

DIANA MARCELA TABIMA MARTÍNEZ

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EDUCATION

- 2010 **Ph.D Biomedical Engineering**, University of Wisconsin, Madison, WI.
Thesis project: "Characterization of the pulmonary vascular coupling with the right ventricle"
Thesis Advisor: Professor Naomi Chesler
- 2003 **MS Mechanical Engineering**, University of los Andes, Bogotá, Colombia.
Research project: "Preparation and evaluation of biodegradable scaffolds used for the growth of human cells"
Thesis Advisor: Professor Juan Carlos Briceño
- 2002 **BS Chemical Engineering**, University of los Andes, Bogotá, Colombia.
Senior project: "Development of a methodology for the preparation of biodegradable scaffolds"
Thesis Advisor: Professor Juan Carlos Briceño

PROFESSIONAL EXPERIENCE

ASSISTANT SCIENTIST

University of Wisconsin-Madison, Biomedical Engineering

July 2015-Present

- Generated animal models for understanding pulmonary vascular disease
- Developed an ex vivo mechanical testing system to measure changes of pulmonary vascular impedance as a function of oxygen tension
- Supervised research initiatives for undergraduate and graduate students

ASSISTANT PROFESSOR

January 2012-January 2015

University of Los Andes, School of Engineering, Biomedical Engineering Department

- **Courses taught:** Introduction to Biomedical Engineering (2012), Principles of Industrial Processes (2012), Biomaterials (2012, 2013, 2014), Biomechanics (2013), Intermediate Project: Business Plan (2013, 2014), Introduction to Tissue Engineering (2014), Modules in Physiology for Engineers (2014)
- Supervised three masters students working on thesis, seven undergraduate students working on senior projects and eight undergraduate students working on special projects
- **Grants Awarded:**
 - Development of an animal model for understanding and treating pulmonary hypertension in Colombia. Support Fund for Assistant Professor-Universidad de los Andes-Colombia, 2014. Principal Investigator

- Development of a bone adhesive for complex fractures. Fundación SantaFe de Bogotá- Universidad de los Andes-Colombia, 2014. Principal Investigator
- Development of a bone adhesive for complex fractures. Interfaculties Universidad de los Andes-Colombia, 2013. Principal Investigator
- Dressings Extracellular matrix for re-epithelialization of open wounds. Fundación Cardioinfantil-Colombia, 2013. Principal Investigator

POSTDOCTORAL ASSOCIATE

University of Pittsburgh, Department of Medicine

September 2010-December 2011

Vascular Medicine Institute

- Generated an animal model for understanding pulmonary and systemic vascular disease
- Studied the role of hemolysis in causing vasculopathy
- Tested AMP-kinase signaling in metabolic syndrome related pulmonary hypertension

PROJECT ASSISTANT

University of Wisconsin-Madison, Biomedical Engineering

November 2009- August 2010

- Provided support in the development of new laboratory practices for teaching biomedical engineering principles

RESEARCH ASSISTANT

University of Wisconsin-Madison, Biomedical Engineering

August 2006- August 2010

Vascular Tissue Biomechanics Laboratory

- Successfully determined the role of smooth muscle cell (SMC) activation in the loss of pulmonary arterial compliance in response to pulmonary hypertension
- Measured pulmonary vascular impedance in an in-vivo preparation of a mouse model
- Determined the role of collagen in pulmonary vascular bed hemodynamics
- Quantified ventricular-vascular coupling in a mouse model
- Supervised research initiatives for two undergraduate students

INSTRUCTOR

August 2003 – May 2006

University of los Andes, School of Engineering Chemical Engineering Department

- **Courses taught:** Introduction to Chemical Engineering (2003-2004); Chemical Thermodynamics (2004-2005); Biochemistry (2005); Introduction to Biological Engineering-Bioengineering module (2004); Introduction to Bioengineering-Biomaterials and Tissue Engineering module (2005)
- Supervised twelve undergraduate students working on senior projects
- Represented the University of los Andes on the Bogotá Chamber of Commerce Biotechnology Board (2004-2005)
- Coordinated the biotechnology program at the Department of Chemical Engineering
- Coordinated the tissue engineering and biomaterials research program at the University of los Andes Biomedical Engineering Group
- Lead a curriculum reform committee for the Department of Chemical Engineering

TEACHING ASSISTANT

University of los Andes, Chemical Engineering Department

January 2003 –May 2003

- **Courses taught:** Introduction to Chemical Engineering, Thermodynamics, Mass Balance

RESEARCH ASSISTANT

University of los Andes

January 2002-December 2002

Center of Investigation of the Faculty of Engineering (CIFI)

