

# Tabassum (Taby) Ahsan, PhD

## **Contact Information**

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New Orleans, LA 70124  
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site: <http://ahsanlab.org>

## **Education:**

University of Pennsylvania  
B.S.E in Bioengineering, 1991

University of California San Diego  
*Integrative Repair and Collagen Crosslinking of Adult Articular Cartilage*  
Thesis advisor: Robert L. Sah, M.D., Sc. D.  
Ph.D. in Bioengineering, 1998

## **POSITIONS & EMPLOYMENT**

### **Academic Positions:**

- 2009-present Assistant Professor: Tulane University, New Orleans, LA  
Department of Biomedical Engineering, Tulane University
- 2014-2016 Burk-Kleinpeter Early Career Professor  
Department of Biomedical Engineering, Tulane University
- 2007-2009 Research Engineer: Georgia Institute of Technology  
Cardiovascular Tissue Engineering Laboratory  
PI of Lab: Dr. Robert M. Nerem
- 2007 Visiting Academic (Summer): Imperial College London  
Department of Chemical Engineering & Institute of Biomedical Engineering  
Mentors: Drs. Athanasios Mantalaris and Judit Nagy
- 2003-2007 Postdoctoral Research Fellow: Georgia Institute of Technology  
Cardiovascular Tissue Engineering Laboratory  
PI of Lab: Dr. Robert M. Nerem
- 1998-1999 Postdoctoral Fellow: M.E. Müller Inst. for Biomechanics, Bern, Switzerland  
Cartilage Tissue Biomechanics and Structural Biology  
Institute Director: Prof Ernst B. Hunziker
- 1994-1998 Research Assistant: University of California San Diego, La Jolla, California  
Cartilage Tissue Engineering Laboratory  
Advisor: Dr. Robert L. Sah
- 1992-1994 Research Assistant: University of California San Diego, La Jolla, CA  
Neuromuscular Physiology Laboratory  
Advisor: Dr. Richard L. Lieber

### **Government Positions:**

2014-2015 Committee Chair: Cell, Tissue, and Gene Therapies Advisory Council of FDA  
*Note: Have been asked to return as Committee Chair starting 2017*

2010-2015 Member: Cell, Tissue, and Gene Therapies Advisory Council of FDA  
*Expertise: Bioengineering.*

### **Industry Positions:**

2001-2002 Senior Research Scientist: Advanced Tissue Sciences, La Jolla, CA

1999-2001 Senior Bioengineer: Advanced Tissue Sciences, La Jolla, CA  
Musculoskeletal Research Group / Bioengineering Group  
Reported to VP of Research: Dr. Tony Ratcliffe  
*Research and development in functional cartilage tissue engineering, focused on bioreactor development for tissue growth and experimental design for pre-clinical animal studies. Involved in preparation of IND for tissue engineered cartilage. Efforts were to develop a product design of an effective cell-based therapy to go from cell seeding, cell expansion, tissue growth, storage, shipping, and delivery to the operating room, as well as select predictive and reproducible quality control assessments.*

### **Honors:**

Keystone Symposia Travel Award (2005)

Georgia Tech/Emory Engineering Center Travel Award (2005)

American Society of Cell Biology Travel Award (2005)

Ruth L. Kirschstein National Research Service Award (Postdoc Fellow 2004-2006)

GSSA Outstanding Faculty Award: School of Science & Engineering (2009-2010)

Invitation to Participate in Special NSF meeting of New Directions for Tissue Engineering & Regenerative Medicine (2013)

Regenerative Medicine Workshop Travel Award (2015)

Burk-Kleinpeter Early Career Professor (2014-2016)

