# BIOMEDICAL ENGINEERING

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Third-Year Options

- Clinical Innovation & Design Distinction
- Dual Degree: MSE/MD

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**SHELLY SAKIYAMA-ELBERT, PHD**
Chair & Professor of BME

**LAURA SUGGS, PHD**
Associate Chair & Professor of BME

**CARLOS MERY, MD, MPH**
Associate Professor of Surgery

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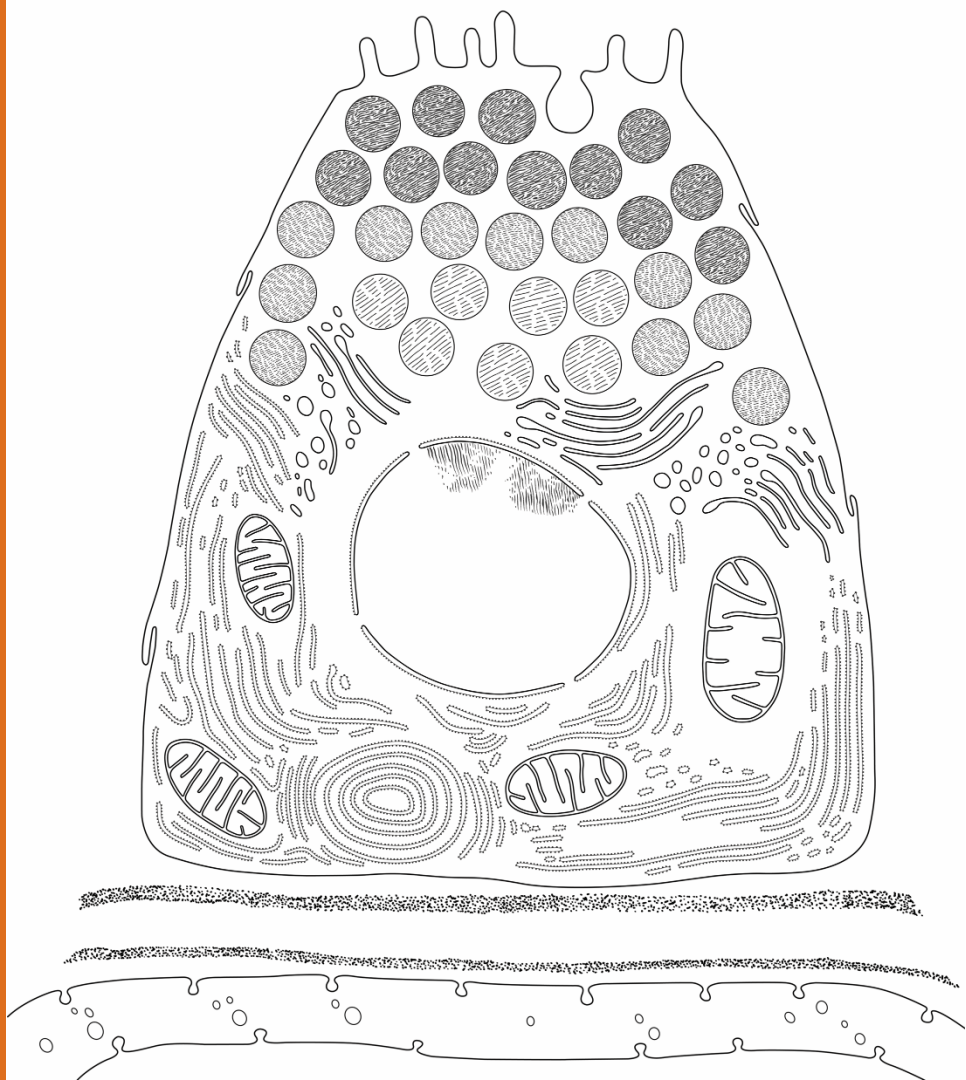
# WHAT IS BIOMEDICAL ENGINEERING?

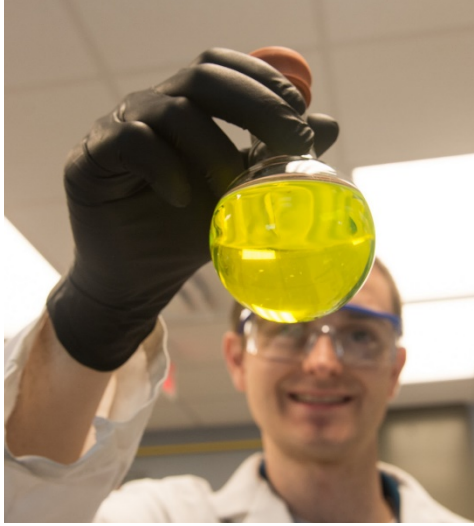


# BIOMEDICAL ENGEERING

Integrates biological & medical sciences

with engineering problem-solving tools to

Produce solutions to complex problems in medicine



# COCKRELL SCHOOL OF ENGINEERING

## #10

**Best Graduate Engineering Program in the U.S.**

*U.S. News and World Report*

## #11

**Best Undergraduate Engineering Program in the U.S.**

*U.S. News and World Report*

## #10

**Best Engineering Program in the World**

*Academic Ranking of World Universities*

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Biomedical Engineering
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# BME BUILDING

