




Marissa D'Souza


Medical Student


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 [Marissa D'Souza](#)

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 Savannah, GA

EDUCATION

Doctor of Medicine

Mercer University School of Medicine (MUSM)

08/2017 – 05/2021

Bachelor of Science in Computer Science

Georgia Institute of Technology (GT) | Concentrations: People x Media

08/2013 – 05/2017

Magna Cum Laude

- ▶ Selected to partake in GT “**Grand Challenges**” — a four-year curricular program and living community designed to foster problem-solving, leadership, and entrepreneurship in students wishing to tackle major global problems

HONORS & AWARDS

MUSM Award for Student Excellence in Research

08/2020

Jocelyn A. Rankin Student Excellence in Library Research Award Honorable Mention

05/2019

Jocelyn A. Rankin Student Excellence in Library Research Award Honorable Mention

05/2019

Neurosurgery Research and Education Foundation Medical Student Summer Research Scholarship

05/2018 – 08/2018

Georgia Institute of Technology Dean's List

05/2013 – 05/2017

LEADERSHIP EXPERIENCE

Savannah COVID-19 Response Team

03/2020 – Present

Founder | Executive Board Member | Website Developer: sites.google.com/view/musmcovid19

MUSM

- ▶ Founded and led the Savannah COVID-19 Response Team, a group of 100+ student volunteers from various GA medical schools and universities who were motivated to help serve the Savannah community during the coronavirus pandemic
- ▶ Organized volunteers into various student-driven teams (e.g., PPE fundraising, grocery delivery services, mask making, contact tracing, American Red Cross blood donation drives) depending on student interest and community need
- ▶ Helped fundraise \$2,400 that went towards purchasing over 2,000 surgical gowns, masks, hand sanitizer, and various medical PPE for donation to Georgia hospitals, ambulance services, and hospice organizations

MUSM Liaison Committee on Medical Education (LCME) Steering Committee

01/2020 – Present

Member

MUSM

- ▶ Collaborating with the Deans and other faculty/administration of the medical school to oversee the school's compliance with various LCME accreditation standards and elements
- ▶ Overseeing the writing of the school's LCME Institutional Self-Study report, incorporating both objective and subjective data into each of its the individual sections

MUSM LCME Independent Student Analysis (ISA) Committee

05/2019 – Present

Chair

MUSM

- ▶ Overseeing the ISA Committee — a group of students tasked with assessing, commending, and critiquing the medical education program at MUSM
- ▶ Distributed a Qualtrics survey to the MUSM student body and achieved a 98.1% response rate, with 471 out of 480 students completing the survey
- ▶ Individually analyzed the survey results, completing intercampus and interclass analytics through MATLAB and Excel
- ▶ Co-authored the “Independent Student Analysis”, a 100+ page document that outlined both strengths and weaknesses of the school along with suggestions to address major student concerns

Student Government Association

05/2019 – 05/2020

Savannah Campus Student Body President | Student Council Co-Chair

MUSM

- ▶ Served as a liaison between the student body and faculty/administration of the Savannah campus

- ▶ Oversaw student participation within the various Interest Groups and faculty committees
- ▶ Led and created agendas for monthly Student Council and Steering Committee meetings
- ▶ Created a “Student Research & Volunteer Opportunities” database comprised of over 100 opportunities with student contact information to facilitate student involvement in extracurricular activities and also to encourage communication/mentorship between medical students of various classes and campuses

RESEARCH EXPERIENCE

Department of Academic Affairs | MUSM

The Impact of COVID-19 on Third-Year Medical School Clerkship Grades and Standardized Exam Scores

06/2020 – Present
PI: Dr. James Colquitt, PhD

- ▶ Determining the effect of medical school curricular adjustments made in response to the COVID-19 pandemic on student clerkship grades and standardized exam scores

Department of Neurosurgery | Stanford University School of Medicine

Effect of Skull Density Ratio on MRI-Guided High Intensity Focused Ultrasound for the Treatment of Essential Tremor

08/2018 – 04/2019
PI: Dr. Casey Halpern, MD &
Dr. Pejman Ghanouni, MD, PhD

- ▶ Collaborated with Dr. Pejman Ghanouni, Director of the Stanford Focused Ultrasound Center of Excellence, and Dr. Casey Halpern, Director of Epilepsy Surgery, to determine the effect of skull density ratio on the efficacy, efficiency, and safety of MRI-Guided High Intensity Focused Ultrasound (MRgFUS) for the treatment of patients with essential tremor
- ▶ Resulted in expanded Medicare coverage of MRgFUS for patients with lower skull density ratios

Coordinated Reset-Deep Brain Stimulation (CR-DBS) for the Treatment of Binge Drinking Disorder | NREF Medical Student Summer Research Fellow

