

MAY 2022

BIOMEDICAL ENGINEERING

Third-Year Options

- Clinical Innovation and Design
- Dual Degree: MD/MSE



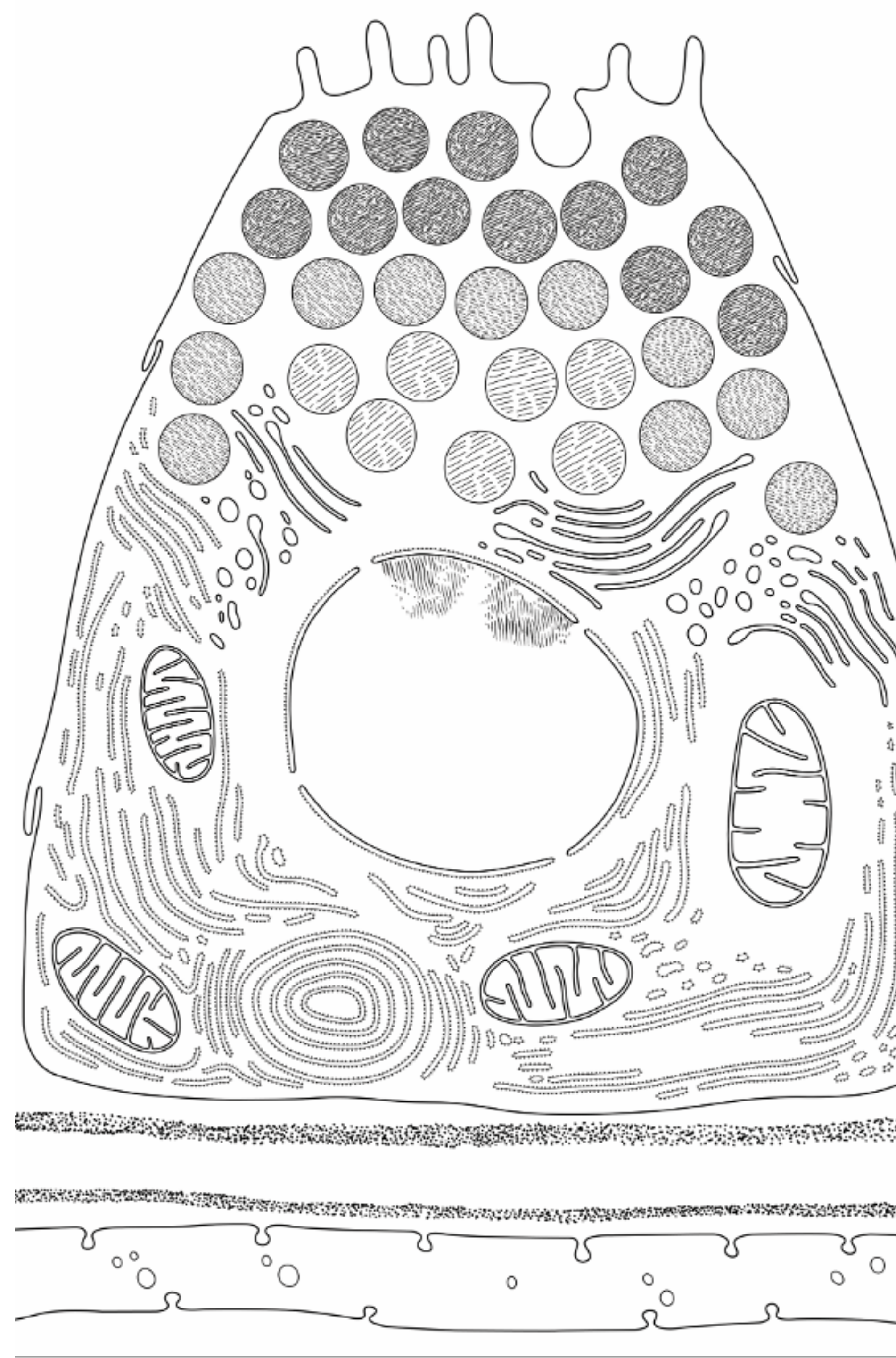
SHELLY SAKIYAMA-ELBERT, PHD
Chair & Professor, BME