- BME & Pharmacy
- Student Services
- Research Labs
- Design & Project Labs

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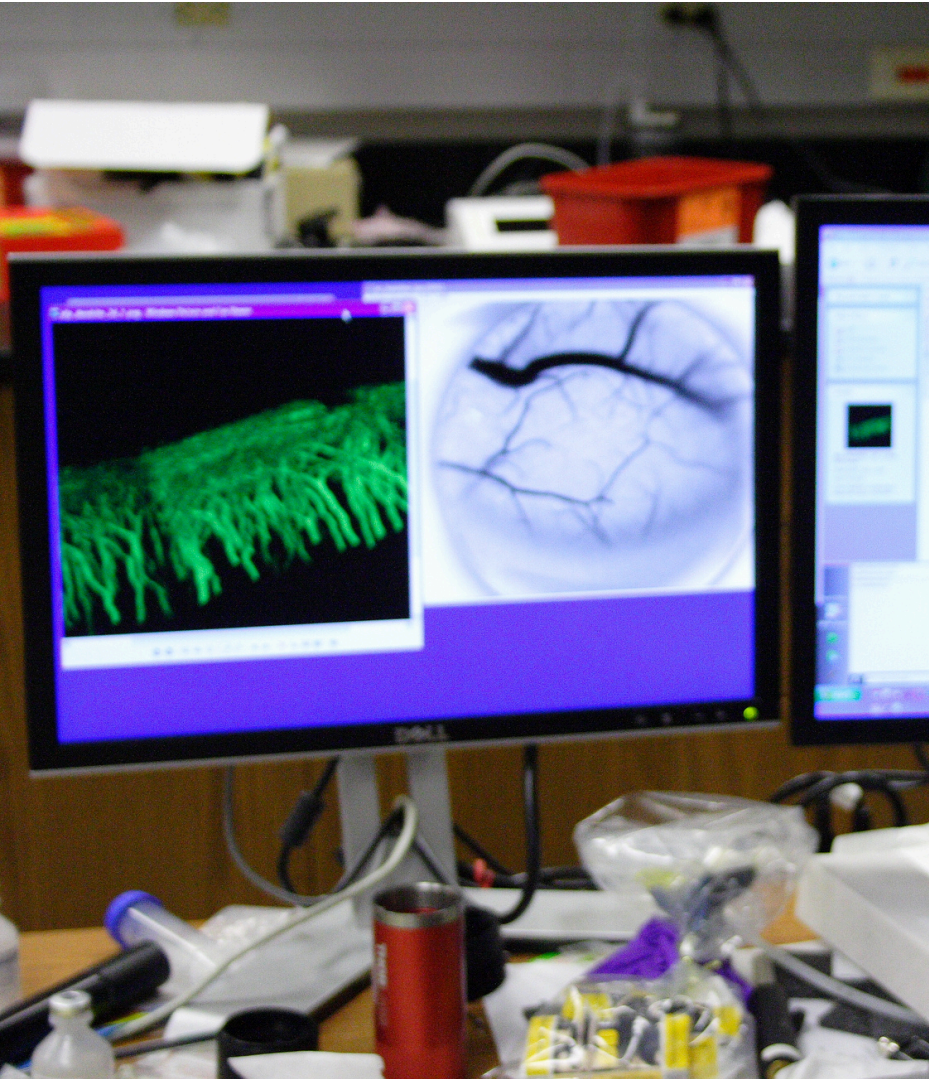
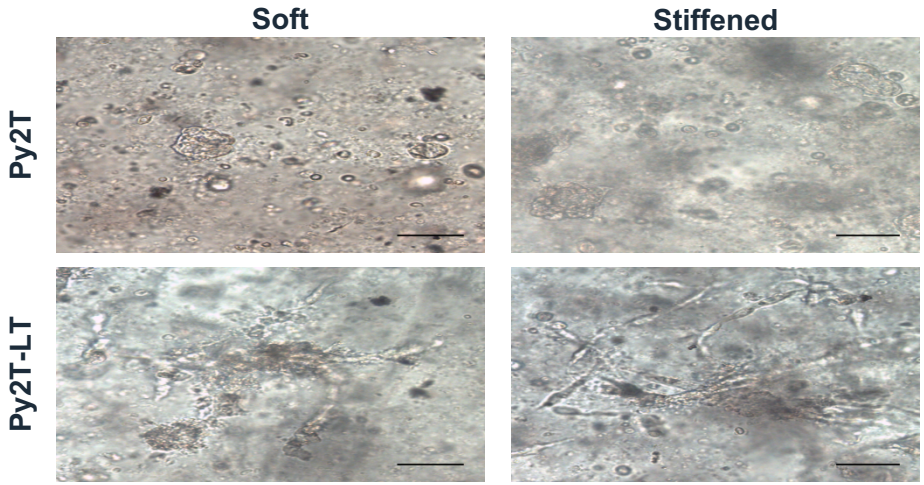
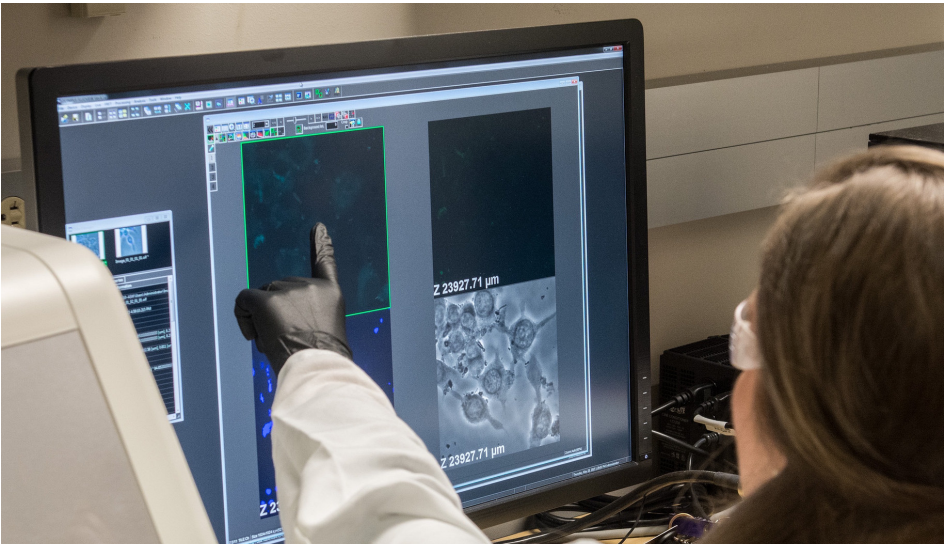
# PEOPLE

