Reza Babakhani Galangashi

School of Mechanical Engineering, Purdue University

West Lafayette, IN, USA

Email: rbabakha@purdue.edu Tel: (413)2758433

Education:

2013-2017 B.Sc. Mechanical Engineering, Marine Engineering, Persian Gulf University, Bushehr, Iran

2017-2020 MS. E. Mechanical Engineering, Sharif University of Technology, Tehran, Iran

2021-2022 Ph.D. Biomechanical Engineering, University of Massachusetts Amherst, Amherst, US

Research Experience:

2021-Present Ph.D., Biomechanical Engineering, University of Massachusetts Amherst, Amherst, US

- The effect of different frequency vibrations on the Endothelial cell behavior by analyzing the gene expression (q-RTPCR) and protein expression (IF and western blot) in order to study the BBB tight junction. In this project we set up an experiment that we could expose the cells to low (1 Hz) to high (100 Hz) vibration with magnetic field.
- The effect of different vibration frequencies on the brain Endothelial cells permeability (mimicking the bifurcations in brain vessels)
- Investigation of Endothelial Cell injuries during stent deployment and evaluate Endothelial Cell migration after stent deployment in 2D, which I tried to investigate the effect of different genes in the cell migration by developing the stent struts with PDMS and making the wound on the PDMS substrate cultured with cells.
- Development the platform to mimic Endothelial Cell injuries during stent deployment and evaluate Endothelial Cell migration after stent deployment in 3D model (to mimic 3D shape of the vessels) under fluid flow.
- Development the platform to evaluate and quantify the Platelet, Fibrin and Thrombin accumulation on commercially available stents with different geometries and materials under blood fluidic flow by Flow cytometry, Immunostaining, SEM and TEM imaging.
- Development of Cerebral Aneurysm model using 3D Printing (Molding and Hydrogel 3D printing).

2017-2019 MS. E., Mechanical Engineering, Sharif University of Technology, Tehran, Iran

- The investigation of the European Eel locomotion experimentally (PIV, IP) and numerically (CFD with STAR-CCM+ and COMSOL)
- Hind and Front Limb Kinematics and the Amount of Propulsion Force Generations during Swimming in European Pond Turtle (Experimental and Numerical (FLUENT))

2013-2017 B.Sc., Mechanical Engineering, Marine Engineering, PGU, Bushehr, Iran

- Numerical simulation of the effects of Sharkskin Micro-Riblets and dimples on drag reduction of a flat plate (Micro-riblets and Dimples)

Honors:

2013-2017 Top student (Ranked 1st) during bachelor's degree (**Rank**: **1/29**)

GPA: 3.88/4 or 17.97/20

2016 Best student of the year award in Marine Engineering at Persian Gulf University

2017 Best student of the year award in Marine Engineering at Persian Gulf University

2017 Rank 4th of the master's degree qualification exam among more than 5000 test-takers.

2017-2019 Top student (Ranked 1st) during master's degree (**Rank**: **1/11**)

GPA: 4/4 or 17.11/20

2019 Best Thesis of the Year Award

Teacher's Assistant:

- Hydrostatic and hydrodynamics of marine vessels (+40 students)
- Mathematics (+40 students)
- Strength of material
- Thermodynamics (+40 students)
- Structural analysis
- CATIA, SolidWorks, Photoshop, COMSOL 5.4, and STAR-CCM+ trainer (+20 students)

Professional Qualifications:

Cellular and Molecular Assays:

- 2D & 3D Cell Culture
- Cytotoxicity Assay (MTT, Alamar Blue, LDH), PCR, Real Time, Flow cytometry
- Immune Fluorescence (IF) staining, Western Blot and Elisa Techniques, Fluorescent Microscope
- Tissue staining
- Permeability Assay

Microfluidic and Mechanical Engineering:

- Microfluidic devices
- 3-D printing, micro fabrication (Lymphatic Valves), and Bioprinting (PEGDA)
- Hydrogel's synthesis
- Computational Fluid Dynamics (Fluid-Solid interaction)
- Image Processing (e.g., Motion capturing and cell tracking)
- Particle Image Velocimetry (PIV)

Software:

- CATIA Certificate
- COMSOL multiphasic technical and vocation training certificate
- ImageJ, DANTEC PIV software, LabView (steady and pulsatile flow)
- SOLIDWORKS and AutoCAD technical and vocation training certificate.
- Tech-savvy with strong STAR CCM, OpenFOAM, MATLAB, and Catia.
- ANSYS 19.2 RBF Morph
- Photoshop and Inkscape

Collaborations:

- A corporation with Professor Reinhold Hanel, from Thuenen Institute (Germany) on an academic project associated with eel motion.
- A corporation with Professor Marko Evangelos Biancolini (professor at University of Rome Tor Vergata and owner of RBF Morph) on an idea of mine, which was associated with European eel motion.
- ANSYS 19.2 RBF Morph (Grant from its owner) for studying the swimming behavior of an eel in turbulent flows.

Research Interests:

- Biotechnology and Biomechanics
- Drug Delivery
- Tissue Engineering
- Experimental Biology like studies including Micro and Nano Fluid Mechanics
- Cell Mechanics

Publication:

- ***Research in Marine Sciences journal***

  Reza Babakhani Galangashi, Ahmad Reza Kohansal, and Seyedeh Safoora Adnani (2017). Designing a rotary converter for absorbing sea wave energy (vol.2). Available online at http://resmarsci.com

References:

Prof. Abbaspour (Prof. of Mechanical Engineering at Sharif University of Technology):

abbpor@sharif.edu

Prof. Mohsen Daghooghi (Prof. of Mechanical Engineering at University of Houston-Clear Lake):

Daghooghi@uhcl.edu

Dr. Sina Farzaneh (Assistant Prof. of Tissue Engineering at SBMU):

farzaneh@sbmu.ac.ir

sfarzaneh@umass.edu

Tel: +1(323)7231371

Dr. Reza Roozafzoon (Researcher at Harvard General Hospital and Assistant Prof. of Tissue Engineering at SBMU):

Rroozafzoon@mgh.harvard.edu

roozafzoon.r@gmail.com

Tel: (+1)8574525221