LAURA SUGGS, PHD
Professor, BME

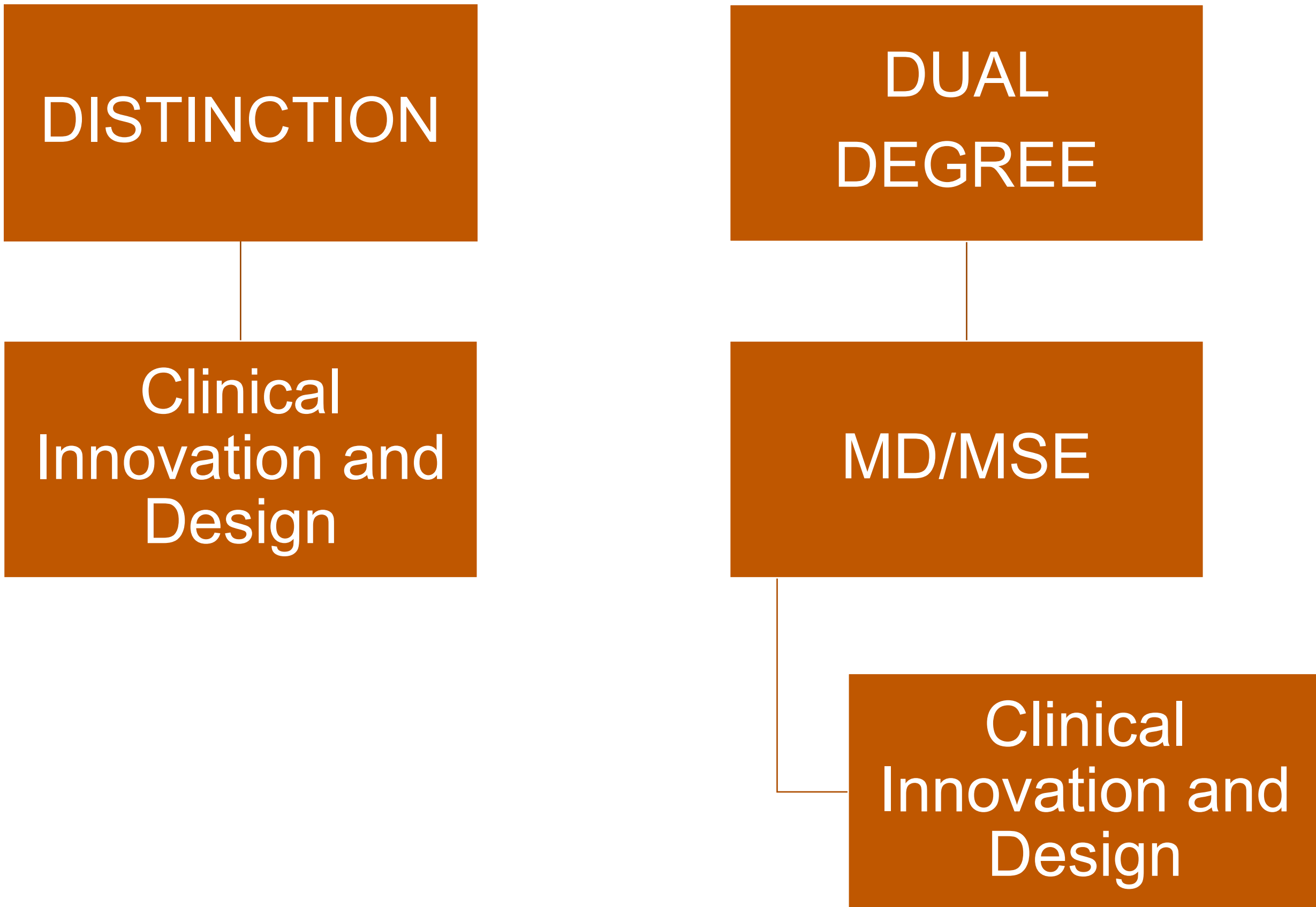
CARLOS MERY, MD, MPH
Associate Professor of Surgery, DMS

