

# LINA MARIA MANCIPE CASTRO

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## EDUCATION

### **Ph.D. in Bioengineering**

Georgia Institute of Technology

August 2015 – July 2020

Atlanta, GA

### **B.S., Biomedical Engineering. Summa Cum laude with Honors**

Universidad de Los Andes – Full tuition scholarship awardee: ECOPETROL, S.A.

July 2011 – June 2015

Bogotá, Colombia

## SKILLS

**Technical:** Tissue engineering | Biomaterials | Animal models | Drug delivery | Experimental design

**Laboratory:** Cell culture | Confocal microscopy | Aseptic technique | Assay development | Microfluidics

**Computational:** GraphPad Prism | MATLAB | Microsoft Office | LaTeX

**Interpersonal:** Communication | Leadership | Teamwork | Organization | Adaptability | Bilingual

## RESEARCH EXPERIENCE

### **University of Oregon**

#### **Postdoctoral Fellow**

*Project:* Improving Mesenchymal Stem Cells (MSCs) therapeutic efficacy via intra-articular delivery vehicles and rehabilitation programs.

*Advisor:* Robert E. Guldberg, PhD

Eugene, OR

October 2020 – Present

### **Georgia Institute of Technology**

#### **Graduate Research Assistant**

*Project:* Tissue-binding nano-composite microgels as an intra-articular drug delivery system for osteoarthritis treatment

*Advisors:* Andrés J. García, PhD and Robert E. Guldberg, PhD

Atlanta, GA

August 2015 – July 2020

- Designed biomaterial-based drug delivery vehicles for improved intra-articular administration of small molecule drugs.
- Assisted orthopedic surgeons and PhD students on the development of an *in vivo* experimental model of rotator cuff repair for the evaluation of tissue-engineered therapies.
- Collaborated with a multidisciplinary team of students on the development of pre-clinical *in vitro* models of osteoarthritis for therapeutics screening using 2D and 3D cell culture methods.
- Conducted multiple *in vivo* studies, gaining experience on surgery, aseptic technique, micro-computed tomography ( $\mu$ CT), *in vivo* imaging system (IVIS), blood draws, routes of administration and histology.
- Mentored undergraduate students on the development of short research projects with solid experimental design and trained them in laboratory techniques such as cell culture,  $\mu$ CT, histology processing and image analysis.

### **Georgia Institute of Technology**

#### **Graduate Research Assistant**

*Project:* Chitosan-based Mesenchymal Stem Cell Micro-carriers for Improved Cell Survival and Secretome Upregulation.

*Advisors:* Andrés J. García, Ph.D.

Atlanta, GA

August 2019 – July 2020

- Trained a Ph.D. student on the use of microfluidic technology to produce chitosan-based micro-carriers for mesenchymal stem cell encapsulation and delivery.
- Analyzed the data from a multiplex ELISA to determine the effect of the micro-carrier composition on stem cell cytokine expression using multivariate data analysis methods.

**Vanderbilt University**

**Undergraduate Summer Research Scholar**

Vanderbilt International Summer Research Academy (VISRA), School of Medicine

*Project:* Effect of WNT pathway inhibition on human skin regeneration and hair follicle formation.

*Advisors:* Pampee Young, MD, Ph.D. and Dikshya Bastakoty, Ph.D.

**Nashville, TN**

**June 2014 – August 2014**

- Developed an *in vitro* model of human skin wound healing using commercially available skin grafts.
- Supported my research mentor in the development of genetically modified human fibroblasts by expanding plasmids of interest in *E. coli*.

**Universidad de los Andes**

**Undergraduate Research Assistant**

Tissue Engineering Lab

**Bogotá, Colombia**

**August 2013 – June 2015**

*Advisors:* Juan Carlos Briceño Triana, Ph.D. and Diana Marcela Tabima, Ph.D.

- Engineered a low cost freezer mill to accelerate the production of micronized small intestinal submucosa (SIS).
- Characterized the micronized SIS for its morphology and total protein and collagen content.
- Served as non-sterile assistant for the implantation of abdominal aorta SIS vascular grafts in a porcine model.
- Identified hospital logistics problems at the nursing department of Fundación Santa Fe de Bogotá and proposed a software platform to better manage the multiple tasks performed at this department.

## **LEADERSHIP**

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**President: Latino Organization of Graduate Students (LOGRAS):**

**May 2019 – July 2020**

Georgia Institute of Technology

- Facilitated the formation of LOGRAS executive board and contributed to its growth by recruiting over 50 new members.
- Organized and coordinated activities in areas such as professional development, culture and community outreach to support the development of integral Latino professionals at Georgia Tech and Atlanta area.
- Promoted the study of STEM fields among middle and high school Latino students in the Atlanta area through the development of scientific presentations and demonstrations.

**Teaching Assistant**

**Fall 2017**

Georgia Institute of Technology

- Assisted the graduate course “Cellular Engineering” by holding office hours and designing exams questions.
- Delivered lectures in topics including ligand-receptor interactions and cell mechanics.

**Biomaterials Day: Vice-Chair**

**October 2016**

- Participated in the organization of a one-day event to feature the forefront of biomaterials research being conducted by students and faculty at Georgia Tech and other universities around the Southeast.

## **PUBLICATIONS**

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**Lina M. Mancipe Castro**, Andrés J. García, Robert E. Guldberg. *Biomaterial strategies for improved intra-articular drug delivery.* *Journal of Biomedical Materials Research - Part A* **2020**, 1-11. DOI: 10.1002/jbm.a.37074

**Lina M. Mancipe Castro**, Abigail Sequeira, Andrés J. García, and Robert E. Guldberg. *Articular Cartilage- and Synoviocyte-Binding Poly(ethylene glycol) Nanocomposite Microgels as Intra-Articular Drug Delivery Vehicles for the Treatment of Osteoarthritis;* *ACS Biomaterials Science & Engineering* **2020** 6 (9), 5084-5095, DOI: 10.1021/acsbmaterials.0c00960

Ana Mora-Boza; **Lina M. Mancipe Castro**; Rebecca S. Schneider; Woojin M. Han; Andrés J. García; Blanca Vazquez-Lasa; Julio San Román. *Microfluidics generation of chitosan microgels containing glycerylphosphate crosslinker for in situ human mesenchymal stem cells encapsulation.* *Material Science and Engineering: C*; **2020**. DOI: 10.1016/j.msec.2020.111716

## CONFERENCE PROCEEDINGS

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### **Gordon Research Conference: Biomaterials and Tissue Engineering**

**Barcelona, Spain, July 2019**

- *Poster:* Tissue-Specific Peptide-Functionalized Poly(ethylene glycol) Microgels as an Intra-Articular Small Molecule Drug Delivery System for the Treatment of Osteoarthritis

### **TERMIS - AM, 2017**

**Charleston, NC, December 2017**

- *Poster:* Curcumin-loaded PLGA particles for Treatment of Osteoarthritis

### **VII International Seminar of Biomedical Engineering**

**Bogotá, Colombia, April 2014**

- *Poster:* N,O-Carboxymethyl Chitosan (NOCC)/ Poly (vinyl alcohol) (PVA) barriers for alveolar ridge maintenance after teeth extraction