## **GOVERNMENT & REGULATORY ACTIVITIES**

### **FDA Product Regulatory Activities:**

- CBER, Cellular, Tissue and Gene Therapies Advisory Committee Meeting 2010  
Role: Committee Member  
Topic: Current FDA recommendations for Testing of Replication Competent Retrovirus (RCR)/Lentivirus (RCL) in Retroviral and Lentiviral Vector Based Gene Therapy Products.
- CBER, Cellular, Tissue and Gene Therapies Advisory Committee Meeting 2011  
Role: Committee Member  
Topic: Cellular and gene therapy products for the treatment of retinal disorders. Topics to be considered include the following: (1) Efficacy endpoints in pediatric and adult populations, (2) potential safety issues related to repeat administration or second eye administration, and (3) evaluation of product delivery into target site.
- CBER, Cellular, Tissue and Gene Therapies Advisory Committee Meeting 2011  
Role: Committee Member  
Topic: HDE BH110018, CliniMACS CD34 Selection System, Miltenyi Biotec, for processing allogeneic HLA-matched hematopoietic progenitor cells-apheresis (HPC-C) for additional graft-vs-host disease (GVHD) prophylaxis in patients with acute myelogenous leukemia in first or second morphologic complete remission.
- CBER, Cellular, Tissue and Gene Therapies Advisory Committee Meeting 2011  
Role: Committee Member  
Topic: BLA 125397, Umbilical Cord Blood, New York Blood Center, indicated for hematologic malignancies, bone marrow failure, primary immunodeficiency diseases, beta thalassemia, Hurler syndrome, Krabbe disease, and X-linked adrenoleukodystrophy.
- CBER, Cellular, Tissue and Gene Therapies Advisory Committee Meeting 2011  
Role: Committee Member  
Topic: Apligraf (Oral), Organogenesis, Inc., BLA 125400, for the treatment of surgically created gingival and alveolar mucosal surface defects in adults.
- CBER, Cellular, Tissue and Gene Therapies Advisory Committee Meeting 2014  
Role: Committee Member  
Topic: Oocyte Modification in Assisted Reproduction for the Prevention of Transmission Of Mitochondrial Disease or Treatment of Infertility & Draft Guidance for Industry “Considerations for the Design of Early-Phase Clinical Trials of Cellular and Gene Therapy Products”
- CBER, Cellular, Tissue and Gene Therapies Advisory Committee Meeting 2014  
Role: Chair of Committee  
Topic: Draft Guidance for Industry “Design and Analysis of Shedding Studies for Virus or Bacteria-Based Gene Therapy and Oncolytic Products” & Gene Therapy IND Master Sponsor Letter
- Joint Meeting of CBER, Cellular, Tissue and Gene Therapies Advisory Committee and CDER, Oncological Drugs Advisory Committee 2015  
Role: Chair of Committee  
Topic: talimogene laherparepvec, Amgen, Inc., BLA 125518, for the treatment of unresectable but injectable regionally or distantly metastatic melanoma.

### **Site Visits of FDA Intramural Programs:**

- Cellular, Tissue and Gene Therapies Advisory Committee 2011  
Role: Site Visit Team Member  
Topic: Site Visit of the Cellular and Tissue Therapy Branch, Office of Cellular, Tissue and Gene Therapies, FDA

Cellular, Tissue and Gene Therapies Advisory Committee 2012  
 Role: Chair of Site Visit Team  
 Topic: Site Visit of the Gene Transfer and Immunogenicity Branch, Office of Cellular, Tissue and Gene Therapies, FDA

Cellular, Tissue and Gene Therapies Advisory Committee 2014  
 Role: Chair of Site Visit Team  
 Topic: Site Visit of the Laboratory of Molecular and Developmental Immunology, Division of Monoclonal Antibodies, FDA

Cellular, Tissue and Gene Therapies Advisory Committee 2015  
 Role: Co-Chair of Site Visit Team  
 Topic: Site Visit of the Cellular and Tissue Therapy Branch, Office of Cellular, Tissue and Gene Therapies, FDA

**Reviewer Of FDA Intramural Programs:**

Cellular, Tissue and Gene Therapies Advisory Committee 2010  
 Role: Committee Member  
 Topic: Site Visit Report of the Tumor Vaccines and Biotechnology Branch, Office of Cellular, Tissue and Gene Therapies, FDA

Cellular, Tissue and Gene Therapies Advisory Committee 2011  
 Role: Committee Member  
 Topic: Site Visit Report of the Laboratory of Biochemistry, Division of Therapeutic Proteins, FDA & Laboratory of Cell Biology, the Laboratory of Molecular and Developmental Immunology, FDA

Cellular, Tissue and Gene Therapies Advisory Committee 2013  
 Role: Committee Member  
 Topic: Site Visit Report of the Laboratory of Chemistry, Division of Therapeutic Proteins, FDA

Cellular, Tissue and Gene Therapies Advisory Committee 2013  
 Role: Committee Member  
 Topic: Site Visit Report of the Laboratory of Immunology, Division of Therapeutic Proteins, FDA

Cellular, Tissue and Gene Therapies Advisory Committee 2015  
 Role: Committee Member  
 Topic: Site Visit Report of the Tumor Vaccines and Biotechnology Branch, Office of Cellular, Tissue and Gene Therapies, FDA

## RESEARCH ACTIVITIES

### **Refereed Publications:**

- Ahsan T, Lottman LM, Harwood F, Amiel D, Sah RL. Integrative cartilage repair: inhibition by beta-aminopropionitrile. *J Orthop Res.* 17(6):850-857, 1999.
- Ahsan T, Sah RL. Biomechanics of integrative cartilage repair. *Osteoarthritis Cartilage.* 7(1):29-40, 1999.
- Ahsan T, Harwood F, McGowan KB, Amiel D, Sah RL. Kinetics of collagen crosslinking in adult bovine articular cartilage. *Osteoarthritis Cartilage.* 13(8):709-715, 2005.
- Ahsan T, Nerem RM. Bioengineered tissues: the science, the technology, and the industry. *Orthod Craniofac Res.* 8(3):134-140, 2005.