WHAT IS BIOMEDICAL ENGINEERING

- Integrates **biological and medical sciences** with **engineering** problem-solving tools to produce solutions to complex problems in medicine
- Medical Imaging & Instrumentation
- Regenerative Medicine & Nanotechnology
- Computational Modeling & Simulation
- Molecular, Cellular & Tissue Biomechanics



YEAR 3 OPTIONS IN BME



CLINICAL INNOVATION & DESIGN

- Develop a market-viable product & business plan
- 9-month team project
- Multidisciplinary teams of medical and engineering students
- Distinction only or as a component of the MSE



The University of Texas at Austin
Dell Medical School



CLINICAL INNOVATION & DESIGN



PRELIMINARY

CLINICAL NEEDS ASSESSMENT

NEED SELECTION AND SPECIFICATION

BRAINSTORMING AND PROTOTYPING

BUSINESS / PROJECT PLAN

MENTORS: ENGINEERING



SHELLY SAKIYAMA-ELBERT, PHD

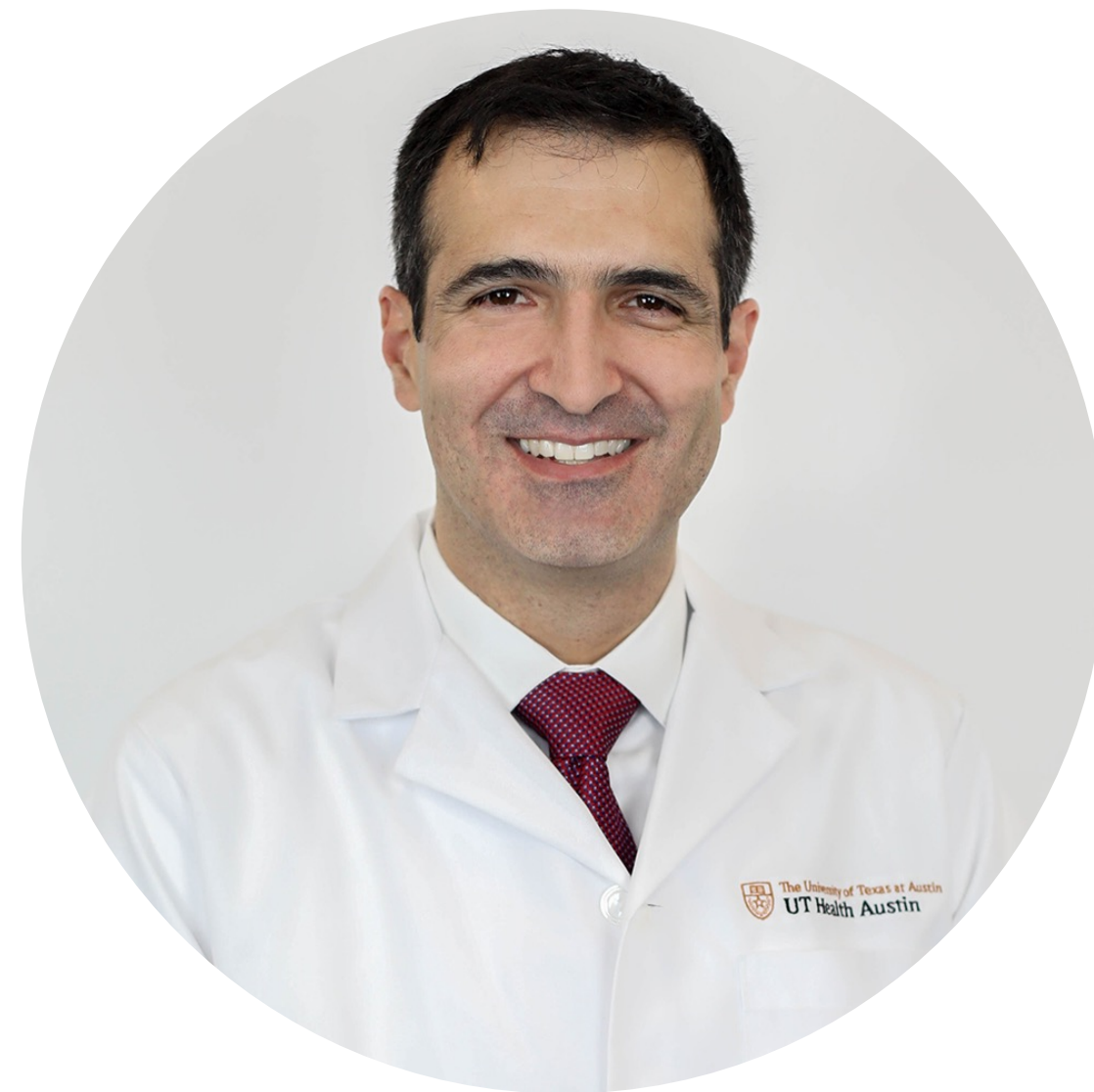
Professor & Chair
Director, Clinical Innovation & Design
Department of Biomedical
Engineering



