

Takayuki Suzuki

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EDUCATION

Johns Hopkins University

Ph.D. Candidate in Mechanical Engineering (Biomechanics)

Master of Science in Engineering

Baltimore, MD

August 2019-TBD

August 2019-December 2020

Case Western Reserve University

B.S. in Biomedical Engineering (Biomechanics)

Cleveland, OH

August 2015 – May 2019

INTERNSHIP AND RESEARCH EXPERIENCE

Johns Hopkins University Department of Mechanical Engineering (Professor Soojung Claire Hur)

2020-present

- Research of particle and continuum media's properties (viscoelasticity, shape, etc) effect on inertial focusing/cell sorting.
- Developing image analysis tools/scripts for high-speed videos of cells & particles in microfluidic device flow.

Johns Hopkins University Institute for Nanobiotechnology (Professor Sean Sun)

2019-2020

- Investigated microfluidic system compatibility and stem cell differentiation of primary and secondary epithelial cells.
- Worked to develop a high-throughput micro-capillary measurement system using Raspberry Pi and MATLAB

Case Western Reserve University (Professor Ozan Akkus)

2015-2018

- Developed a high-throughput system to study mesenchymal stem cell differentiation using biochemical and biophysical (electro-compacted, mechanically elongated collagen sheets) cues.
- Created a continuous scaffold prototype for braided electro compacted collagen threads.

University at Buffalo (UB) Clinical and Translational Science Institute (Professor John Canty Jr. & Professor Gen Suzuki)

2013-2017

- Studied therapeutic potential of cardio sphere derived cells (CDC) to reverse left ventricular dysfunction in asymptomatic heart failure.
- Investigated global infusion of CDC may regenerate myocardium in patients with ischemic cardiomyopathy.

PAPERS

- "Deciphering viscoelastic cell manipulation in rectangular microchannels", **Takayuki Suzuki**, Srivathsan Kalyan, Cynthia Berlinicke, Samantha Yoseph, Donald J. Zack, Soojung Claire Hur, Physics of Fluids 2023
- "Heart Derived Stem Cells in Miniature Swine with Coronary Micro embolization: Novel Ischemic Cardiomyopathy Model to Assess the Efficacy of Cell-Based Therapy" Gen Suzuki, Merced Leiker, Rebecca Young, and **Takayuki Suzuki**, Stem Cells Internationals 2016

SELECTED CONFERENCES

- "Viscoelastic Focusing of Living Cells: Fluidic Mechanics Insights for Microfluidic Device Design", **Takayuki Suzuki**, Soojung C Hur, 76th Annual Meeting of the Division of Fluid Dynamics APS 2023 (Presentation)
- "Hydrodynamic Manipulation of cells in Non-Newtonian Solutions: Insights for Device Design", **Takayuki Suzuki**, Soojung Claire Hur, Microscale Innovation in Life Sciences Symposium 2023 (Poster)
- "Aligned Substrate Topography induces MSC tenogenic differentiation through the Rho/ROCK pathway" by Thomas Mbimba, **Takayuki Suzuki**, Ozan Akkus, Society of Biomaterials 2017 (Poster)
- "Global Infusion of Allogenic Cardiosphere-Derived Cells Proportionally Stimulates Angiogenesis and Myocyte Regeneration in Swine with Chronic Myocardial Infarction" Gen Suzuki, **Takayuki Suzuki**, Arteriosclerosis, Thrombosis and Vascular Biology Scientific Session 2014 (Poster)

SKILLS

Software: MATLAB, Python, C++, R, LaTeX, COMSOL, CAD (SolidWorks & Autodesk), Adobe Illustrator, Raspberry Pi

Technical: Photolithography, Soft lithography, Isolation of Collagen from Animal Tendon, Mono Nuclear Cells Isolation, Electrochemically compacted and stretching collagen, Collagen Sheet & Thread Fabrication & Genipin cross linking, live dead stain & automated classification, Stem Cell Culture, CSC Cardio sphere and sheet making, Gel Electrophoresis, ELISA, Immunohistochemistry, PCR, Large Animal Respirator and Anesthesia Assurance, Chicken Embryo Dissection & Skeletal Muscle Isolation

Languages: Fluency in Japanese & English (Speaking, reading, writing, and able to translate if necessary)

JOBS & HOBBIES

Teaching:

- Instructor for EN.500.134.01: Bootcamp: MATLAB at Johns Hopkins University (Fall 2023, Intersession 2024, Spring 2024, Fall 2024)
- Mentoring high school student for Ingenuity Research Practicum (Summer 2024-Summer 2025) and JHSJP (Summer 2023)
- Lead Teaching Assistant for EN.530.480.01: Image Processing and Data Visualization at Johns Hopkins University (Spring 2023, Spring 2024)

Hobbies: Marathon distance running and Intermural sports