### *Refereed Publications Since Becoming an Independent Investigator*

- Doyle AM, Nerem RM, Ahsan T. Human mesenchymal stem cells form multicellular structures in response to applied cyclic strain. *Ann Biomed Eng.* 37(4):783-793, 2009.
- Duffy GP, Ahsan T\*, O'Brien T, Barry F, Nerem RM. Bone marrow-derived mesenchymal stem cells promote angiogenic processes in a time- and dose-dependent manner in vitro. *Tissue Eng Part A.* 15(9):2459-2470, 2009. \*co-first author
- Gauvin R, Ahsan T, Larouche D, Levesque P, Dube J, Auger FA, Nerem RM, Germain L. A Novel Single-Step Self-Assembly Approach for the Fabrication of Tissue-Engineered Vascular Constructs. *Tissue Eng Part A.* 16(5):1737-47, 2010.
- Duffy GP, D'Arcy S, Ahsan T, Nerem RM, O'Brien T, Barry F. Mesenchymal Stem Cells Overexpressing Ephrin-B2 Rapidly Adopt an Early Endothelial Phenotype with Simultaneous Reduction of Osteogenic Potential. *Tissue Eng Part A.* 16(9):2755-68, 2010.
- Ahsan T, Nerem RM: Fluid shear stress promotes an endothelial phenotype during the early differentiation of embryonic stem cells *Tissue Eng Part A.* 16(11):3547-53, 2010. PMID: PMC2992398
- Wolfe RP, Leleux J, Nerem RM, Ahsan T: Effects of shear stress on germ lineage specification of embryonic stem cells. *Integr Biol.* 4(10):1263-1273, 2012.
- Stapor PC, Azimi MS, Ahsan T, Murfee WL: An angiogenesis model for investigating multicellular interactions across intact microvascular networks. *Am J Physiol Heart Circ Physiol.* 304:H235-H245, 2013. PMID: PMC3543666
- Wolfe RP, Ahsan T: Shear stress during early embryonic stem cell differentiation promotes hematopoietic and endothelial phenotypes. *Biotechnol Bioeng.* 110(4):1231-42, 2013. PMID: PMC4052571.
- Pineda ET, Nerem RM, Ahsan T: Differentiation patterns of embryonic stem cells in two versus three dimensional culture. *Cells Tissues Organs* 197(5):399-410, 2013. PMID: PMC3732738.
- Lynch KM, Ahsan T: Modulating the physical microenvironment to study regenerate processes in vitro using cells from mouse phalangeal elements. *Tissue Eng Part A* 19(11-12):1406-15, 2013. PMID: PMC3638516
- Nsiah BA, Ahsan T, Griffiths S, Cooke M, Nerem RM, McDevitt TC: Fluid shear stress preconditioning promotes endothelial morphogenesis of embryonic stem cells within embryoid bodies. *Tissue Eng Part A* 20(5-6):954-65, 2014. PMID: PMC3938916.
- Lynch KM, Ahsan T: Correlating the effects of BMP to secreted soluble factors from fibroblasts and mesenchymal stem cells in regulating regenerative processes in vitro. *Tissue Eng Part A* 20(23-24):3122-9, 2014. PMID: 24851900.
- Wolfe RP, Guidry JB, Messina SL, Ahsan T: Applying shear stress to pluripotent stem cells. *Methods Mol Biol* 1341:377-89, 2016. PMID: 25762292
- Quijano LM, Lynch KM, Allan CH, Badylak S, Ahsan T: Looking ahead to engineering epimorphic regeneration of a human digit or limb. *Tissue Eng Part B* 22(3):251-62, 2016 PMID: 26603349
- Boraas LC, Guidry JB, Pineda ET, Ahsan T: Cytoskeletal expression and remodeling in pluripotent stem cells. *PLOS One* Jan 15 11(1).

Boraas LC, Ahsan T: Lack of vimentin impairs endothelial differentiation of embryonic stem cells. *Scientific Reports* 6:30814, 2016. PMID: 27480130

*Publications In Process (submitted or in post-submission revision)*

Wolfe RP, Ahsan T: Effects of low oxygen on mouse embryonic stem cell differentiation are dependent on the hydrodynamic environment. (*in post-submission revision*)

Boraas LC, Pineda ET, Ahsan T: Actin and myosin II modulate mesendodermal specification of pluripotent stem cells during differentiation. (*submitted*)

Quijano LM, Ahsan T: identification of an in vitro model to study early events of epimorphic regeneration. (*submitted*)

Quijano LM, Lynch KM, Ahsan T: Modulation of oxygen concentration regulates processes relevant for epimorphic regeneration. (*submitted*)

Janaszak MM, Neal EG, Peucker KF, Boraas LC, Lynch KM, Ahsan T: Assessing integrin expression in differentiating embryonic stem cells using modified quantification of flow cytometry. (*submitted*)

Guidry J, James D, Lynch KM, Ahsan T: Density separation of embryoid bodies for selection of target phenotypes. (*submitted*)

Guidry J, James D, Lynch KM, Ahsan T: Purification of embryonic stem cells from feeder layer cells using density separation. (*submitted*)

**Book Chapters:**

Ahsan T, Doyle AM, Nerem RM: Stem cell research. In: Atala A, Lanza R, Thomson J, & Nerem R, eds. *Principles of Regenerative Medicine*. New York, NY: Academic Press, pp. 28-47, 2007.

