

## CURRICULUM VITAE

### **Gretchen A. Meyer, Ph.D.**

#### **Current Position:**

Assistant Professor, Physical Therapy and Neurology, Washington University School of Medicine, St. Louis, MO

#### **Education:**

2000-2004      **BS Mechanical Engineering**; Washington University in St. Louis, St. Louis, MO  
2003-2004      **MS Mechanical Engineering**; Washington University in St. Louis, St. Louis, MO  
2006-2011      **Ph.D. Bioengineering**; University of California, San Diego, San Diego, CA  
2011-2014      **Postdoctoral Fellowship, Bioengineering**; University of California, San Diego, San Diego, CA

#### **Academic Positions/Employment:**

05/02-08/03      **Research Assistant**, Dynamics Laboratory  
Washington University in St. Louis, Philip V. Bayly, Director  
08/04-09/06      **Engineer/Scientist 1**, Dynamics Group  
The Boeing Company (St. Louis, MO), Robert Mullans, Group Lead  
07/07-07/11      **Graduate Research Assistant**, Muscle Physiology Laboratory  
University of California, San Diego, Richard L. Lieber, Director  
09/11-07/14      **Postdoctoral Fellow**, Stem Cell Biology and Bioengineering Laboratory  
University of California, San Diego, Adam J. Engler, Director  
08/14-present      **Instructor**, Physical Therapy and Neurology  
Washington University in St. Louis

#### **Honors and Awards:**

2000 – National Merit Scholarship & Dean’s Honorary Scholarship  
2004 – Most Outstanding Member, American Society of Mechanical Engineers (Washington University Chapter)  
2007 – Pass with Distinction, Departmental Qualifying Examination (University of California, San Diego, Bioengineering)  
2009 – Young Investigator Award Finalist, Workshop on Multi-scale Muscle Mechanics

#### **Professional Societies:**

2002 – 2004      American Society of Mechanical Engineers, Member  
2012 – present      Biomedical Engineering Society, Member

2013 – present American Society for Cell Biology, Member  
2014 – present American Society of Biomechanics, Member  
2014 – present Orthopaedic Research Society  
2014 – present American Society of Mechanical Engineers, Member

### **Professional Activities:**

#### Washington University Committees

- Physical Therapy Research Advisory Council, 2014-2015

#### Conference chairs

- Co-chair - Alternative Muscle Club Annual Meeting, 2013

#### Conference session moderator

- World Congress of Biomechanics, Session: Altered Cell Mechanics in Diseased Environments, July 11, 2014, Boston, MA

#### Manuscript reviewer

- American Journal of Physiology, Cell Physiology
- American Society of Mechanical Engineers
- Arteriosclerosis, Thrombosis and Vascular Biology
- Biomechanics and Modeling in Mechanobiology
- Journal of the Mechanical Behavior of Biomedical Materials
- Journal of Orthopaedic Research
- Molecular and Cellular Biology
- Plos One
- Biomaterials Science
- Cells Tissues Organs
- American Journal of Sports Medicine
- Journal of Medical and Biological Engineering
- Journal of Shoulder and Elbow Surgery
- Scientific Reports

#### Editorial Board

- Journal of Orthopaedic Research

### **Teaching Experience:**

2006-2007 Graduate Teaching Assistantships (University of California, San Diego)  
BENG101: Foundations of Biomedical Imaging  
BENG122A: Biosystems and Control  
BENG125: Modeling and Computation in Bioengineering  
BENG112A: Biomechanics  
2009 CSD1: Cells, Systems and Disease 1 – Lecture: *Skeletal Muscle Physiology*  
(Washington University in St. Louis, Physical Therapy)

- 2012-2013 BENG87: Engineering Stem Cells – Lecture: *Stem Cells and Disease* (University of California, San Diego, Bioengineering)
- 2013-2014 BENG277: Tissue Engineering Laboratory – Module: *Stiffness Driven Differentiation* (University of California, San Diego, Bioengineering)
- 2014 604 CSDI: Skeletal Muscle Extracellular Matrix (2hr)  
604 CSDI: Muscle Regeneration and the Satellite Cell (2hr)  
606 Kines I: Muscle Structure and Function (2hr)

### Research Support:

#### Current:

- 2015-2016 MRC Pilot & Feasibility Program (Internal) (**Principal Investigator**): Promoting rotator cuff muscle regeneration with paracrine adipose signaling (\$35,000 total award)

#### Pending:

- Submitted 10/2014 NIH R01 (**Co-Investigator**, PI: Corey Deeken): Promoting Mechanical Integration at the Tissue-Biomaterial Interface in Ventral Hernia Repair (\$1,899,989 total proposed)
- Submitted 10/2014 SAGES (**Co-Investigator**, PI: Corey Deeken): Promoting Mechanical Integration at the Tissue-Biomaterial Interface in Ventral Hernia Repair (\$30,000 total proposal)
- Submitted 12/2014 NIH 1R01AR057836-01 Renewal (**Co-Investigator**, PI: Stavros Thomopoulos): Rotator cuff healing (\$1,900,000 total proposed)

#### Completed:

- 2012-2014 NIH 1F32AR063588-01 (**Principal Investigator**): Promoting regeneration in muscular dystrophy with adipose derived stem cells (\$146,070 total award)