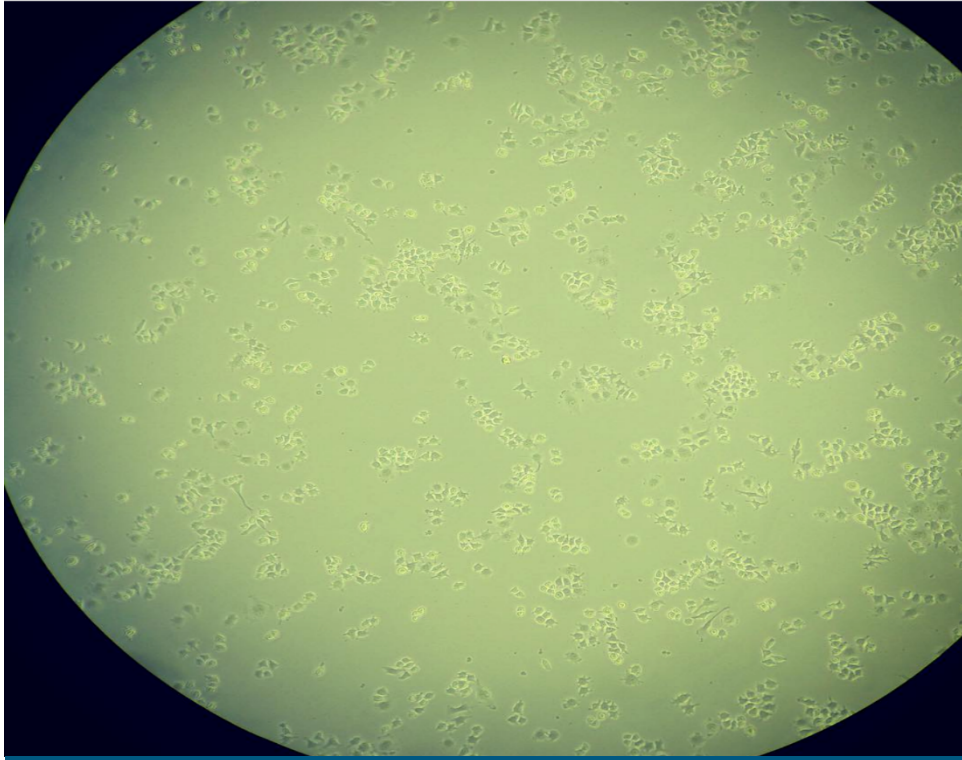
- **25 faculty**
  36% women, 64% men
- **513 undergraduates**
  50% women, 50% men
- **115 MS & PhD students**
  36% women, 64% men