Ahsan T, Bellamkonda R, Nerem RM: Tissue engineering and regenerative medicine: Advancing towards clinical therapies. In: Mao JJ, Vunjak-Novakovic G, Mikos AG, & Atala A, eds. *Translational Approaches in Tissue Engineering and Regenerative Medicine*. Boston, MA: Artech House Publishing, pp. 3-16, 2008.

Ahsan T, Doyle AM, Nerem RM: Stem cells, biomechanics, and Y.C. Fung. In: Chien S, Chen PC, Schmid-Schoenbein GW, & Woo SL, eds. *Tributes to Yuan-Cheng Fung on his 90<sup>th</sup> birthday*. Singapore: World Scientific Publishing, pp. 185-192, 2009.

Janaszak MM, Wolfe RP, Ahsan T: Biomechanics in stem cell manufacturing. In: Cabral J, Chase L, Lobato da Silva C, Diogo M eds. *Stem Cell Manufacturing. in press*.

**Invited Presentations (International/National):**

2010 University of Southern Mississippi, Hattiesburg MS  
2010 BioStar Conference, Stuttgart Germany  
2010 Worcester Polytechnic Institute, Worcester MA  
2010 World Congress of Biomechanics, “Stem Cell Mechanics”, Singapore  
2011 Morehouse College, Atlanta, GA  
2011 Methodist Medical Center, Houston, TX  
2011 Stem Cell Biomanufacturing Workshop, Atlanta, GA  
2013 Advanced Course in Rehabilitative & Regenerative Medicine, Howard University, Washington DC  
2013 Advanced Course in Stem Cell Manufacturing, Algarve, Portugal  
2013 Frontiers in Regenerative Medicine, Xavier University, New Orleans, LA  
2013 NSF “New Directions for Tissue Engineering & Reg Med”, Sonoma, CA  
2014 Stem Cell Engineering Workshop, Lisbon, Portugal  
2014 World Congress of Biomechanics, “Stem Cell Mechanics”, Boston, MA  
2014 Society for Biological Engineering, Coronado, CA  
2014 Georgia Institute of Technology, Stem Cell Engineering Series, Atlanta, GA  
2014 Universite Laval, LOEX Seminar Series, Quebec, Canada  
2016 University of Massachusetts, Amherst, Inst of Applied Life Sciences  
2016 BMES Annual Meeting, Pluripotent Stem Cell Engineering, Minneapolis, MN

**Invited Presentations (State):**

2009	Tulane University, Department of Physiology
2009	Tulane University, Aging Interest Group
2009	Tulane University, Muneoka Group Meeting
2010	Louisiana State University, Pennington Center
2010	Tulane University, Department of Structural Cell Biology
2010	Tulane University, Department of Physics & Engineering Physics
2010	Tulane University, Women Faculty Research Marathon
2012	Louisiana Tech University, Seminar Series in Stem Cells
2012	Tulane University, Aging Interest Group
2012	Tulane University, School of Medicine Surgery Grand Rounds
2013	Tulane University, Department of Physiology
2013	Tulane University, School of Public Health
2013	Tulane University, Aging Interest Group
2014	Tulane University, School of Public Health
2014	Tulane University, Department of Pharmacology
2016	Louisiana State University, Dept of Biological and Agricultural Engineering