Biomedical Engineering Group

- Defined the intellectual properties employed in guided tissue regeneration (GTR) of small intestinal submucosa (SIS) membranes
- Prepared and evaluated biodegradable scaffolds for the growth of human cells
- Prepared and preformed biodegradable scaffolds of poly L-lactic Acid for tissue growth

RESEARCH PUBLICATIONS

In revision

- **The Journal of Clinical Investigation.** Lai YC, Tabima DM, Dube JJ, Hughan KS Goncharov, St Croix CM, Garcia-Ocaña A, Goncharova EA, Tofovic SP, Mora AL and Gladwin MT. "SIRT3-AMPK activation by nitrite and metformin improves hyperglycemia and normalizes pulmonary hypertension in heart failure with preserved ejection fraction (PH-HFpEF)"

In preparation

- **AJP.** Tabima DM, Vanderpool RR, Hacker T and Chesler N. "The effects of chronic hypoxia on pulmonary input, characteristic impedance and wave reflections: A comparison between time and frequency domain methods"
- **ASAIO Journal.** Navarro J, Narváez DM, Groot H, López R, Tabima DM. "Study on early cellular adhesion during the development of 3D small intestinal submucosa scaffolds"

Publications in Refereed Journals

- **Antioxidant and Redox Signaling.** Raat NJH, Tabima DM, Specht PA, Tejero J, Champion HC, Kim-Shapiro D, Baust J, Mik EG, Hildesheim M, Stasch JP, Becker EM, Truebel H, and Gladwin MT. "Direct sGC activation bypasses NO scavenging reactions of intravascular oxy-hemoglobin and limits vasoconstriction". 19(18):2232-43,2013
- **Free Radical Biology and Medicine.** Tabima DM, Frizzell S, Gladwin MT. "Reactive Oxygen and Nitrogen Species in Pulmonary Hypertension". 52(9):1970-1986, 2012
- **Journal of Biomechanics.** Tabima DM, Roldan-Alzate A, Wang Z, Hacker TA, Molthen RA, Chesler N. "Persistent vascular collagen accumulation alters hemodynamic recovery from chronic hypoxia". 45(5):799-804, 2012
- **AJP Heart Circ Physiol.** Tabima DM, Hacker TA, and Chesler N. "Measuring right ventricular function in the normal and hypertensive mouse hearts using admittance-derived pressure-volume loops". 299(6):H2069-75, 2010
- **AJP Heart Circ Physiol.** Ooi C, Wang Z, Tabima DM, Eickhoff J, and Chesler N. "The role of collagen in extralobar pulmonary artery stiffening in response to hypoxia-induced pulmonary hypertension". 299(6):H1823-31, 2010
- **Journal of Biomechanics.** Tabima DM, Chesler N. "The effects of vasoactivity and hypoxic pulmonary hypertension on extralobar pulmonary artery biomechanics". 43(10):1864-9, 2010

Abstracts in Refereed Journals

- **ASAIO Journal.** Cesar C, Tabima DM, Briceño JC: “Tensile mechanical properties of porcine small intestinal submucosa scaffolds: Effects of orientation and number of layers”. v.51, n.2, p.10A, 2005
- **ASAIO Journal.** Briceño F, Tabima DM, Briceño JC: “Use of small intestinal submucosa for tissue regeneration in maxillofacial surgery: a safety study”. v.50, n.2, p.1058 - 1058, 2004
- **ASAIO Journal.** Tabima DM, Briceño JC: “Mechanical properties of dry, wet and fibroblast seeded small intestinal submucosa”. v.50, n.2, p.169 - 169, 2004
- **Química en Uniandes.** Tabima DM, Gómez R, Briceño JC: “Preparation and evaluation of biodegradable scaffolds for the growth of human cells” (In Spanish). Bogotá, Vol 1, 2004

Book Chapter

- **Mechanobiology Handbook.** Tabima DM, Chesler N. “Pulmonary vascular mechanobiology”. Editor: Jiro Nagatomi. Publication date: March 15, 2011. ISBN 9781420091212

AWARDS

- Second Place in the PhD Student Paper Competition. Biofluids and Biotransport Engineering and Other Category. Summer Bioengineering Conference. **June 2010**
- Fulbright Scholarship (Program Fulbright-DNP-Colciencias). **May 2006- May 2009**
- Best Research Award. “Development of a methodology for the preparation and evaluation of biodegradable scaffolds”. Colombian Human Genetics Association. **April 2003**

TECHNOLOGY TRANSFER

- Co-founder of Biomaster SAS. (an enterprise that produces and sells SIS scaffolds), Bogotá, Colombia. **January 2005**