05/2018 – 08/2018
PI: Dr. Casey Halpern, MD

- ▶ Worked to establish mice model for the treatment of binge-drinking disorders using CR-DBS in the [Halpern-Malenka Lab](#)
- ▶ Utilized neural signaling toolboxes within MATLAB to help characterize an electrophysiological marker within the nucleus accumbens that precedes the onset of binge-drinking behaviors

Department of Surgery | Memorial Health University Medical Center (MHUMC)

Implementation of an Enhanced Recovery after Surgery (ERAS) Protocol for Laparoscopic Procedures: A Prospective Study on Post-Operative Outcomes

01/2020 – Present
PI: Dr. Timothy Finnegan, MD

- ▶ Working with residents of the General Surgery program on a quality improvement project to study the effect of an early discharge protocol on 30-day postoperative outcomes

Surgical Care from the Rural Patient's Perspective: An Engagement Award Research Meeting and Conference Support Grant

01/2018 – 10/2019
PI: Dr. Christopher, Senkowski, MD

- ▶ Collaborated with Dr. Christopher Senkowski, Program Director and Chair of the General Surgery program, to plan a patient-centered conference with goals of facilitating frank discussions between patients and medical professionals regarding experiences before, during, and after surgical procedures
- ▶ Submitted a grant to the Patient-Centered Outcomes Research Institute under the Engagement Award Research Meeting and Conference Support Grant

Cognitive Neuro Motor Control Laboratory | GT

Effect of Spinal Cord Injury on Force Modulation

01/2015 – 05/2017
PI: Dr. Lewis Wheaton, PhD

- ▶ Examined differences in force modulation between healthy adults and adults with spinal cord injury in order to come up with unique, individualized neuro-rehabilitation strategies
- ▶ Ran and analyzed MRI and EEG data through the use of Excel, SPSS, MATLAB, and R

Center for Advanced Brain Imaging | GT

Effect of Brain Games and Training on Cognitive Skills

05/2014 – 01/2015
PI: Dr. Eric Schumacher, PhD

- ▶ Investigated the effect of brain games and memory training on cognitive skills by using MATLAB and E-Prime software to conduct experiments, record results, and analyze data

Department of Immunology | MUSM

Theragnostic Nanoparticles as a Potential Delivery System for Tumor Targeting

05/2011 – 05/2018
PI: Dr. Martin D'Souza, PhD

- ▶ Determined the effects of certain nanoparticle properties (e.g., size, charge) on efficacy of nanoparticle delivery
- ▶ Formulated therapeutic nanoparticles as a potential tumor targeting and imaging delivery system

JOURNAL PUBLICATIONS

- ▶ Gendreau J, Kim L, Prins PN, **D'Souza M**, Rezaii P, Pendharkar AP, Sussman ES, Ho AL, Desai AM. Outcomes After Cervical Disc Arthroplasty Versus Stand-Alone Anterior Cervical Discectomy and Fusion: A Meta-Analysis. *Global Spine Journal*. 2019 Nov 21.
- ▶ **D'Souza M**, Gendreau J, Feng AY, Ho AL. Robot-assisted spine surgery: current applications and future advances. *Rob Surg*. 2019 Nov 7; 2019(6):9-23.
- ▶ Delaney SL, Gendreau JL, **D'Souza M**, Feng AY, Ho A. Optogenetic Modulation for the Treatment of Traumatic Brain Injury. *Stem Cells Dev*. 2019 Sep 27.
- ▶ **D'Souza M**, Macdonald NA, Gendreau JL, Duddleston PJ, Feng AY, Ho AL. Graft Materials and Biologics for Spinal Interbody Fusion. *Biomedicines*. 2019 Sep 26;7(4).
- ▶ Nguyen L, Bowlds S, Juan D, Thompson A, Clayton E, Spencer C, **D'Souza M**, Bromberg W. Predictors of Pneumothorax (POP) Score: A Statistical Model for Identifying Occult Pneumothoraces after Blunt Chest Trauma That Will Require Intervention. *Am Surg*. 2019 Aug 1; 85(8):e430-e432.
- ▶ **D'Souza M**, Chen KS, Rosenberg J, et al. Impact of skull density ratio on efficacy and safety of magnetic resonance-guided focused ultrasound treatment of essential tremor. *J Neurosurg*. 2019 Apr 26;:1-6.
- ▶ Kim L H, **D'Souza M**, Ho A L, et al. Anterior techniques in managing cervical disc disease. *Cureus*. 10(8): e314. 2018 Aug 14.
- ▶ Iyer A, **D'Souza M**, Steinberg GK. Embolization before stereotactic radiosurgery for the treatment of brain arteriovenous malformations. *J Neurosurg Sci*. 2018 Mar 26.
- ▶ Kolluru LP, Rizvi SAA, **D'Souza M**, D'Souza MJ. Formulation development of albumin based theragnostic nanoparticles as a potential delivery system for tumor targeting. *J Drug Target*. 2013;21(1):77-86.

