

Mark J. Golob

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EDUCATION

University of Wisconsin-Madison, GPA: 3.66/4.00 **Madison, WI**
Graduate Student, Materials Science Ph.D. Program *Late 2016/Early 2017 (Expected)*
M.S. Biomedical Engineering *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*

INDUSTRY EXPERIENCE

St. Jude Medical, Biomechanics Test Development Intern, St. Paul, MN **May-Sept. 2015**

- Designed fixtures in SolidWorks and created rapid prototypes using 3D printing for mechanical testing of heart valves
- Modified MATLAB code that reduced sample analysis time by 80% for mechanical testing
- Created user interface in MATLAB to automatically calculate mechanical properties from testing data
- 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 | R | Basic Java | Basic VBA | ANSYS

GRADUATE SCHOOL RESEARCH AND TEACHING EXPERIENCE

Vascular Tissue Biomechanics Laboratory, University of Wisconsin **Sept. 2012-Present**

- Modifying the uniaxial arterial mechanical testing setup by developing new fixtures using SolidWorks and new code using MATLAB to accommodate biaxial data
- Analyzing hemodynamic and cardiac function data using 2-way ANOVA, inter-observer variability, and outlier statistical methods
- Upgraded MATLAB code for analysis which reduced data processing time by 20%
- Published three first author publications and presented at a bioengineering conference

Teaching Assistant-Biofluidics, University of Wisconsin **Jan.-May 2014, Jan.-May 2015**

- Lead MATLAB and problem solving discussions related to fluid dynamics concepts

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)
- **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)
- **Golob MJ**, Moss RL, Chesler NC, “Cardiac tissue structure, properties, and performance: A Materials Science Perspective” *Annals of Biomedical Engineering* (2014)
- **Golob MJ**, Wolf GD, Forouzan O, Mulchrone AM, Johnston JD, Kelliham HB, Bates ML, Chesler NC, “Experimental and computational investigations of pulmonary arterial stiffening in a chronic model of pulmonary arterial hypertension.” (2016) In preparation.
- 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
- 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).
- Wang Z, Lakes RS, **Golob MJ**, Eickhoff JC, Chesler NC, “Changes in Large Pulmonary Arterial Viscoelasticity in Chronic Pulmonary Hypertension” *PLoS ONE* 8(11): e78569. doi:10.1371/journal.pone.0078569 (2013)

CONFERENCE PRESENTATIONS AND POSTERS (*Presenting Author)

- ***Golob MJ**, Forouzan O, Mulchrone AM, Kelliham 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* (Presentation).
- ***Golob MJ**, Wolf GD, Forouzan O, Mulchrone AM, Kelliham HB, Bates ML, Chesler NC, “Pulmonary artery stiffening is evident by changes in nonlinear mechanical properties in canine PAH” 2016. *Biomedical Engineering Society* (Submitted)
- ***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* (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* (Poster).
- 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* (Presentation).
- 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* (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 (Presentation).