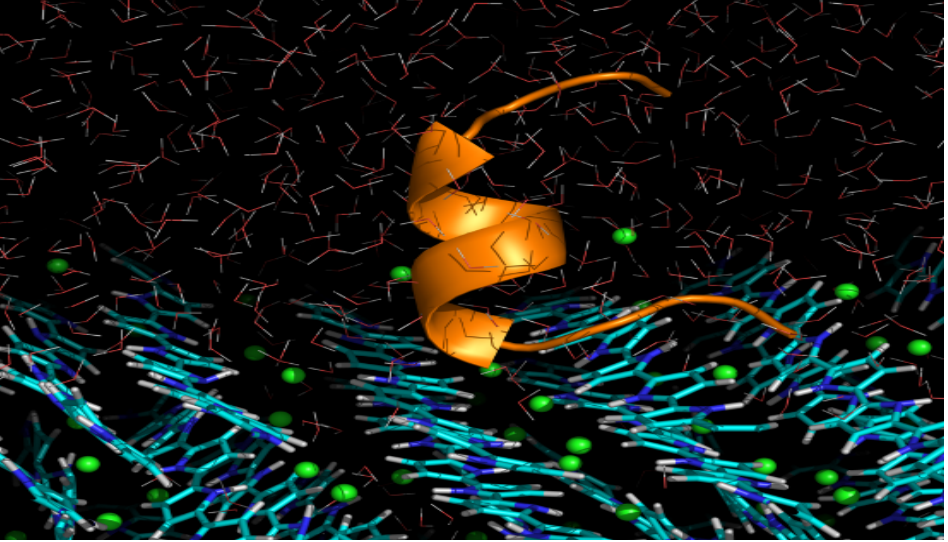
# Medical Imaging & Instrumentation

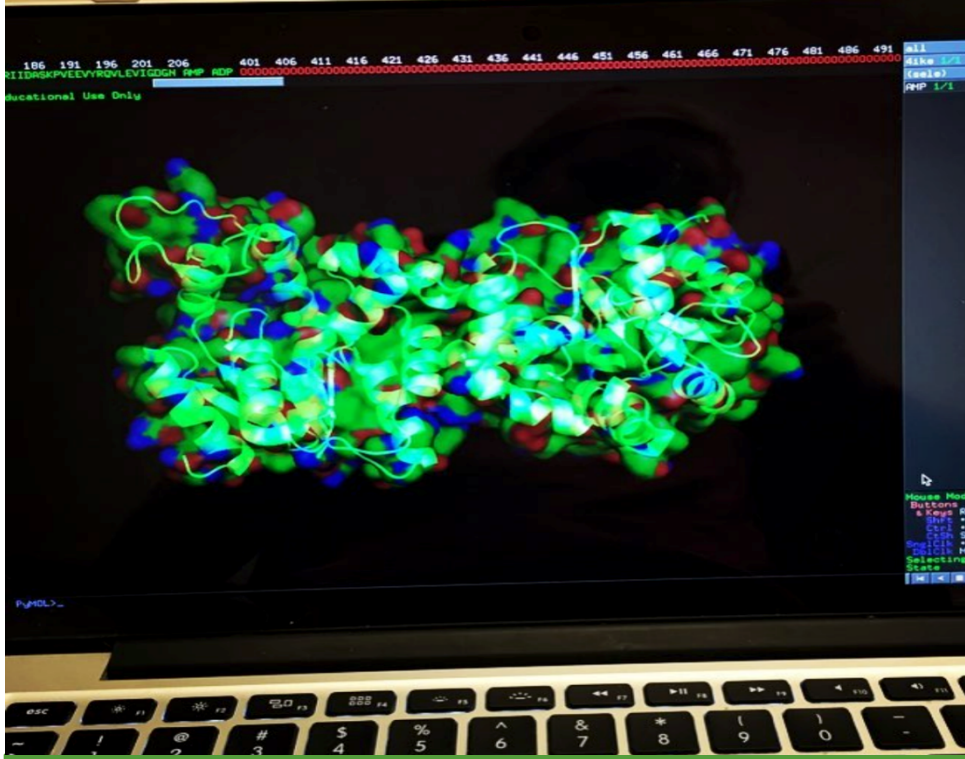


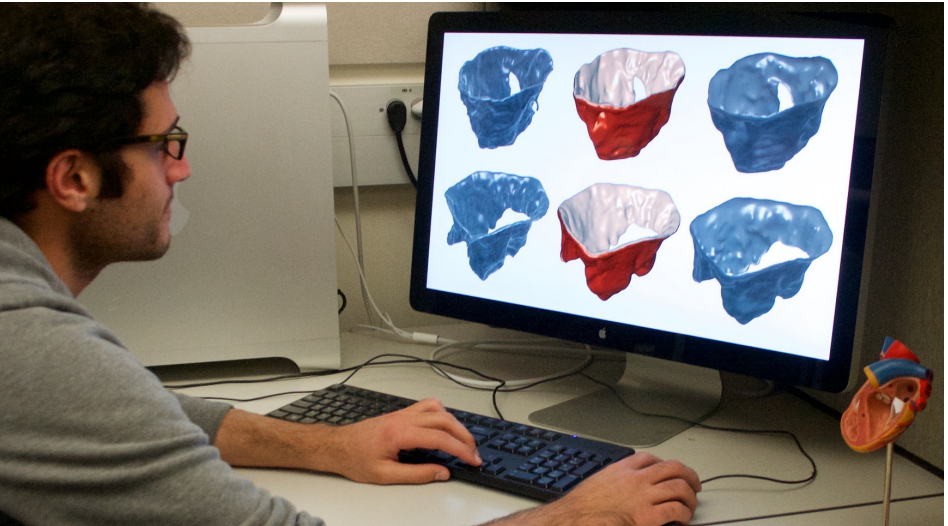



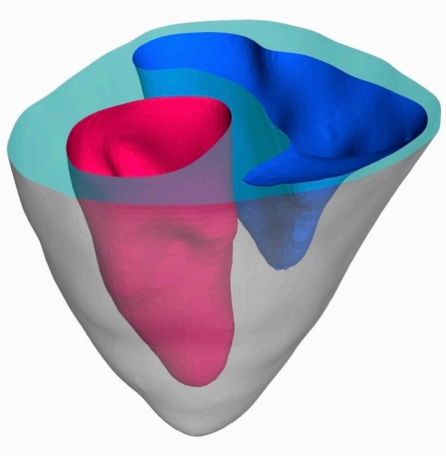
# Regenerative Medicine & Nanotechnology