**Select Conference Presentations (presentations by TA unless otherwise noted):**

- Wong M, Siegrist M, Ahsan T: Cartilage matrix synthesis enhances the mechanical properties of alginate. Orthop Res Soc, 2000.
- Ahsan T, Harwood F, Amiel D, Sah RL: Kinetics of collagen crosslinking in adult bovine articular cartilage. Orthop Res Soc, 2000.
- Ahsan T, Chin LE, Ratcliffe A: Effects of perfusion on tissue engineered cartilage. Orthop Res Soc, 2003.
- Ahsan T, Chen AC, Chin LE, Wong VW, Bank RA, Verzijl N, Sah RL, Ratcliffe A: Effects of long term growth on tissue engineered cartilage. Orthop Res Soc, 2003.
- Ahsan T, Durst CA, Nerem RM: Differentiation of stem and progenitor cells in biologically-based scaffolds. Society for Biomaterials, 2004.
- Ahsan T, Durst CA, Nerem RM: Differentiation of mouse stem cells in collagen type I gels. Regenerate, 2004.
- Ahsan T, Nerem RM: Effect of physical cues on differentiation. Keystone Meeting – Molecular Regulation of Stem Cells, 2005.
- Ahsan T, Nerem RM: Effects of mechanical stimulation on vascular progenitor cells. Regenerate, 2005.
- Ahsan T, Nerem RM: Effect of fluid shear stress on vascular progenitor cells. Tissue Engineering Society International, 2005.
- Ahsan T, Nerem RM: Effect of shear stress on vascular progenitors. Tissue Engineering & Regenerative Medicine International Society, 2006.
- Ahsan T, Nerem RM: Physical modulation of embryonic stem cells. ASME Summer Bioengineering Conference, 2006.
- Doyle AM (presenter), Ahsan T, Nerem RM: Effect of substrate and applied force on mesenchymal stem cell differentiation. Biomedical Engineering Society, 2006.
- Ahsan T, Nerem RM: Effect of shear stress on partially differentiated embryonic stem cells. Biomedical Engineering Society, 2006.
- Ahsan T, Doyle AM, Nerem RM: Embryonic stem cell encapsulation in collagen gels for vascular applications. Biomedical Engineering Society, 2006.
- Ahsan T, Doyle AM, Nerem RM: Differentiation of embryonic stem cells in 3D scaffolds. Hilton Head Tissue Engineering Meeting, 2007.
- Doyle AM, Ahsan T, Nerem RM: Response of mesenchymal stem cells to substrate-based cyclic strain. Keystone Meeting – Tissue Engineering and Developmental Biology, 2007.

Ahsan T, Doyle AM, Nerem RM: Differentiation of embryonic stem cells in three dimensional collagen scaffolds. Keystone Meeting – Tissue Engineering and Dev Biology, 2007.

Ahsan T, Doyle AM, Duffy GP, Nerem RM: Stem cells and vascular tissue engineering. Biomedical Engineering Society, 2007

Ahsan T, Doyle AM, Nerem RM: Effect of Three-Dimensional Culture on Embryonic Stem Cell Differentiation. Symposium on Cardiovascular Regenerative Medicine sponsored by NHLBI, 2007.

Ahsan T, Doyle AM, Duffy GP, Nerem RM: Effect of Physical Microenvironment on Embryonic Stem Cells. Stem Cells sponsored by Abcam, 2007.

Ahsan T, Nerem RM: Directed Differentiation using Applied Physical Forces. First International Conference on Stem Cell Engineering sponsored by The AIChE, 2008.

Ahsan, T: Effects of fluid shear stress on embryonic stem cells. Hilton Head Tissue Engineering Meeting, 2009.

Ahsan, T: Effects of fluid shear stress on embryonic stem cell differentiation. FASEB Meeting, 2009.

Ahsan, T: Challenges and Insights for Stem Cell Biomanufacturing. Tissue Engineering & Regenerative Medicine World Congress, 2009.

Ahsan, T: Stem Cell Bioprocessing. Biomedical Engineering Society, 2009.

Wolfe RP, Leleux J, Ahsan, T: Can shear stress be used to determine hematopoietic versus endothelial stem cell fate? Stem Cell Differentiation & Dedifferentiation, Keystone Symposia, 2010.

Wolfe RP (presenter), Ahsan, T: Effects of shear stress on ESCs. Hilton Head Tissue Engineering Meeting, 2010.

Ahsan, T: Effects of fluid shear stress on embryonic stem cells. Hilton Head Tissue Engineering Meeting, 2010.

Ahsan, T: Effect of Fluid Shear Stress on Endothelial and Hematopoietic Differentiation of ESCs. AIChE Society for Biological Engineering, Stem Cell Engineering, 2010.

Ahsan, T: Effect of Fluid Shear Stress on Endothelial and Hematopoietic Differentiation of ESCs. World Congress of Biomechanics, 2010.

Pineda ET (presenter), Nerem RM, Ahsan T: Three dimensional culture of mouse ESCs in collagen gels. Biomedical Engineering Society 2010.

Wolfe RP (presenter), Leleux JA, Ahsan T: Shear stress effects on ESC differentiation. Biomedical Engineering Society 2010.

Lynch K (presenter), Johnson T, Avery P, Ahsan T: High throughput antibody independent method for sorting stem cells,. Biomedical Engineering Society 2010.

Ahsan, T: Mechanisms of Shear Stress-Mediated Pluripotent Stem Cell Differentiation to Endothelial and Hematopoietic Phenotypes. North American Vascular Biology Mtg, 2011.

Lynch K (presenter), Ahsan, T: Role of Cytoskeletal Elements in Regulating the Mammalian Limb Regeneration Response in vitro. Hilton Head Tissue Engineering Meeting, 2011.

Ahsan, T: Role of Substrate and Oxygen in Shear Stress-Mediated EC And HSC Differentiation Of ESCs. Hilton Head Tissue Engineering Meeting, 2011.

