

LINA AVANCINI COLUCCI

EDUCATION

- Harvard-MIT Health Sciences and Technology (HST) Program**, Cambridge, MA. PhD candidate in Biomedical Engineering. *Expected 2017*
- Mechanical Engineering coursework at MIT combined with first-year medical classes at Harvard Medical School.
- Finalist / Hertz Fellowship**, One of top 50 doctoral students in applied physical, biological, and engineering sciences. *2013*
- Duke University**, Pratt School of Engineering, Durham, NC. BSE Mechanical Engineering *May 2012*
- GPA: 3.70 – Graduation with Distinction in Mechanical Engineering – Dean’s List and Dean’s List with Distinction
 - **Robertson Scholar**, Full-ride merit scholarship and leadership development program including dual enrollment at both Duke and UNC Chapel Hill. Offered to ~30 students every year from over 60,000 applications.
- Royal Institute of Technology (KTH)**, Stockholm, Sweden. Exchange student with coursework in Biomechanics, Product Design and Bionanotechnology. *Spring 2011*

RESEARCH

- PhD Student / Cima Lab (Koch Institute, MIT)** *June 2013 – Present*
- Developing a novel, portable sensor for non-invasive assessment of a person’s hydration state.

Advisor: Dr. Michael J. Cima, David H. Koch Professor of Engineering and Faculty Director of Lemelson-MIT Program

- Researcher / Orthopaedic Bioengineering Laboratory (Duke)** *Aug 2011 – May 2012*
- Studied scaffolds that are best suited for hMSC chondrogenesis.
- Fabricated novel cartilage-derived matrix (CDM) scaffolds for tissue-engineering
 - Analyzed the effects of freeze rate and cartilage concentration on scaffold pore size, mechanical properties, and cell infiltration.
 - Quantified cell-attachment to CDM films crosslinked in various methods.
 - Mastered: cell culture techniques, confocal microscopy, scanning electron microscopy, unconfined compression testing, immunohistochemistry, histology, collagen crosslinking techniques

Advisor: Dr. Farshid Guilak, Director of OBL and Editor of Journal of Biomechanics.

- Researcher and Project Manager / Janalakshmi Financial Services (Bangalore, India)** *May – Aug 2010*
- Researched and in the process of co-authoring article with Dr. Anirudh Krishna (Duke University), an expert in poverty of developing countries, in which:
- Studied effects of internal migration on poverty in urban slums (Bangalore, India)
 - Directly supervised 30-person research team to conduct 1500 interviews over 2 months. Had authority over hiring.
 - Developed critical thinking and knowledge of research methods through designing and conducting field research

Advisor: Dr. Anirudh Krishna, Public Policy Professor (Duke). Funding and support from Janalakshmi Financial Services.

- Researcher / KTH Tribology Lab (Stockholm, Sweden)** *Jan-Jun 2011*
- Studied how the mechanics of touch impact a subject’s perception of a material, part of a larger body of work being undergone at KTH aimed at interconnecting tactile perception of various materials with their physical properties.
- Findings were presented by advisor at the International Tribology Conference 2011 in Hiroshima
 - Kistler force plate used to obtain friction measurements of one-, two- and three-finger touching of various textiles.

Advisor: Dr. Carl Michael Johansson, Professor of Industrial Design (KTH)

WORK EXPERIENCE AND INVENTIONS

Product Creation Intern / NIKE, Inc.

Jun – Aug
2011

- Conducted innovative biomechanics research using force plates, high-speed video and motion capture to improve the understanding of gender differences in landing (Nike Sports Research Lab)
- Applied biomechanics insights to an innovative cushioning system for Nike footwear (Innovation Kitchen / Advanced Cushioning Innovation Team)
- Developed a social media platform for Nike - from user-research to data synthesis to design - and was chosen to present the platform to Nike founder, Phil Knight

Advisors: Dr. Matthew Nurse, Director of Nike NSRL; Tobie Hatfield, Director of Nike Innovation Kitchen.

Inventor / Development of Innovative Pointe Shoes

2006 – 2012

Redesigned the ballet pointe shoe for safety, comfort, and improved ergonomics. Worked with advisors from IDEO to conduct user- and consumer insights-research to inspire innovation in design. Lina's innovative ballet shoes have won many awards, including:

- 1st place / Massachusetts State Science Fair 2006 – MIT
- Best Presenter / Selected by Aaron Patzer, founder of Mint.com, at Duke Start-up Challenge 2010
- Semi-Finalist / Intel Science Talent Search 2008
- 1st place poster / Southern New England Jr Science & Humanities Symposium (JSHS) 2007 – Boston University

In addition, Lina is the first author of a peer-reviewed article on ballet shoe design featured on the cover of *Ergonomics in Design*, a journal published by the Human Factors and Ergonomics Society. She wrote the article when she was 16.

Advisor: Dr. Devorah Klein, Continuum (previously with IDEO)

Teacher / Breakthrough Collaborative – New Orleans, LA

Jun – Aug
2009

- Taught approximately 40 high-potential middle school students from low-income areas of New Orleans
- Lesson-planned and developed curriculum for classes in Science, Engineering, and Dance
- Honed oral presentation skills and creative problem solving through coaching and practice

Inventor / e-Print Reprint

Spring 2009

Re-designed the printing service at Duke so that students would not lose their print jobs to a malfunctioning printer:

- Utilized process of user-research, brainstorming and rapid-prototyping to best provide value to user
- Implemented this software improvement across Duke University

Graphic Designer / Duke Innovative Design Agency (DiDA)

2008-2009

- Designed posters, flyers, apparel, and marketing strategies for student organizations at Duke.

Engineer / SmartHome Lighting

2008 – 2009

The Duke SmartHome is the world's first dormitory that functions as a live-in laboratory for greener living.

- Re-designed the home's CLIPSAL lighting system to promote greener habits
- Recreated the central-control PICED touch screen

OTHER

Has danced **ballet and jazz** for the past 15 years with Harvard Ballet Company (Cambridge, MA), Duke University Dance Program (Durham, NC), Dans och Cirkushögskolan (Stockholm, Sweden), Jose Mateo Ballet Theatre (Cambridge, MA), American Academy of Ballet (New York), Lexington School of Ballet (Lexington, MA), Interplay School of Ball (Toronto, Canada).

Plays **clarinet and saxophone** in classical and jazz ensembles for 10 years with UNC Music Department (Chapel Hill, NC), Duke Univ. Music Department (Durham, NC), Kungliga Tekniska Högskolan (Stockholm, Sweden), New England Conservatory (Boston, MA).

Pi Tau Sigma, Mechanical Engineering Honor Society

SKILLS

SolidWorks 3D CAD, MatLab, MathCad, Mathematica, Maple, Labview, Eagle (PCB Design), Adobe Photoshop, Illustrator, InDesign, Dreamweaver, Lightroom, MS Word, MS Excel, MS PowerPoint, Latex. Avid photographer and blogger (see linacolucci.wordpress.com).

Lived in Brazil, Canada and USA. Traveled in 20 countries. Fluent in Portuguese, Spanish and English. Elementary in Swedish.