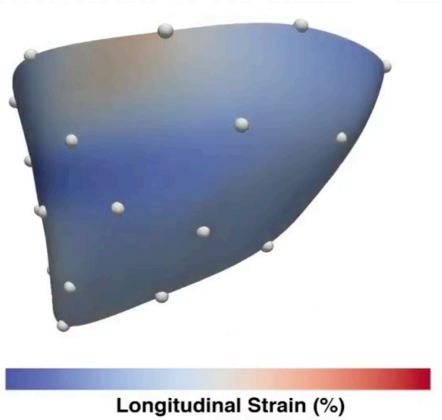




# Computational Modeling & Simulation




# Molecular, Cellular & Tissue Biomechanics

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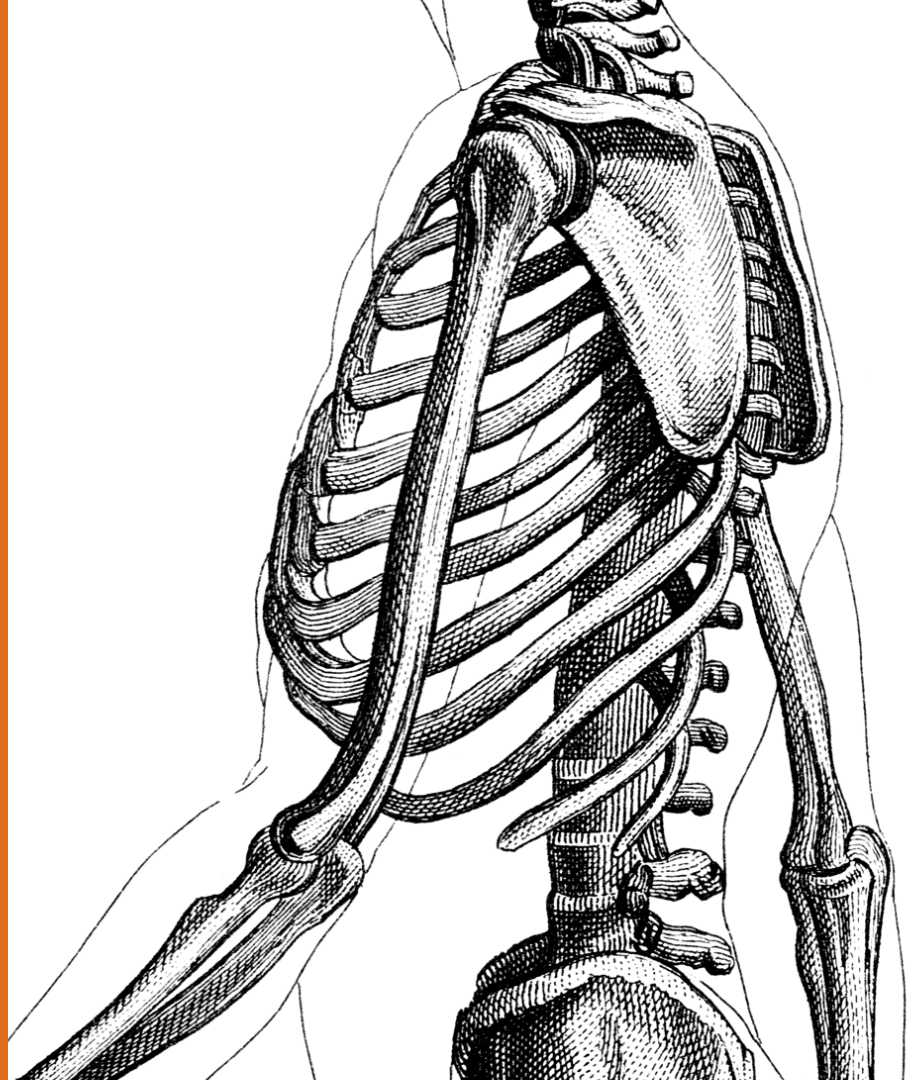
Third-Year Option:

# Distinction in Clinical Innovation & Design



# MULTIDISCIPLINARY TEAMS

- Medical Students with Masters Engr Students
- Mentored by medical and engineering faculty
- 9-month team project