James D (presenter), Lynch K, Johnson T, Ahsan, T: Characterization of Embryoid Bodies Separated Using Density Gradient. Tissue Engineering & Regenerative Medicine International Society, 2011.

Pineda ET (presenter), Ahsan, T: Embryonic Stem Cell Differentiation is mediated by the ROCK-Myosin II Pathway. Tissue Engineering & Regenerative Medicine International Society, 2011.

Wolfe RP (presenter), Leleux J, Nerem RM, Ahsan, T: Germ Lineage Specification of Embryonic Stem Cells using Fluid Shear Stress. Tissue Engineering & Regenerative Medicine International Society, 2011.

Lynch K (presenter), Ahsan, T: Implications of the Physical Microenvironment in Mammalian Regeneration. Tissue Engineering & Regenerative Medicine International Society, 2011.

Pineda ET (presenter), Ahsan T: Cytoskeletal tension regulates embryonic stem cell commitment to the mesoderm lineage. Biomedical Engineering Society 2012.

Neal EG (presenter), Peucker KF, Ahsan T: Integrin Expression in Differentiating Embryonic Stem Cells. Biomedical Engineering Society 2012.

Wolfe RP (presenter), Ahsan T: Shear Stress Promotes Hematopoietic and Endothelial Differentiation in ESCs via FLK1. Biomedical Engineering Society 2012.

Pineda ET, Ahsan T: Cytoskeletal tension regulates embryonic stem cell lineage commitment. SBE Stem Cell Engineering 2012.

Pineda ET (presenter), Ahsan T: ROCK-MYOSIN II Regulation of Embryonic Stem Cell Differentiation. Biomedical Engineering Society SPRBRM 2012.

Wolfe RP (presenter), Ahsan T: Fluid shear stress promotes endothelial and hematopoietic differentiation in ESCs via FLK1. American Chemical Society 2013.

Pineda ET (presenter), Ahsan T: Role of cytoskeleton contractility in differentiation towards mesoderm cell phenotypes. American Chemical Society 2013.

Ahsan T: Mechanotransduction in embryonic stem cells. American Chemical Society 2013.

Ahsan, T: Tissue Engineering Approaches to Epimorphic Regeneration. Tissue Engineering & Regenerative Medicine, 2013.

Ahsan, T: Modulation of Cytoskeletal Tension Promotes Mesodermal Differentiation. Hilton Head Tissue Engineering Meeting, 2013.

Lynch K (presenter), Ahsan, T: Investigating The Differences In Proliferation Of Cells From A Regenerative Mouse Model System. ASME Summer Bioengineering Meeting, 2013.

Guidry J (presenter), Wolfe RP, Ahsan T: Cytoskeletal Remodeling due to Applied Shear Stress in Differentiating Pluripotent Stem Cells. BMES Annual Meeting 2014

Ahsan T: Intermediate Filaments and Mesodermal Differentiation. Hilton Head Tissue Engineering Meeting, 2015.

Quijano L (presenter), Lynch KM, Ahsan T: Oscillatory oxygen concentration as proliferation regulator in regeneration-incompetent cells. Hilton Head Tissue Engineering Meeting, 2015.

Boraas L (presenter), Ahsan T: Role of Vimentin in Endothelial Differentiation. Hilton Head Tissue Engineering Meeting, 2015.

Boraas L (presenter), Ahsan T: Role of Intermediate Filaments in Mesodermal Differentiation of Pluripotent Stem Cells. Tissue Engineering & Regenerative Medicine International Society World Congress, 2015.

Quijano L (presenter), Ahsan T: Oxygen as a Modulator of Epimorphic Regeneration Processes. Tissue Engineering & Regenerative Medicine International Society World Congress, 2015.

Ahsan T: Differentiation of Vimentin KO ESCs Towards the Endothelial Phenotype. North American Vascular Biology Meeting, 2015

Ahsan T: Mechanical Modulation of Mesodermal Differentiation. Biomedical Engineering Society, 2016

## TEACHING & MENTORING ACTIVITIES

### **Courses Taught at Tulane:**

#### Cell and Tissue Engineering

BMEN 340/740: Undergraduate/Graduate Level, Tulane University  
Spring 2009 (*Course Redeveloped*), Fall 2009

#### Current Topics in Biomedical Engineering

BMEN 710: Graduate Level (PhD students only), Tulane University  
*Spring 2010 (New Course Developed)*

#### Engineering in Regenerative Medicine

BMEN 6930: Graduate Level, Tulane University  
Fall 2012 (*New Course Developed*)

#### Biomechanics

BMEN 3300/6300 (also 330/730): Undergraduate/Graduate Level, Tulane University  
Spring 2011 (*Course Redeveloped*), Spring 2012, Spring 2013, Spring 2014, Spring 2015

#### Stem Cell Engineering

BMEN 7220: Graduate Level, Tulane University  
Spring 2014 (*New Course Developed*)