BOOK CHAPTERS

- ▶ Braz Gomes K, D'Sa S, Jin Z, Bejugam N, **D'Souza M**, et al. *Nanoparticle Vaccine Delivery Systems*. 1 ed. D'Souza MJ, editor. Singapore: Pan Stanford Publishing Pte. Ltd.; 2015. Chapter 1, Introduction; p.1-11. [🔗](#)
- ▶ Chiriva-Internati M, **D'Souza M**, Chablani L, Akalkotkar A, Tawde SA, et al. *Molecular Vaccines*. 2 ed. Giese M, editor. Online: Springer; 2014. Chapter 19, *Nanotechnology in Vaccine Delivery*; p.727-742

PRESENTATIONS

- ▶ Gendreau J, **D'Souza M**. (Oct 2019). Comparing Stand-Alone Anterior Cervical Discectomy and Fusion to Cervical Disc Arthroplasty for the Treatment of Spine Disease: A Meta-Analysis. Poster presentation given at the Congress of Neurological Surgeons Annual Meeting, San Francisco, CA.
- ▶ **D'Souza M**. (Apr 2019). Impact of Skull Density Ratio on Efficacy and Safety of Magnetic Resonance-Guided Focused Ultrasound Treatment of Essential Tremor. Oral presentation given at the American Association of Neurological Surgeons Annual Meeting, San Diego, CA.
- ▶ **D'Souza M**. (Oct 2018). Optimizing Coordinated Reset within the Nucleus Accumbens to Attenuate Binge Drinking. Oral presentation given at the Medical Association of Georgia House of Delegates Meeting, Jekyll Island, GA.
- ▶ **D'Souza M**, McGreal A, Akin M. (May 2018). Disparities in Surgical Cancer Care from the Patient-Centered Perspective. Oral presentation given at the Joint Mercer University School of Medicine and School of Pharmacy Research Symposium, Macon, GA.
- ▶ **D'Souza M**, Daly B, Greenlee S, Meltzer M. (Dec 2014). The Effects of Subconscious Color Queuing on Taste Perception. Poster presentation given at the Georgia Tech School of Psychology Poster Conference, Atlanta, GA.
- ▶ **D'Souza M**, Atri L, Rao T, Bale P, Hammond W, Tuteja H. (Mar 2014). Curbing Prescription Drug Abuse through the Creation of Digital Pill Cap. Poster presentation given at the Georgia Tech Grand Challenges Research Symposium, Atlanta, GA.

VOLUNTEER EXPERIENCE

Tennis Coach | Special Pops Tennis Savannah

08/2019 – Present

- ▶ Coaching and participating in weekly adult tennis/pickleball clinics, tournament play, and social events for individuals with intellectual disabilities

COVID-19 Contact Tracer | GA Department of Public Health

03/2020-05/2020

- ▶ Called contacts of persons positive for COVID-19 & trained other medical students on how to do the same
- ▶ Helped develop contact tracing protocols that were eventually utilized in public health departments state- & nationwide

St. Jude Heroes & Medical Volunteer | Rock 'n' Roll Savannah Half Marathon

11/2018 – 11/2019

- ▶ Fundraised \$660 in 2019 for St. Jude Children's Research Hospital through the running of a half marathon
- ▶ Served as a medical volunteer during the 2018 marathon

"MUSM Day of Service" | Moses Jackson Advancement Center

03/2017 – 03/2019

- ▶ Participated in the annual "MUSM Day of Service" in which MUSM students help with health screenings, cooking demonstrations, and fitness classes at a local development facility

Shepherd Center | Spinal Cord and Brain Injury Rehabilitation Hospital

01/2016 – 01/2017

- ▶ Provided longitudinal fitness support and training to four patients recovering from spinal cord & traumatic brain injuries in the ProMotion gym facility

SOFTWARE PROJECTS

Savannah COVID-19 Resources | sites.google.com/view/musmcovid19

Website

- ▶ Developed the MUSM COVID-19 Website & Facebook page as a central organization tool for both Savannah community members & medical student volunteers to ask for/receive help, find volunteer opportunities, access local & national COVID-19 information, and obtain/distribute social media resources
- ▶ Used Google Sites in order to create a sustainable, easy-to-learn platform that could remain as a volunteer resource for future MUSM classes

VADERS (Value Analysis Data Extraction Research System)