- Goal: market-viable product & business plan

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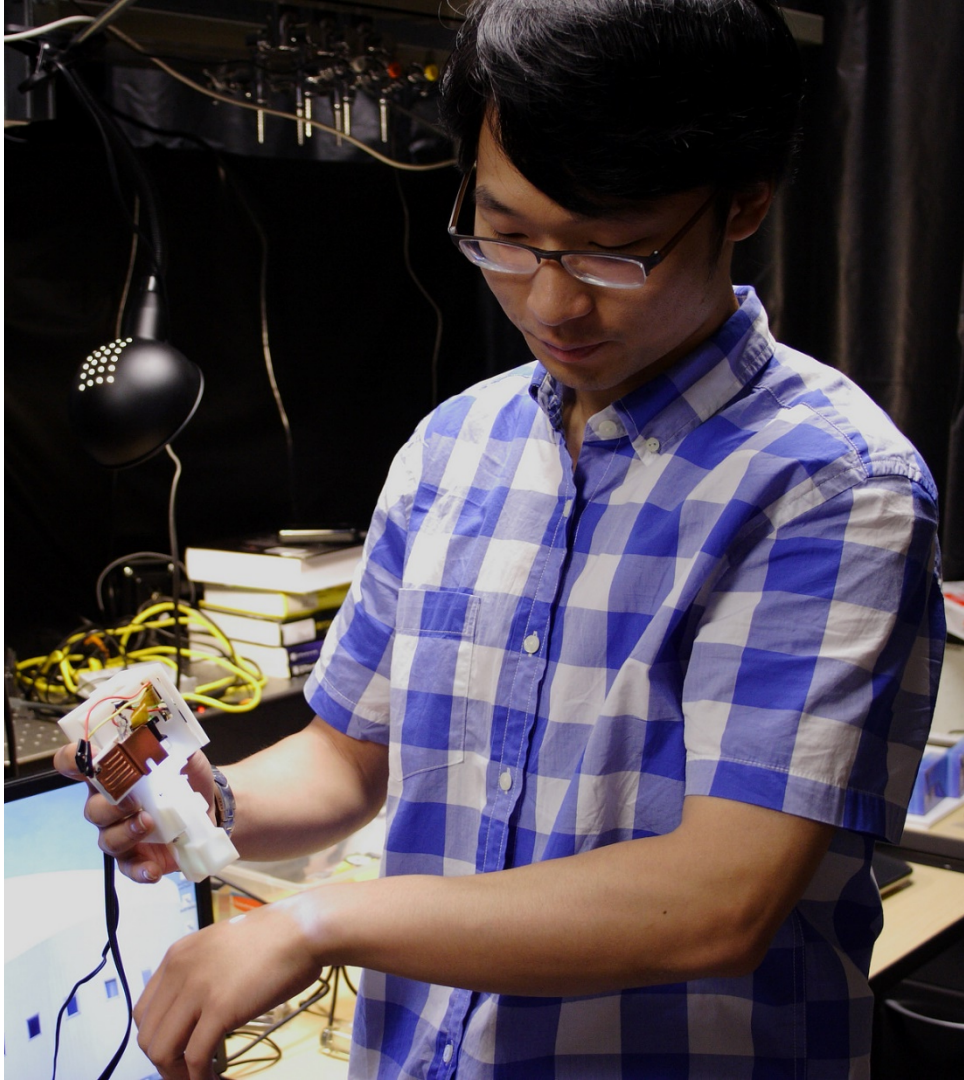
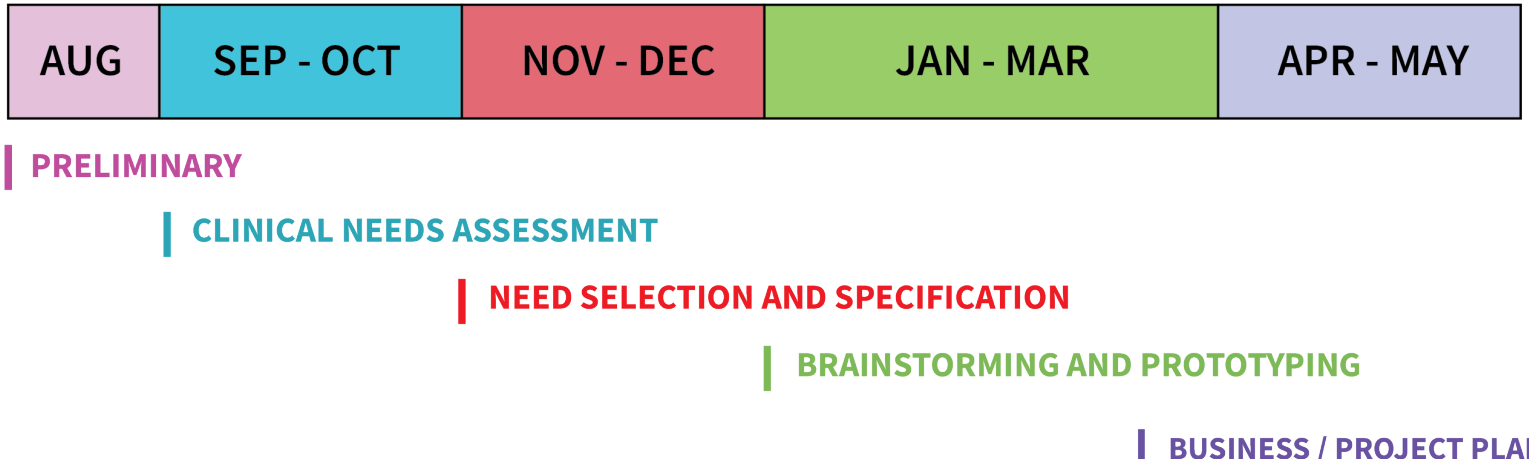


# Clinical Innovation & Design Distinction Project

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Dell Medical School

# Distinction Eligibility & Application

- No engineering or design background necessary!
- Interest in:
  - Clinical Needs Identification
  - Innovative Devices
  - Entrepreneurship
- Applications and interviews take place between September 1 – January 31 of MS2