JAMES TUNNELL, PHD

Associate Professor
Department of Biomedical
Engineering

MENTORS: MEDICINE



CARLOS MERY, MD, MPH

**Congenital Heart Surgeon
Co-Director, Clinical Innovation & Design**

Associate Professor of Surgery & Pediatrics
Texas Center for Pediatric & Congenital Heart Disease



JOHN UECKER, MD

General Surgeon

Professor
Chief of Innovation & Entrepreneurship
Department of Surgery & Perioperative Care

TEXAS BIOMEDICAL ENGINEERING

FINAL PRESENTATION

- Capture the year in review
- Present to a broad audience including clinicians and the local medical device and technology innovation industry



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Dell Medical School



DISTINCTION ELIGIBILITY

- No engineering or design background necessary!
- Have interest in:
 - Clinical needs identification
 - Innovative devices
 - Entrepreneurship
- Short application in Interfolio due December 1 of MS2



“The skills and incredible connections I have gained through this program will allow me to better understand what is truly going on with my patients and develop solutions for often overlooked populations.”

Natalie Weston, 21-22 CID Cohort

MASTER OF SCIENCE IN ENGINEERING (MSE)

- 30 hours of coursework
 - 12 hours already earned in MS1
 - 18 hours completed over two semesters in BME

MS1

MED 181
Normal Body Structure & Function
=
BME 681M (6 hours)

MED 185
Mechanisms of Disease
=
BME 685M (6 hours)



MASTER OF SCIENCE IN ENGINEERING (MSE)

MS3 Fall

BME 382J.4 (3hrs)
Engineering Biomaterials

BME 381J.3 (3hrs)
Imaging Modalities

1 elective (3hrs)
Biomechanics
or Biostats or other

MS3 Spring

BME 381J.8 (3hrs) Imaging
Laboratory

BME 384J.5 (3hrs)
Instrumentation Projects

1 elective (3hrs)
Research project or other

ELECTIVE TOPICS

**Cell & Tissue
Engineering**

**Delivery of Therapeutic
Agents**

**Bioelectronics &
Biointerfaces**

**Health Equity in
Engineering Design**

**Cell & Molecular
Biomechanics**

**Imaging & Image
Processing**

Elective substitutions allowed to match your background and interests

CID PROJECT (12 HRS): OPTION FOR MSE

MS3 Fall

Elective BME Course
(3 credit hrs)



| PRELIMINARY

| CLINICAL NEEDS ASSESSMENT

| NEED SELECTION AND SPECIFICATION

MS3 Spring

Elective BME Course
(3 credit hrs)



| BRAINSTORMING AND PROTOTYPING

| BUSINESS / PROJECT PLAN

Substitute 9-month long project for 12 hours toward MSE

MSE 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 not required**



THANK YOU.

Join us for the breakout session!

clinicalinnovation@utexas.edu



The University of Texas at Austin
Biomedical Engineering
Cockrell School of Engineering