#### Research & Professional Practice

BMEN 4910: Undergraduate Level, Tulane University  
Fall 2013 (*Course Redeveloped*), Fall 2014, Fall 2015

### **Guest Lectures in Tulane Classes:**

#### AGST 704 Interdisciplinary Seminar in Aging

Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015

#### AGST 706 Research Topics in Aging

Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015

#### BME Research & Experimental Design

Fall 2012, Fall 2013, Fall 2014, Fall 2015

#### Tulane School of Public Health Communication Seminar Series

Fall 2010, Fall 2012, Fall 2014

### **Courses at Georgia Institute of Technology:**

2004/5 (fall) BE 1750: Introduction to Bioengineering  
Orthopaedic biomechanics module: Instructor

2006 (spr/fall) BMED 1300: Problem-based Learning  
Freshman level course: Facilitator

### **Courses at University of California San Diego (UCSD):**

1994 (spring) AMES 183: Biomedical Electronics and Electrical Engineering  
Junior/Senior level course: TA

1994 (winter) AMES 102: Mechanical Behavior of Materials (>100 students)  
Sophomore/Junior level course: Head TA

1996 (spring) BE 172: Bioengineering Laboratory  
Senior level laboratory course: Head TA  
*Redeveloped Course*



”Evaluation of infuse™ bone graft (rhbmp-2) in the canine acetabular defect model”  
 Alexander D Cigan Biomedical Engineering Masters 2010  
 “The Role Of Doublecortin in Motility of Articular Chondrocytes”  
 Jennifer L Robichaux Biomedical Engineering Masters 2010  
 “Investigation of Lymphatic/Blood Endothelial Cell Connetions in Adult Microvascular Networks”  
 Bryan Goldman Chem & Biomol Engineering Masters 2015  
 “The Effects of Oxidative Stress on Adenosine Receptors in Saccharomyces Cerevisiae”

Undergraduate Students (with thesis):

Austin Dobbins Biomedical Engineering BSE Thesis, May 2010  
 “Design of a Cone and Plate Bioreactor System”  
 Jardin Leleux Biomedical Engineering BSE Honors Thesis, May 2010  
 “The Effects Of Shear Stress On Mouse Embryonic Stem Cells: Point Of Application”  
 Todd Johnson Biomedical Engineering BSE Honors Thesis, May 2010  
 “Development Of An Antibody Independent Method For The Selection Of ESCs”  
 Amaris Genemaras Biomedical Engineering BSE Honors Thesis, May 2011  
 ”Cell Proliferation Rate Characterization Of Human ASCs From Young And Old Donors”  
 Lindsey Shepard Biomedical Engineering BSE Honors Thesis, May 2011  
 “The Effect Hypoxia On Mouse Embryonic Stem Cell Differentiation”  
 John Weems Biomedical Engineering BSE, May 2012  
 “Development of a Low-Volume, Gravity-Driven Shear Stress Bioreactors”  
 Kate Peucker Biomedical Engineering BSE, May 2013  
 “Quantifying the Expression Levels of Specific Integrin  $\alpha$  And  $\beta$  Units”  
 Elizabeth Zipf Biomedical Engineering BSE Honors Thesis, May 2013  
 “Characterization of the Cytoskeleton in ESCs and Induced Pluripotent Stem Cells”  
 Leah Gerber Biomedical Engineering BSE, December 2014  
 “Characterizing Mouse Embryoid Bodies using Density Centrifugation”  
 Natalia Sarmiento, Biomedical Engineering BSE, May 2015  
 “Design, Manufacture, and Evaluation of a Hindlimb Suspension Cage”  
 Richmond van Winter Biomedical Engineering BSE, May 2015  
 “Characterization for Stem Cell Mechanics: Hardware and Software Design”  
 Maxwell Weinerman Biomedical Engineering BSE, May 2016  
 “Modeling of Tissues as Relevant for Cell Transplantation”

Other Students Trained in the Ahsan Laboratory:

Carrie Malcolm, Tulane University Cell & Mol Bio, Undergraduate Honors Thesis 2009  
 Mary -Anne Nguyen, Louisiana State University Undergraduate Summer 2010  
 Paula Avery, Washington University Undergraduate Summer 2010  
 Iris Guo, Louisiana State University Undergraduate Summer 2010  
 Yoni Kaplan, Tulane University BME Undergraduate 2010-2012  
 Russ Guidry, Tulane University, BME Undergraduate 2012

## ORGANIZATIONAL & SERVICE ACTIVITIES

### Institution Participation:

#### Department Service:

BME Cell Culture Core Designer	2009
BME External Constituency Committee	2010-2012
BME Staff Search	2009, 2013
BME Seminar Organizer	2013-2014
BME Faculty Search Committee	2009 – 2016
BME Undergraduate Studies Committee	2012 – 2016
BME Library Liaison	2012 – 2016
JBJ Executive Committee	2013 – present