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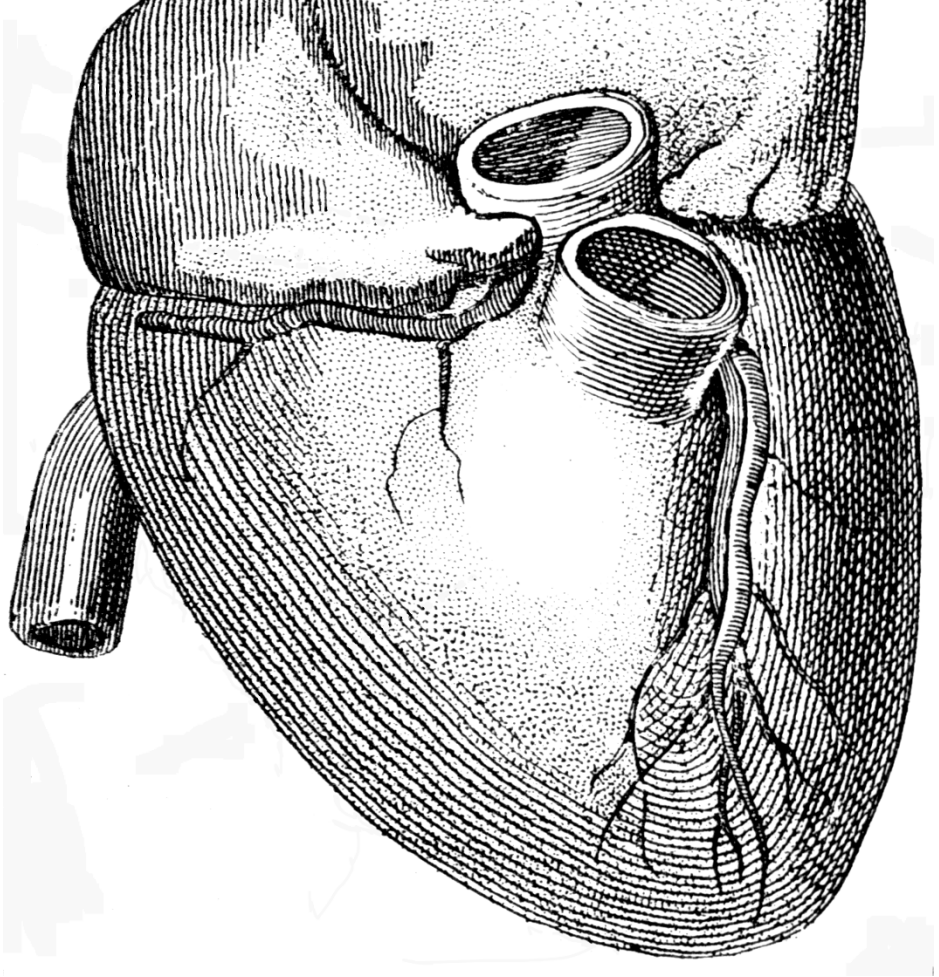
Third-Year Option:

# Master of Science in Engineering (MSE)



# Master of Science in Engineering (MSE): 30 hours

- Biomedical Engineering masters degree
- MSE requires 30 hours total
- **12 hours already earned in MS1**

| | | |
|---|---|---|
| **MS1** | MED 181<br>Normal Body Structure & Function<br>=<br>BME 681M (6 hours) | MED 185<br>Mechanisms of Disease<br>=<br>BME 685M (6 hours) |

# Master of Science in Engineering (MSE): Year 3

| | | | |
|---|---|---|---|
| **MS3 Fall** | BME 382J.4 (3hrs)<br>Engineering Biomaterials | BME 381J.3 (3hrs)<br>Imaging Modalities | 1 elective (3hrs)<br>Biomechanics or Biostats or other |
| **MS3 Spring** | BME 381J.8 (3hrs)<br>Imaging Laboratory | BME 384J.5 (3hrs)<br>Instrumentation Projects | 1 elective (3hrs)<br>Research project or other |

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18 hours earned in MS3 finishes MSE degree

# Many Elective Topics Available

**Therapeutic Agent Delivery**

**Systems Immunology**

**Cancer Bioengineering**

**Cell & Tissue Biomechanics**

**Biological Responses to Medical Devices**

**Imaging & Image Processing**

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**Elective substitutions allowed** to match your background and interests

# Distinction Project (12 hrs): option for MSE credit

**MS3 Fall**

Elective BME Course
(3 credit hrs)

+

AUG | SEP - OCT | NOV - DEC

- PRELIMINARY
- CLINICAL NEEDS ASSESSMENT
- NEED SELECTION AND SPECIFICATION

**MS3 Spring**

Elective BME Course
(3 credit hrs)

+

JAN - MAR | APR - MAY

- BRAINSTORMING AND PROTOTYPING
- BUSINESS / PROJECT PLAN

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**Substitute 9-month long project for 4 courses** (12 hrs) toward MSE

# MSE ELIGIBILITY & APPLICATION

## Eligibility

- Engineering BS not required
- Some biology, chemistry, physics and calculus recommended

## Application deadline is December 1

- 3 letters of recommendation
- statement of purpose
- transcripts
- GRE requirement is waived for MSE/MD Dual Degree

# QUESTIONS?


Distinction Contacts:

**Shelly Sakiyama-Elbert**, PhD

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**Carlos Mery,** MD, MPH

cmery@austin.utexas.edu

MSE/MD Contact:

**Laura Suggs**, PhD

suggs@utexas.edu