Software

- ▶ Collaborated with Dr. Bruce Ziran, Director of Orthopaedic Trauma at the Gwinnett Medical Center, on an image recognition-based software designed to analyze the quality of fracture reduction
- ▶ Incorporated machine learning and classification algorithms to develop a model that would combine fracture reduction quality with time/cost of surgery in order to objectively quantify the quality of a given surgery

Food Renewed | JP Morgan Chase Hackathon

iOS App

- ▶ Created an iOS application and web-based mobile site for Feed the Children and JP Morgan Chase that matched individuals in the Supplemental Nutrition Assistance Program (SNAP) with grocery stores/restaurants that had food to be discarded
- ▶ Collaborated with industrial engineers in order to implement an optimized inventory model so to minimize total waste inventory

Multicultural Greek Society | mgc.gtorg.gatech.edu

Website

- ▶ Re-designed the Georgia Tech MGC website in efforts to spread MGC's name and promote diversity awareness throughout campus

Sigma Sigma Rho Sorority, Inc.

Website

- ▶ Increased intake by 150% through the use of effective marketing strategies including photography, flyers, and the redesign of the website

When I Grow Up

iOS App

- ▶ Designed and prototyped an iOS app using Axure that featured a board game designed to help users determine the career fields that match their interests and to manage a career from entry level to retirement

WORK EXPERIENCE

MUSM Peer-to-Peer Tutoring Program

08/2019 – Present

Preclinical Tutor

Savannah, GA

- ▶ Individually tutoring multiple pre-clinical medical students in topics such as biochemistry, immunology, cardiology, pulmonology, endocrinology, and nephrology – with over 65 hours logged to date
- ▶ Led two class review sessions over topics in neurology and nephrology to help students prepare for their end-of-block exams
- ▶ Collaborating with other medical students and faculty to host presentations for M1/M2 students; past presentations include "Getting Involved in Research," "Learning Styles in Medical School," and "Medical School Extracurricular Opportunities"

Johns Creek Tennis Academy

05/2011 - Present

Tennis Instructor | Professional Tennis Registry (PTR) Certification

Johns Creek, GA

- ▶ Coaching adult tennis leagues and youth private lessons over holidays and break time
- ▶ Instructed 50+ kids aged 5-15 the technique, rules, and good behaviors needed for success on the tennis court over the course of multiple summers from 2011 to 2014

Enopi Learning Center Tutoring

Tutor

05/2012 – 05/2013
Johns Creek, GA

- ▶ Tutored high-school students in essential topics for the SAT and ACT standardized exams

OTHER EXTRACURRICULAR ACTIVITIES

Student Council

Student Body Secretary

04/2018 – 05/2019
MUSM

General Surgery Interest Group

Vice President

04/2018 – 05/2019
MUSM

Phi Delta Epsilon International Medical Fraternity, Inc. | Epsilon Mu Chapter

Founding Member | Vice President of Recruitment

12/2017 –12/2018
MUSM

Student Council

Class Secretary

12/2017 – 04/2018
MUSM

Multicultural Greek Council (MGC)

Executive Vice President

01/2015 – 12/2015
GT

Sigma Sigma Rho Sorority, Inc. | Nu Chapter

Vice President of Communications, Philanthropy Chair

01/2014 – 12/2015
GT

Biomedical Engineering Society

Secretary

01/2014 – 05/2015
GT

PROFESSIONAL MEMBERSHIPS

American Association of Neurological Surgeons (AANS)

01/2019 – Present

American Academy of Neurology (AAN)

09/2018 – Present

Medical Association of Georgia (MAG)

06/2018 –Present

American Medical Association (AMA)

01/2018 – Present

Phi Delta Epsilon International Medical Fraternity, Inc.

12/2017 – Present

HOBBIES & INTERESTS

Programming

Tennis

Neurophysiology

Travel

AI & Healthcare Innovation

Philosophy

Pickleball

Interior Design

Mental Health

Golf

Web & UI Design

Strength Training

Narrative Medicine

MBTI

LANGUAGES

- ▶ MATLAB
- ▶ Java
- ▶ JavaScript/jQuery
- ▶ Python
- ▶ R

SOFTWARE

- ▶ Adobe Creative Suite
- ▶ SolidWorks -- 3D Modeling
- ▶ SPSS Statistical Software
- ▶ Android Studio
- ▶ Xcode

UNDERGRADUATE COURSEWORK

- ▶ Data Structures and Algorithms
 - ▶ Applied Combinatorics
 - ▶ Real Estate Development
- ▶ Information Visualization
 - ▶ Industrial Design Computing II
 - ▶ Computer Organization & Architecture
- ▶ User Interface Design
 - ▶ Computer Graphics
 - ▶ Computational Photography