Hammad F. Khan

June 14, 2021

West Lafayette, Indiana

Phone: (406)696-4079. Email: khan332@purdue.edu

Personal GitHub: https://github.com/HammadFKhan/

RESEARCH INTEREST

Neuroengineering, neuroscience, calcium imaging, electrophysiology, bio-integrated devices.

EDUCATION

PhD in Biomedical Engineering, *Purdue University* Expected May 2025
GPA: 3.95/4.00
Advisor: Dr. Krishna Jayant

BS in Electrical Engineering, *Montana State University* Graduated May 2020
GPA: 3.66/4.00
Curriculum Advisor: Dr. Kevin Repasky
Senior CAPSTONE Design: Launching a bioengineering startup using a magnetic gradient device for therapeutic screenings.

RESEARCH EXPERIENCE

Graduate Research Assistant, *Purdue University* August 2020 – Present
Research Advisor: Dr. Krishna Jayant
Unraveling dendritic dynamics to understand the formation of hippocampal place fields in the context of behavior.

Undergraduate Research Assistant, *Montana State University* June 2018 – June 2020
Research Advisor: Dr. Anja Kunze
Investigated neuronal calcium signaling and network by developing a biocompatible cell assay.

PUBLICATIONS

1) **H. F. Khan,** C. L. Beck, A. Kunze, Multi-curvature micropatterns unveil distinct calcium and mitochondrial dynamics in neuronal networks. *Lab on a Chip 2021*.

2) Anja Kunze, Connor L. Beck, **Hammad F. Khan**, Multi-curvature soft matter patterns and methods for lab-on-chip pharmaceutical testing and neurobiology studies. *US Patent #63/143.701, 2021.*

3) **H. Khan**, C. Beck, A. Kunze, Soft-gel Microchannels to Study Curvature Effects in Neuronal Calcium Signaling. *In: Proceedings of the BMES, Philadelphia, Pennsylvania, USA, 2019.*

4) Jeneane Jaber, **Hammad Khan**, Anja Kunze, Quantifying Magnetic Nanoparticle Movement Under Micromagnetic Field Patterns. *In: Proceedings of the BMES, Philadelphia, Pennsylvania, USA, 2019*

RESEARCH GRANTS

NIH T32DC016853 July 2021 – July 2023
Project title: *Mapping intracellular rate code in CA1 neurons under auditory spatial cues*

NIH P20GM103474 January 2019 – January 2020
Project title: *Using Agarose Hydrogel to Mimic Organize Neural Network Response and Mechanical Stimulus In Vitro*

PRESENTATIONS

- Annual NCUR Conference (Invited Talk), *Montana State University, MT* March 2020
  Hammad Khan, Connor Beck, Anja Kunze.
  Agarose Microchannels to Study Curvature Effects in Neuronal Calcium Signaling.

- Annual BMES Conference (Invited Talk), *Philadelphia, PA* Oct. 2019
  Hammad Khan, Connor Beck, Anja Kunze.
  Soft-gel Microchannels to Study Curvature Effects in Neuronal Calcium Signaling.

- Annual BMES Conference (Poster), *Philadelphia, PA* Oct. 2019
  Jeneane Jaber, **Hammad Khan**, Anja Kunze.
  Quantifying Magnetic Nanoparticle Movement Under Micromagnetic Field Patterns.

- NSF NNCI Convocation (Invited Talk), *Cornell University, NY* Aug. 2019
  Hammad Khan, Connor Beck, Anja Kunze.
  Agarose microchannels to study curvature effects in neuronal calcium signaling.

- NIH INBRE Convocation (Poster), *Montana State University, MT* Aug. 2019
  Hammad Khan, Connor Beck, Anja Kunze.

Agarose microchannels to study curvature effects in neuronal calcium signaling.

- Undergraduate Scholars Research Celebration (Poster), *Montana State University, MT* May 2019
  Hammad Khan, Anja Kunze.
  Fine-tuning Agarose Concentrations towards Soft-gel based Neuro-microfluidics.

- IEEE Neuroengineering Conference (Poster), *San Francisco, CA* March 2019
  Derek Judge, **Hammad Khan,** Anja Kunze.
  Neural network growth under heterogeneous magnetic gradient patterns.

AWARDS

Stephan Ash Fellowship	August 2020
Undergraduate Scholar Program Travel Award	March, Oct. 2019
Extended abstract for annual (BMES) conference	July 2019
National Institute of Health INBRE Fellowship	May 2019
IM Flash Scholarship	March 2019
Warren Edward and Phyllis Sullivan Howe Scholarship	2016 – 2019
Frank L. Eckard Scholarship Endowment	2018 – 2019
Dean's List Academic Recognition	2016 – 2019
Elks Valuable Student Scholar	2016 – 2017

LEADERSHIP EXPERIENCE

BME GSA
- Treasurer — July 2021 – Present
- First Year representative — August 2020-July 2021

Sophomore Surge Program
- Mentor/Leader — Aug. 2017 – June 2020

Mentored incoming students on academic resources, registrations, and classes. Researched high impact practices for seminar classroom.

Biomedical Engineering Journal Club
- Member — May 2018 – May 2019

Presented on a diverse set of biomedical and neuroengineering topics. Reviewed and discussed new developments within respective fields.

Residence Hall Association (RHA)
- Senator — Aug. 2016 – May 2017

Participated in advocating for community needs within our residence halls. Coordinated with other student organizations for monetary budgets and activities.

TEACHING EXPERIENCE

Montana State University Sept. 2018 – Dec. 2019

- Peer Facilitator; US 101

Helped facilitate discussions in a freshman seminar classroom.

Montana State University Sept. 2017 – Dec. 2017

- Co-instructor; M121

Lectured three times a week in introductory algebra for non-traditional students.
Graded quizzes and compiled homework packets.