Taby Ahsan, PhD
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EDUCATION & TRAINING

Ph.D. in Bioengineering, University of California San Diego
Thesis title: Integrative Repair and Collagen Crosslinking of Adult Articular Cartilage
Thesis advisor: Robert L. Sah, M.D., Sc. D.
B.S.E. in Bioengineering, Minor in Mechanical Engineering, University of Pennsylvania

INDUSTRY & ACADEMIC EXPERIENCE

Head, Analytical Development & Characterization: MD Anderson **2020-present**

On the Senior Leadership of Biologics Development in the Therapeutic Discovery Division. As Head of Analytics, I lead a team of scientists and engineers to design assays to support the release and characterization of cell-based therapeutics, as well as design studies related to MDACC trials to make clinical correlations across patient and manufacturing data.

Vice President, Research and Development: RoosterBio **2019-2020**
Senior Director, Analytical, Process, and Product Development: RoosterBio **2019**
Director, Analytical, Process, and Product Development: RoosterBio **2018**
Director, Analytical Development: RoosterBio **2017-2018**

On the RoosterBio Leadership Team and Functional Lead for Research and Development. Create the corporate Product Strategy and oversee development and launch of cell-based and media products (6 in 2 years), which include products in closed system configurations.

- Research: Efforts focused on advancing understanding of MSC biology, analytics, and functional properties for therapeutics.
- Product Development: Aligned the Target Product Profile with market needs.
- Analytical Development: Established Critical Quality Attributes and release criteria, including design of functional cell-based assays, and then tech transfer to internal QC group or CTO.
- Process Development: Established manufacturing processes, determine critical process parameters, and then tech transfer to internal Manufacturing group or CMO. Completed multiple 50-80L scale bioreactor runs for MSC expansion.
- Lifecycle Management: Supported Manufacturing and Quality Control with investigations for both in-house and contract organizations.
- Regulatory Support: Contributed sections to Master Files and help strategize solutions in response to FDA requests.
- External Engagement: Grant and manuscript writing and review, speaking engagements, and conference organization.

Assistant Professor: Tulane University, New Orleans, LA **2009-2017**
Department of Biomedical Engineering, Tulane University

Directed an independent interdisciplinary lab for 8+ years with over 30 trainees (graduating both PhD and Masters students). The Ahsan Stem Cell Bioengineering Lab focused on translating stem cell research into a positive clinical impact on public health.

- Lab focused on the effects of the microenvironment on stem cell fate utilizing custom engineered bioreactor systems that regulate the physical, chemical, and biological inputs to the cell.
- Studies performed in stem cell mechanobiology, bioprocessing, and tissue engineering to help develop basic experimental models, in vitro diagnostic systems, methods for drug discovery, cancer treatments, and regenerative medicine therapies.
- Novel findings included:
  - Shear stress promotes embryonic stem cell differentiation towards the vascular lineage.
  - The cytoskeleton, pivotal for proper function of orthopedic and cardiovascular tissues, regulates (de)differentiation of induced pluripotent stem cells.
  - Mesenchymal stem cell stabilization of newly formed vessels in an angiogenesis model is time- and dose-dependent.
  - 3D *in vitro* culture leads to discoveries in mammalian epimorphic regeneration (regrowth of digit/limb after amputation).
  - Regulating mechanical parameters during bioprocessing and biomanufacturing of pluripotent stem cells can enhance large-scale production of target vascular populations.
  - Stem cell populations can be purified using density during downstream bioprocessing.

Research Faculty: Georgia Institute of Technology **2007-2009**
Cardiovascular Tissue Engineering Laboratory
Mentor: Dr. Robert M. Nerem
Mentored undergraduate and graduate students and conducted research in the potential role of pluripotent and adult stem cells in promoting angiogenesis.

Visiting Scholar: Imperial College London, UK **2007**
Department of Chemical Engineering & Institute of Biomedical Engineering
NSF-funded program to established expertise in 2D gel- and MS-based proteomics analysis.

Postdoctoral Research Fellow: Georgia Institute of Technology **2003-2007**
Cardiovascular Tissue Engineering Laboratory
PI of Lab: Dr. Robert M. Nerem
Research efforts focused on determining the effects of shear stress on pluripotent stem cell differentiation towards the endothelial phenotypes.

Senior Research Scientist: Advanced Tissue Sciences, La Jolla, CA **2001-2002**
Musculoskeletal Research Group; Reported to VP of Research: Dr. Tony Ratcliffe
Senior Bioengineer: Advanced Tissue Sciences, La Jolla, CA **1999-2001**
Musculoskeletal Research Group / Bioengineering Group

Led a group of researchers (up to 8 direct reports) overseeing research and development of engineered orthopedic tissues (including cartilage, meniscus and ligament) and overall support for the commercial

skin graft products for burn and diabetic patients (Transcyte and Dermagraft). Part of the research team that prepared an FDA IDE (Investigative Device Exemption) for tissue engineered cartilage.

- Directed a research team (including biologists and bioengineers) to develop a paradigm of cell seeding, cell expansion, tissue growth, product storage, and product delivery to the operating room with validated predictive and reproducible quality control assessments to develop the product design of an effective cell-based therapy. Research projects also focused on designing customized bioreactors to mimic select *in vivo* parameters.
- Led the design and planning of preclinical animal studies, including focus on identifying an appropriate large animal model and clinically relevant outcome measures for cartilage repair.

GOVERNMENT EXPERIENCE

Chair: Cell, Tissue, and Gene Therapies Advisory Council of the FDA **2017**
Chair: Cell, Tissue, and Gene Therapies Advisory Council of the FDA **2014-2015**
Member: Cell, Tissue, and Gene Therapies Advisory Council of the FDA **2010-2014**
Expertise: Bioengineering.

The committee addressed specific sponsor-related issues and guidance documents related to clinical products (e.g. quality control testing, mode of delivery, biocompatibility, etc.) and clinical trial design (e.g. dosing, appropriate patient populations, safety and efficacy outcomes, etc) for biologics and combination products (biologics/device).

LEADERSHIP & HONORS

Scientific Advisory Board for CMaT GA Tech 2020-
Industrial Advisory Board for CMaT GA Tech 2019-2020
Chair of the Stem Cell Engineering Track for the BMES Annual Society Meeting 2016
Tissue Eng & Regenerative Med Society Membership Committee (elected) 2014-2016
Tulane Burk-Kleinpeter Early Career Professor 2014-2016
Chair of the FDA Cell, Tissue, and Gene Therapies Advisory Council 2014-2015, 2017
Invitee to Special NSF meeting on Future Directions of Tissue Eng & Regenerative Med 2013
GSSA Outstanding Faculty Award: School of Science & Engineering 2009-2010
NIH Ruth L. Kirschstein National Research Service Award 2004-2006

PUBLICATIONS *(selection of 5 representative publications)*

Strategies for scalable manufacturing and translation of MSC-derived extracellular vesicles. Adlerz K, Patel D, Rowley J, Ng K, Ahsan T: *Stem Cell Res*. 2020

Peak MSC – Are we there yet? Olsen TR, Ng KS, Lock LT, Ahsan T, Rowley JA: *Frontiers in Medicine 2018*

Actin and myosin II modulate differentiation of pluripotent stem cells. Boraas LC, Pineda, ET, Ahsan T: *PLOS One 2018.*

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

Looking ahead to engineering epimorphic regeneration of a human digit or limb. Quijano LM, Lynch KM, Allan CH, Badylak S, Ahsan T: *Tissue Eng Part B 2016*.

A full listing of publications is listed on the National Library of Medicine PubMed website: http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/40257895/?sort=date&direction=descending