcare by bringing affordable, curative cell therapies to patients.

**PARTNER WITH CMAT**  
TO ADVANCE CELL MANUFACTURING

» [cellmanufacturingusa.org](http://cellmanufacturingusa.org)

# What is CMaT?

The center for Cell Manufacturing Technologies (CMaT) is a National Science Foundation (NSF) engineering research center awarded \$20 million for five years with the potential to be renewed and become a 10 year \$40 million center.

Collaborators include the Georgia Institute of Technology (lead), University of Georgia, University of Puerto Rico at Mayagüez, University of Wisconsin-Madison, University of Pennsylvania, Michigan Technological University, Gladstone Institutes, Emory University, and University of Oregon.



## MISSION

CMaT will be recognized as a **Diverse and Inclusive Innovation Hub** for

- Creating **fundamental new knowledge** that enables predictive cell-quality determination and robust, low-cost, scalable cell manufacturing processes
- Inventing and translating **new and transformative tools and technologies** for affordable, reproducible, and high-quality **cell production systems**
- Training an **inclusive cell manufacturing workforce**
- Disseminating **best practices and standards to all stakeholders** throughout the cell manufacturing ecosystem

## VISION

To **transform the manufacture of cell-based therapeutics** into a **large-scale, lower-cost, reproducible, and high-quality engineered process** for broad industry and clinical use.

To **become a visionary and strategic international resource and an exemplar** for developing **new knowledge, innovative technologies, diverse workforce and enabling standards** for cell-production and characterization processes.



## Why join now?

Be at the forefront of an exciting new opportunity to create new technological innovations that bring life-changing cell-based cures to patients.

By joining CMat now, you'll be able to partner with leading academics, industry leaders and practitioners to innovate new, efficient, and economical manufacturing processes with high quality standards to advance cell therapies.

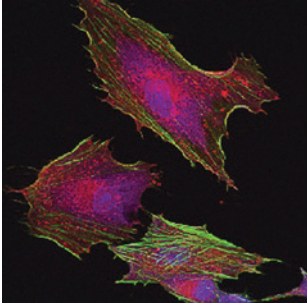
## BENEFITS OF JOINING INCLUDE:

- Partner with an international consortium exclusively engaged in cell manufacturing
- Help develop transformative new tools and technologies for the cell manufacturing industry
- Access to an international network for strategic placement and validation of your tools, instruments, and reagents
- Connect to a trained and inclusive workforce at all levels (technical colleges, graduate students, undergraduate students and post-doctoral researchers)
- Gain insights into emerging standards and regulatory considerations
- Access to state-of-the-art infrastructure to develop and test your processes, tools, and reagents under GMP conditions
- Network with other industry members, collaborate with a world class intellectual ecosystem and an emerging workforce, and utilize insights to refine strategic plans
- Priority access to IP developed by the center and consortium

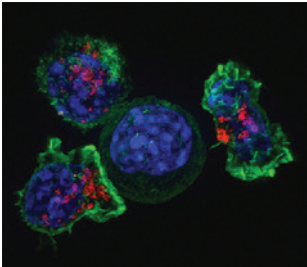
# Our Research

» *Driven by stakeholders* » *Clinically relevant* » *Leading edge*

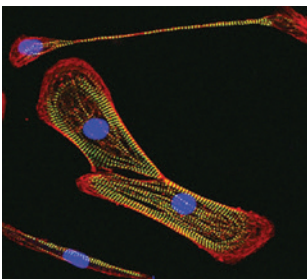
## Research Testbeds



Mesenchymal Stem Cells (MSCs) for Immunomodulation and Tissue Regeneration



Engineered T-cells to Treat Cancer



Induced Pluripotent Stem Cell (iPSC)-derived Cardiomyocytes for Cardiac Repair

### THRUST 1

#### Cell-omics: Cell characterization and computational modeling to identify predictive cell therapy biomarkers

##### What to measure to ensure quality?

- Surface markers, transcriptome, proteome, metabolome, cell biophysical properties, and functional assays
- Informatics-based modeling and identification of predictive biomarkers (i.e. critical quality attributes, CQA)

#### Predicting cell potency and safety:

##### How to measure and predict quality?

- Rapid readout sensors for CQA
- In vitro organotypic and on-chip models
- High throughput potency and safety assay
- Validation/safety of manufactured cells using animal models

### THRUST 2

### THRUST 3

#### Scalable manufacturing:

##### How to manufacture with high quality, low cost, and at large scale?

- Integrated in-line sensors and assays
- Biomaterials for cell expansion
- Massively parallel microfluidic and millifluidic bioreactors for scale-out
- Integration of process control and modeling
- Supply chain management and predictive models

# MAKING CELL THERAPIES MORE ACCESSIBLE



## **CMaT ecosystem and partners:**

Marcus Center for Therapeutic Cell Characterization and Manufacturing (MC3M)

Georgia Tech Petit Institute for Bioengineering and Bioscience

Waisman Biomanufacturing

National Cell Manufacturing Consortium (NCCMC)

Georgia Tech Research Institute (GTRI)

Georgia Tech Manufacturing Institute (GTMI)

Georgia Tech Institute for Robotics and Intelligent Machines (IRIM)

Georgia Clinical and Translational Science Alliance

Global Center for Medical Innovation (GCMi)

National Institute for Standards and Technology (NIST)

Standards Coordinating Body

National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)

Advanced Regenerative Manufacturing Institute (ARMI)

Georgia Advance Biomanufacturing Center (GABC)

Forward BIO Initiative

## COLLABORATE

*with industry, practitioners & academia*

## INNOVATE

*new cell production processes and analytics*

## INVENT

*new tools & technologies*

## ENABLE

*low cost production*

## TRANSLATE

*next generation technologies to commercial adoption*

## TRAIN

*a talented, diverse and inclusive workforce*



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The time is now!

Become a CMaT partner and  
revolutionize medicine with us.

**Contact us today for more information.**

**[cmat@cellmanufacturingusa.org](mailto:cmat@cellmanufacturingusa.org)**

**» [cellmanufacturingusa.org](http://cellmanufacturingusa.org)**

**BECOME A PARTNER TODAY**