Mark J. Golob

mark.golob.j@gmail.com

EDUCATION

University of Wisconsin-Madison   **Madison, WI**
Graduate Student, Materials Science Ph.D. Program   *May 2017*
      Emphasis: Cardiovascular biomechanics
M.S. Biomedical Engineering, GPA: 3.66/4.00   *Dec. 2014*

University of Minnesota-Twin Cities, GPA: 3.51/4.00   **Minneapolis, MN**
B.S. Materials Science and Engineering, *Astrophysics Minor, Math Minor*   *May 2012*

GRADUATE SCHOOL RESEARCH AND TEACHING EXPERIENCE

Vascular Tissue Biomechanics Laboratory, University of Wisconsin   Sept. 2012-Present
- Modified a uniaxial arterial testing setup to accommodate biaxial data which expanded the characterization of mechanical properties
- Analyzed statistics of cardiovascular function and structure metrics using ANOVA, inter-observer variability, and outlier methods
- Supervised and mentored 3 undergraduate students simultaneously in research, data analysis, coding, and CAD modeling
- Upgraded MATLAB code for analysis which reduced data processing time by 20%

Teaching Assistant-Biofluidics, University of Wisconsin   Jan.-May 2014, 2015, 2017
- Led MATLAB and problem solving discussions related to fluid dynamics concepts

INDUSTRY EXPERIENCE

St. Jude Medical, Biomechanics Test Development Intern, St. Paul, MN   May-Sept. 2015
- Designed and 3D printed fixtures using SolidWorks resulting in faster preparation and expanded capabilities for mechanical testing of heart valves
- Modified MATLAB code which reduced data analysis time by 80% for mechanical testing
- Coded a user interface to automate calculations from test data resulting in independent application able to be used by any personnel in research group
- Fit mechanical data to constitutive models for use in heart valve finite element analysis

Test Resources, Temporary Assembler, Shakopee, MN   Dec. 2014
- Wired load cells using soldering techniques and calibrated assembled load cells under tension and compression

Medtronic, Summer Associate, Fridley, MN   May-Aug. 2012
- Characterized polymer mechanics using tensile testing and dynamic mechanical analysis
- Developed a processing procedure using design of experiments for polyurethanes

3M, Technical Aide, Maplewood, MN   Oct. 2011-May 2012
- Formulated and characterized electrical resistance of metal particle conductive coatings

Donaldson Company, Engineering Intern, Bloomington, MN   May-Aug. 2011
- Conducted permeability and pore size tests of glass fiber air filters

COMPUTER PROGRAMMING AND SOFTWARE EXPERIENCE

MATLAB | SolidWorks | LabVIEW (CLAD Certified) | Minitab | Arduino |R | Basic Java | Basic VBA |ANSYS | EndNote

PEER REVIEWED PUBLICATIONS

- **Golob MJ**, Wang Z, Prostrollo A, Hacker TA, Chesler NC, "Limiting collagen turnover via collagenase-resistance attenuates right ventricular dysfunction and fibrosis in pulmonary arterial hypertension" Physiological Reports (2016)
- Wang Z, **Golob MJ**, Chesler NC, "Viscoelastic properties of cardiovascular tissues." *Viscoelastic and Viscoplastic Materials.* Editor: El-Amin, M. Intech, 2016. ISBN 978-953-51-4822-7
- **Golob MJ**, Tabima DM, Wolf GD, Johnston JL, Forouzan O, Mulchrone AM, Kellihan HB, Bates ML, Chesler NC, "Pulmonary arterial strain- and remodeling-induced stiffening are differentiated in a chronic model of pulmonary hypertension." (2016) Submitted to the Journal of Biomechanics.
- **Golob MJ,** Tian L, Wang Z, Zimmerman TA, Caneba CA, Hacker TA, Song G, Chesler NC, "Mitochondria DNA mutations cause sex-dependent development of hypertension and alterations in cardiovascular function" Journal of Biomechanics 48: 405-412 (2015)
- Liu A, Tian L, **Golob MJ**, Eickhoff JC, Boston M, Chesler NC, "17-β Estrogen attenuates conduit pulmonary artery mechanical property changes with pulmonary arterial hypertension" Hypertension (2015).
- **Golob MJ**, Moss RL, Chesler NC, "Cardiac tissue structure, properties, and performance: A Materials Science Perspective" Annals of Biomedical Engineering (2014)
- Wang Z, Lakes RS, **Golob MJ**, Eickhoff JC, Chesler NC, "Changes in Large Pulmonary Arterial Viscoelasticity in Chronic Pulmonary Hypertension" PLoSONE 8(11): e78569. doi:10.1371/journal.pone.0078569 (2013)

CONFERENCE PRESENTATIONS AND POSTERS (*Presenting Author)

- ***Golob MJ,** Forouzan O, Mulchrone AM, Kellihan H, Chesler NC, "A Fung type exponential constitutive model accurately captures and differentiates between strain- and remodeling-induced stiffening in conduit pulmonary arteries" 2016. Computer Methods in Biomechanics and Biomedical Engineering, Tel Aviv, Israel. (Presentation).
- ***Golob MJ,** Tabima DM, Wolf GD, Forouzan O, Mulchrone AM, Kellihan HB, Bates ML, Chesler NC, "Conduit pulmonary artery stiffening in a chronic model of pulmonary hypertension" 2016. Biomedical Engineering Society, Minneapolis, MN. (Presentation)
- ***Golob MJ,** Wang Z, Prostrollo AJ, Hacker TA, Diarra G, Chesler NC, "Impaired collagen degradation prevents RV hypertrophy and enhances RV contractility in PAH" 2015. Summer Bioengineering Conference, Salt Lake City, UT. (Presentation).
- Wang Z, Morgan S, **Golob MJ**, Liu Z, Liu B, Chesler NC, "Stiffer arterial wall enhances aortic aneurysm formation in a mouse model via elastase infusion" 2015. Summer Bioengineering Conference, Salt Lake City, UT. (Presentation).
- ***Golob MJ**, Tian L, Wang Z, Zimmerman TA, Hacker TA, Song G, Chesler NC, "Mitochondria DNA mutations cause sex-dependent development of hypertension and

alterations in cardiovascular function" 2014. World Congress of Biomechanics, Boston, MA. (Poster).

- Liu A, Tian L, **Golob MJ**, Chesler NC, "Estrogen alters mechanical property changes in conduit pulmonary arteries with pulmonary artery hypertension" 2014. World Congress of Biomechanics, Boston, MA. (Presentation).
- Tian L, Liu A, **Golob MJ**, Chesler NC, "Smooth muscle cells in proximal pulmonary artery respond differently to vasoconstrictor in static and dynamic states in both healthy and pulmonary hypertensive female mice" 2014. World Congress of Biomechanics, Boston, MA. (Presentation).

AWARDS AND HONORS

UW-Madison Conference Presentation Award	Oct. 2016
IonOptix Travel Grant	Apr. 2016
MSP Fellowship, University of Wisconsin-Madison	Sept. 2012-2013
ASM MN Chapter Scholarship, University of Minnesota-Twin Cities	April 2012
Bentson Family Scholarship, University of Minnesota-Twin Cities	Sept. 2008-May 2012
Nathan Lifson Scholarship, University of Minnesota-Twin Cities	Sept.-May 2009, 2010, & 2011