Aylin Acun

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PROFESSIONAL SUMMARY

Ph.D. in Bioengineering with more than 7 years of hydrogel and microfluidics-based tissue engineering, 6 years of culture and differentiation of induced pluripotent stem cells, and more than 1 year of whole organ/vascularized, large-scale tissue engineering for various bioengineering and potential clinical applications. Authored one book chapter and over 10 peer-reviewed research articles in prestigious journals including Acta Biomaterialia, Scientific Reports, and Biomicrofluidics.

EDUCATION

UNIVERSITY OF NOTRE DAME **Notre Dame, IN**
Ph.D. in Bioengineering, May 2018
- Research Area: Development and characterization of iPSC-based cardiac tissues to investigate age-related diseases

MIDDLE EAST TECHNICAL UNIVERSITY (METU) **Ankara, Turkey**
Master of Science in Biotechnology, January 2013
- Thesis: development and characterization of clinically relevant cornea substitute

Bachelor of Science in Biological Sciences, June 2010

HONORS & AWARDS

- June 2019, Boston, MA Shriners Postdoctoral Research Fellowship $144,000/2 yrs
- October 2017, Notre Dame, IN International Stem Cell Conference Travel Award
- August 2017, Notre Dame, IN Conference Presentation Grant

PROFESSIONAL EXPERIENCE

Center for Engineering in Medicine (CEM), Harvard Medical School-Massachusetts General Hospital **Boston, MA**
Postdoctoral Research Fellow September 2018 - present
- Developed of optimized protocols for effective whole human liver decellularization methods.
- Achieved successful perfusion seeding and differentiation of decellularized whole rat livers.
- Development and characterization of decellularized vascularized porcine skin flaps targeted for treating large skin defects.

University of Notre Dame **Notre Dame, IN**
Graduate Research Assistant January 2013 – May 2018
- Developed biomimetic cardiac tissue models to study tissue level aging and failure.
- Identified a novel regulatory mechanism of HIF-1a under oxidative stress which is involved in cardiac survival under reperfusion injury conditions.
- Developed an iPSC-based microfluidic myocardium-on-chip with cardiomyocytes and endothelial cells for better mimicking physiological conditions.
- Developed an iPSC-based vasculature model genetically modified using CRISPR/Cas9 to mimic age-related deteriorations.
- Optimized iPSC growth and differentiation in novel hollow microcarriers for large-scale production
- Supervised the development of hydrogel-based microwell arrays for studying cell-cell and cell-matrix interactions of cancer cell line and primary rat mammary organoids

LEADERSHIP & SERVICE

- Peer-reviewer for Journal of Cells, Tissues, Organs since 2019
- Organization committee of CEM Biomedical Science and Engineering Seminar Series since January 2019 (Lead organizer since August 2019)
- Organization and leadership of Expending Your Horizons Workshops annually. April 2014-April 2018
- Research mentorship of 2 high school and 7 undergraduate students. Since January 2013

TECHNICAL SKILLS

Cell and tissue culture (~7y), **cell-based assays (viability, cytotoxicity, immunostaining, etc.)** (6y), **Microscopy (fluorescence and confocal) and imageJ image analysis** (6y), **iPSC culture and differentiation to cardiomyocytes, endothelial cells, vascular smooth muscle cells** (5,5y)**, RT-qPCR** (5,5y), **3D hydrogel-based tissue construction** (5,5y), **ELISA** (~4y), **microfluidic chip fabrication and on-chip tissue culture** (2y) **mechanical testing of 3D tissues** (2y) **CRISPR/Cas9 gene modification** (~1,5y) **whole human and rat liver perfusion decellularization** (1y), **histology** (1y), **ex vivo perfusion** (1y), **iPSC differentiation to hepatocytes** (1y)