#### School of Science & Engineering Service:

SSE Nominating Committee	2010, 2012
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#### University Service:

Mortar Board Faculty Advisor	2009-2010
Wall Residence Fellow	2011-2012
Diversity and Inclusive Excellence Work Group	2011-2012
HSC Research Days Judge	2010-2014
Newcomb Fellow	2012 – present
Senate Equal Opportunity and Institutional Equity	2012 – present
Center of Public Service, Service Learning Committee	2012 – 2015
Center of Public Service, Student Petitions Committee	2012 – 2015
Center of Public Service, Executive Committee	2012 – 2015

#### Outreach:

Wall Residence FaculTea	2011
Perry Initiative – Orthopedics Outreach to HS Girls	2012
S&E Honor Society Invited Seminar	2014
FLL Robotics Competition	2014
Girls in STEM at Tulane (GIST)	2012-2015

### Journal Participation:

#### Editorial Boards:

Journal of Tissue Science & Engineering	2010 – present
Frontiers in Bioengineering and Biotechnology	2014 – present

#### Peer Reviewer:

Acta Biomaterialia	
Annals of Biomedical Engineering	Journal of Biomed Materials Res Part A
Biotechnology and Bioengineering	Journal of Biomechanical Engineering
Bone	Stem Cell Research & Therapy
BMC Biotechnology	Stem Cell Reviews and Reports
Cell & Molecular Bioengineering	Stem Cells
Cell Proliferation	Stem Cells International
Cells Tissues Organs	Tissue Engineering Parts A, B, C
Cytotherapy	Trends in Cardiovascular Medicine
Integrative Biology	

## **Grant Review Participation:**

### Review Panels:

American Heart Association	2010 – present
Maryland Stem Cell Foundation	2013
New York Stem Cell Foundation	2009, 2012, 2013

### Ad Hoc Review:

Canadian Natural Science and Engineering Research Council	2009
Singapore NTU	2009
Indo-US Science and Technology Forum	2010
MIT-Portugal Program	2014
NIH/NIGMS: COBRE Mechanism Review	2014, 2016

## **Conference & Society Participation:**

### Elected Leadership Position:

TERMIS, Membership Committee	2014 – 2016
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### Symposium / Workshop Organizer:

2006	ASME “Engineering the Microenvironment for Embryonic Stem Cells”
2008	Stem Cell Biomanufacturing Meeting, Atlanta GA (Meeting Co-organizer)
2009	TERMIS World Congress, Seoul, Korea “Stem Cell Bioprocessing”
2009	Biomedical Engineering Society “Stem Cells Bioprocessing”, Pittsburgh PA
2013	Vascular Matrix Biology and Bioengineering Meeting (Program Committee)
2016	Biomedical Engineering Society, Stem Cell Engineering (Track Chair)

### Session Chair & Abstract Reviewing

2009	Abstract Reviewer, Society for Biomaterials
2009	Session Co-chair, Biomedical Engineering Society “Stem Cells & Regenerative Medicine”, Pittsburgh PA
2010	Session Co-chair, Biomedical Engineering Society “Stem Cells & Tissue Engineering”, Austin TX
2010	Session Co-chair & Abstract Reviewer, Stem Cell Engineering, Boston MA
2010	Abstract Reviewer, Society for Biomaterials
2011	Session Co-Chair, Tissue Engineering & Regenerative Medicine International Society “Skin & Wound Healing” Houston, TX
2012	Session Co-chair & Abstract Reviewer, Stem Cell Engineering, Seattle WA
2012	Session Chair & Abstract Reviewer, Biomedical Engineering Society, “Stem Cell Bioprocessing”, Atlanta, GA
2013	Session Co-Chair & Abstract Reviewer, Tissue Engineering & Regenerative Medicine International Society “Engineering of Multicellular Morphogenesis” Atlanta, GA
2013	Abstract Reviewer, Biomedical Engineering Society, Seattle, WA
2013	Session Co-Chair & Abstract Reviewer, American Chemical Society “Therapeutic Application of Stem Cells and Engineered Tissues Session” New Orleans, LA
2014	Abstract Reviewer, Biomedical Engineering Society, San Antonio, TX
2015	Session Co-Chair, Regenerative Medicine Workshop, Hilton Head, SC “Biomimetic Materials”
2015	Session Co-Chair, North American Vascular Biology Meeting “Cardiovascular Regeneration and Tissue Engineering”

Professional Societies:

American Association for the Advancement of Science	2010-present
American Institute of Chemical Engineers	2010-present
American Society of Cell Biology	2005-present
American Society of Matrix Biology	2001-2008
American Society of Mechanical Engineers	1997-present
Biomedical Engineering Society	2001-present
International Society for Stem Cell Research	2005-present
North American Vascular Biology Organization	2011-present
Tissue Engineering & Regenerative Medicine International Society	2003-present