### Refereed Journal Original Manuscripts:

1. Lange, S., Ouyang, K., Meyer, G., Cui, L., Cheng, H., Lieber, R., Chen, J., “Obscurin determines longitudinal SR architecture” *Journal of Cell Science* (2009) 1;122(Pt 15): 2640-50.
2. Meyer, G.A., Kiss, B., Ward, S.R., Morgan, D.L., Kellermayer, M, Lieber, R.L. “Theoretical predictions of the effects of force transmission by desmin on intersarcomere dynamics” *Biophysical Journal* (2010) 98(2):258-66.
3. Meyer, G.A., Lieber, R.L., “Elucidation of extracellular matrix mechanics from muscle fibers and fiber bundles” *Journal of Biomechanics* (2011) Feb 24;44(4):771-3.
4. Philp, A., Chen, A., Meyer, G.A., Lan, D., Murphy, A.N., Knapp, A., Marcotte, G.R., Olfert, I.M., Carr, J.A., Hogan, M.C., Lieber, R.L., Baar, K., Schenk, S., “Sirtuin 1 (SIRT1) deacetylase activity is not required for mitochondrial biogenesis or peroxisome proliferator-activated receptor-gamma coactivator-1alpha (PGC-1alpha) deacetylation following endurance exercise” *Journal of Biological Chemistry* (2011) Sep 2;286(35):30561-70.

5. **Meyer, G.A.**, McCulloch, A.D., Lieber, R.L., “A nonlinear model of passive muscle viscosity” *Journal of Biomechanical Engineering* (2011) Sep;133(9):091007.
6. **Meyer, G.A.**, Lieber, R.L., “Skeletal muscle fibrosis develops in response to desmin deletion” *Am J Physiol Cell Physiol.* (2012) Jun; 302(11):C1609-20.
7. Chao, L.C., Wroblewski, K., Ilkayeva, O.R., Stevens, R.D., Bain, J., **Meyer, G.A.**, Schenk, S., Martinez, L., Vergnes, L., Narkar, V.A., Drew, B.G., Hong, C., Boyadjian, R., Hevener, A.L., Evans, R.M., Reue, K., Spencer, M.J., Newgard, C.B., Tontonoz, P. “Skeletal muscle Nur77 expression enhances oxidative metabolism” *Journal of Lipid Research* (2012) Dec 53(12)2610:9.
8. **Meyer, G.A.**, Schenk, S., Lieber, R.L., “Role of the cytoskeleton in muscle mechanical and transcriptional responses to altered use” *Physiological Genomics* (2013) Apr 16;45(8):321-31.
9. Palmisano, M.G., Bremner, S.N., Hornberger, T.A., **Meyer, G.A.**, Shah, S.B., Kellermeyer, M., Ryan, A.F., Lieber, R.L., “Muscle intermediate filaments form a stress-transmitting and stress-signaling network” *Journal of Cell Science* (2014) Nov 20 [Epub ahead of print].
10. **Meyer, G.A.**, Farris, A.L., Sato, E., Gibbons, M., Lane J.G., Ward, S.R., Engler, A.J. “Muscle progenitor cell regenerative capacity in the torn rotator cuff” *Journal of Orthopaedic Research* (2014) Nov 20 [Epub ahead of print].
11. **Meyer, G.A.**, Gibbons, M., Sato, E., Lane J.G., Ward, S.R., Engler, A.J. “Epimuscular fat in the human rotator cuff is a novel beige depot” *Stem Cells: Translational Medicine* (submitted).

#### **Refereed Journal Review Manuscripts:**

12. Smith, L.R., **Meyer, G.A.**, Lieber, R.L., “Systems analysis of biological networks in skeletal muscle function” *Wiley Interdisciplinary Reviews Systems Biology and Medicine* (2013) Jan-Feb 5(1):55-71.
13. Thomas, K., Engler, A.J., **Meyer, G.A.**, “Extracellular matrix regulation in the muscle satellite cell niche” *Connective Tissue Research* (2014) Jul 22:1-23 [Epub ahead of print].

### **National/International Podium Presentations:**

1. **Meyer, G.A.**, Kellermeyer, M., Ward, S.R., Lieber, R.L., “A Mathematical Model of Force Transmission by Desmin in Skeletal Muscle” Proceedings of the North American Congress on Biomechanics, Aug 2008.
2. **Meyer, G.A.**, McCulloch, A.D., Ward, S.R., Lieber, R.L., “Passive viscoelastic scaling in desmin knockout muscles” Workshop on Multi-scale Muscle Mechanics, Sept 2009.
3. **Meyer, G.A.**, Smith, L.R., Lieber, R.L., “Skeletal muscle fibrosis in response to compliant muscle fibers” The American Society of Biomechanics, Aug 2011.
4. **Meyer, G.A.**, Gibbons, M., Sato, E., Lane, J.G., Ward, S.R., Engler, A.J. “Epimuscular Fat in the Human Rotator Cuff is a Novel Brown Fat Depot Influenced by Cuff State” Biomedical Engineering Society Meeting, Oct 2014.

### **National/International Invited Talks:**

1. **Meyer, G.A.**, “Stem cells and regenerative medicine” American Physical Therapy Association Section on Research Retreat, Aug 2012.
2. **Meyer, G.A.**, “Stem cells and regenerative medicine: harnessing the body’s natural ability to heal” California Physical Therapy Association Annual Conference, Sept 2013.
3. **Meyer, G.A.**, Gibbons, M., Sato, E., Ward, S.R., Engler A.J., “Epimuscular fat in the human rotator cuff is a novel brown fat depot influenced by cuff state” World Congress of Biomechanics, July 2014.
4. **Meyer, G.A.**, Farris, A.L., Sato, E., Gibbons, M., Lane J.G., Ward, S.R., Engler, A.J. “Muscle progenitor cell regenerative capacity in the torn rotator cuff” Biomedical Engineering Society Meeting, Oct 2014.