

Nicole J Piscopo

PhD Student

University of Wisconsin-Madison, Department of Biomedical Engineering
(609) 618-9590 npiscopo@wisc.edu

QUALIFICATIONS

PhD student in Biomedical Engineering specializing in gene editing of T cells for CAR T cell therapy. Extensive experience using CRISPR Cas9 gene editing and working with primary human cells. Successfully earned the \$100,000 National Science Foundation (NSF) Graduate Research Fellowship in 2017 and provided major contributions to an NSF EAGER Biomufacturing grant that was awarded \$300,000 over a period of 2 years. Multiple internships and manufacturing workshops have provided exposure to the hurdles present in taking research from the lab into the clinic. Strong awareness of the many challenges in cellular manufacturing including design of pipelines for mass production, phenotypic maintenance, FDA regulation, and issues of insurance remuneration. Admitted to the Clinical Investigation PhD minor in 2017 to receive education in how novel therapies receive FDA approval to become products.

EDUCATION

May 2020 (Expected) Ph.D. Biomedical Engineering, Minor Clinical Investigation

University of Wisconsin-Madison, Madison, WI

Advisor: Dr. Krishanu Saha

GPA: 3.90/4.00

May 2015 B.S.E. Biomedical Engineering, Minor Material Science Engineering

University of Connecticut, Storrs, CT

University Honors Program

GPA: 3.77/4.00, *Magna Cum Laude*

RESEARCH EXPERIENCE

Department of Biomedical Engineering, Advisor: Krishanu Saha, University of Wisconsin, Madison, WI

Graduate Research Assistant (Aug. 2015 – Current)

- Initiated the chimeric antigen receptor (CAR) T cell research group within our Human Stem Cell Engineering Lab.
- Investigating the effects of transcriptional variation and heterogeneity of therapeutic cell populations in the manufacturing of CAR T cells by CRISPR Cas9 gene editing.
- Developing a microwell platform to perform high throughput analysis of CAR T cell functionality.
- Reprogramming primary human blood cells to iPSC on micropatterned well-plates constructed in lab.

Department of Biomedical Engineering, Advisor: Yusuf Khan, University of Connecticut Health Center, Farmington, CT

Undergraduate Research Assistant (Jun. 2012 – May 2015)

- Studied the transcriptional effect of ultrasound on bone fracture repair through the utilization of a collagen based hydrogel scaffold cell culture work.
- Utilized COMSOL to create computer models to predict hydrogel deformations and to analyze the forces that pre-osteoblast cells experience when ultrasound is applied to the hydrogel.
- Work resulted in my Honor's Thesis published at the UConn Digital Commons as well as contributed to a paper published in *Tissue Engineering Part A* in September 2017.

Department of Molecular and Cell Biology, Advisor: Craig Nelson, University of Connecticut, Storrs, CT

Undergraduate Research Assistant (Jan. 2012 – May 2013)

- Engineered in-situ hybridization (ISH) probes through polymerase chain reaction (PCR) and vector cloning for detecting gene expression in embryonic mice to identify the stem cell of the embryonic muscle, bone, and cartilage.
- Performed mouse culture to ensure that enough embryos would be available at the correct developmental stage.
- Prepared embryonic mice sections using micro-dissection techniques to be stained with the ISH probes.

INDUSTRY EXPERIENCE

Medtronic, North Haven, CT

Minimally Invasive Therapies Group Intern (May – July 2015)

- Designed a fixation device for a valve to treat female stress urinary incontinence as a Senior Design project.
- Evaluated material and mechanical properties for the fixation device outlined by the client, doctors, and patients to develop an optimal design that fit the criteria provided by all parties.
- Lead the team in utilizing SolidWorks to develop models of the fixation device to submit for prototype production.
- Continued the Senior Design project during an internship by developing multiple prototypes of a stress urinary incontinence valve to fit in the fixation device that both initiated and became the foundation for a new product portfolio.
- Created protocols and established benchmarks for success to test the valve prototypes on porcine bladders for functionality across a pressure gradient.

Covidien, North Haven, CT

Advanced Surgical Technologies Intern (May – Aug. 2014)

- Conducted chemical polymerization reactions to design new polymers to coat hernia meshes with the aim of reducing the need to use screws or sutures when applying meshes to the peritoneum to decrease patient discomfort.
- Performed mechanical testing of meshes coated with polymer samples on both synthetic substrates and porcine tissue.
- Established a relationship between Covidien and the University of Connecticut School of Engineering BRIDGE Program so that incoming Biomedical Engineering students could tour Covidien's research facilities.

OUTREACH EXPERIENCE

Biomedical Engineering Graduate Student Association, University of Wisconsin, Madison, WI

President (Feb. 2017 – Sept. 2018)

Vice President (Sept. 2016 – Feb. 2017)

Outreach Chair (Sept. 2015 – Sept. 2016)

- Planning the incoming graduate student recruitment weekend by delegating responsibilities for the current graduate students and coordinating the Big Ten BME Graduate Student Speaker Exchange between the University of Wisconsin-Madison, Purdue University, and University of Illinois at Urbana-Champaign.
- Organized demonstrations for Saturday Science and the Wisconsin Science Festival.
- Conducted tissue engineering experiments for students from rural high schools at the Summer Science Camp.

Engineering Ambassadors, University of Connecticut, Storrs, CT

General Body Member (Aug. 2011 – May 2015)

- Taught middle school students about chemical reaction rates and performed experiments during Big Brothers Big Sisters: Science and Engineering Day.
- Hosted high school students from across Connecticut at the UConn School of Engineering to increase exposure to engineering in an effort to increase enrollment from underrepresented populations.
- Volunteered at Multiply Your Options for middle school girls by conducting engineering workshops with them to increase their interest in the STEM Fields.

School of Engineering BRIDGE Program, University of Connecticut, Storrs, CT

Lead Tutor (Jul. 2013 – Aug. 2013)

Tutor (Jul. 2012 – Aug. 2012)

- As the lead tutor, ensured that the program functioned efficiently by organizing events and delegating tasks to the team of 12 tutors while serving as liaison between the tutors, the record setting 72 students, and faculty supervisors.
- Served as a residential assistant for minority freshman in engineering by assisting in their acclimation to college.
- Tutored 52 students of chemistry and computer science engineering to increase their understanding of the topics.

AWARDS & SCHOLARSHIPS

Apr. 2017	NIH Genomic Sciences Training Program Summer Fellowship
Mar. 2017	National Science Foundation Graduate Research Fellowship (GRFP)
Mar. 2016	St. Baldrick's Summer Research Fellowship
Apr. 2016	Honorable Mention, National Science Foundation GRFP
May 2015	UConn Honors Scholar
Feb. 2015	New England Scholar, March 2013
Oct. 2013	Sophomore Honors Award
Aug. 2011	Academic Excellence Scholarship

TECHNICAL SKILLS

Computer:	Microsoft Office, MatLab, MiniTab, Solidworks, COMSOL, CellProfiler, ImageJ
Wet Lab:	PCR, Primer Design, In Situ Hybridization, In Vitro Transcription, Mechanical Testing, CRISPR Cas9 Gene Editing, Cell Culture, Basic Mouse Care, Peripheral Blood Manipulation, Phlebotomy

PROFESSIONAL SOCIETY MEMBERSHIPS

Nov. 2016- Present	Member , Phi Kappa Phi Honor Society, UW- Madison Chapter
Sept. 2015- Present	Member, Organizing Committee , UW-Madison SCRMC <ul style="list-style-type: none">Planned the Fall Stem Cell and Regenerative Medicine Center Conference by inviting the keynote speakers, organizing a research to industry panel, and reviewing poster abstracts.
Sept. 2011- Present	Member , Biomedical Engineering Society <ul style="list-style-type: none">Attended the National BMES Conference in Hartford in 2011, San Antonio in 2014, and Minneapolis in 2016, and gained new insights as to current research in the field and future directions.
Feb. 2014- May 2015	Vice President of UConn Chapter , Alpha Eta Mu Beta-Biomedical Engineering Honor Society
Jan. 2014- Present	Member , Tau Beta Pi- National Engineering Honor Society, UConn Chapter

REPRESENTATIVE PRESENTATIONS

Presentation	“Modular Crispr-Cas9 Ribonucleoprotein Complexes For Precise Gene Editing Of Human Cells” Tissue Engineering and Regenerative Medicine International Society (TERMIS), Charlotte, NC, December 2017.
Poster	“Micropatterned Substrates To Promote And Dissect Reprogramming Of Human Somatic Cells,” TERMIS, Charlotte, NC, December 2017.
Poster	“Microscale Methods For Investigating Car T-cell Killing Efficacy,” TERMIS, Charlotte, NC, December 2017.
Poster	“Mathematical Modeling to Predict CAR T Cell Cytotoxicity and Survival”, Keystone Symposia Cancer Immunology and Immunotherapy: Taking a Place in Mainstream Oncology, Whistler, BC, CAN, March 2017.
Presentation	“Micropatterning human cells to track and control induction of human pluripotent stem cells,” Biomedical Engineering Society Annual Meeting, Minneapolis, MN, October 2016.
Poster	“A Microscale Testbed to Assay And Manufacture CAR T Cell Immunotherapies”, Biomedical Engineering Society Annual Meeting, Minneapolis, MN, October 2016.
Poster	“Manufacturing Gene-Edited T Cells”, Regenerative Medicine Manufacturing Conference, Hilton Head, SC, March 2016.

PUBLICATIONS

1. **N. Piscopo***, K. Mueller*, A. Das*, P. Hematti, W. Murphy, S. Palecek, C. Capitini, K. Saha, “Bioengineering solutions for manufacturing challenges in CAR T cells,” *Biotechnology Journal*, September 18, 2017. (*signifies co-authorship)
2. J. Veronick, F. Assanah, **N. Piscopo**, Y. Kutes, V. Vyas, B. Huey, and Y. Khan, “Mechanically Loading Cell/Hydrogel Constructs with Low Intensity Pulsed Ultrasound for Bone Repair,” *Tissue Eng.*, vol. **Accepted**, 2017.