

# Erich S. Franz

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2500 Alumni Drive, Apt #15208, Lexington KY, 40517

## EDUCATION

Boston University, Boston, MA

Graduated January 2020

Master of Science in Biomedical Engineering

- GPA 3.88/4.00
- Passed PhD oral candidacy exam with honors

Rensselaer Polytechnic Institute, Troy, NY

Graduated May 2015

Bachelor of Science in Biomedical Engineering

- Minor in Brain and Brain Behavior
- GPA 3.69/4.00
- Cum Laude

## PROFESSIONAL SKILLS

- ❖ Emergency Medical Technician
  - Provisional Certification 1/21/21, Passed Cognitive Exam 1/17/21
  - Basic Life Support (AED & CPR) Certified
  - Completed EMT Training Course 8/10/2020
- ❖ CAD Experience
  - SOLIDWORKS & Creo
- ❖ Programming & Software Experience
  - MATLAB, Python
  - Photron FASTCAM Viewer, ImageJ

## TEACHING EXPERIENCE

- Mathnasium of Collegeville Math Instructor October 2020 – May 2021
  - Helping Pre-K through 12<sup>th</sup> grade students develop a passion for math through teaching the Mathnasium Curriculum and providing guidance for math related homework in school.
- BU BME Mentor/Mentee Program Summer-Fall 2019
  - Paired with first year PhD students to assist with adjustments to graduate student life
- BU Teaching Assistant for Transport Phenomena of Biological Systems Fall 2016 & Fall 2017
  - Responsible for weekly office hours, grading, teaching of discussion sections, and Blackboard Learn
- RPI Tutor – Advanced Systems Physiology Fall 2014-Spring 2015
  - Solo and small group tutoring while working for the Advising & Learning Student Assistance Center

## RESEARCH EXPERIENCE

**Dr. Ben Scott Lab, BU, Boston, MA – PhD Candidate**

Fall 2019

- Developed a rotation project involving real time 2-photon imaging of transgenic juvenile zebra finches to capture how newly formed neurons migrate from ventricle to high vocal learning center relative to mature neurons
- Learned the surgical procedure for implanting optical windows into zebra finch skulls in addition to the microfabrication of the optical windows pre-surgery
- Trained to operate a Bruker 2-photon microscope to capture fluorescent images of migrating, newly formed neurons in male zebra finches

**Dr. Lee Goldstein Lab, BU, Boston, MA – PhD Candidate**

Spring 2016-Summer 2019

- Developed MATLAB GUI to interface wireless foot pedals with webcams to record mouse behavior before and after traumatic brain injury (TBI)
- Prepared high speed video demonstrations for *60 Minutes* television program on CTE and Veterans
  - Built a mock mouse model to demonstrate the effects of blast and impact TBI's

- Designed plastic ring gelatin model to use the photoelastic effect to depict shear stress fields generated as a result of blast and impact TBI's
- Maintained TBI lab impactor and shock tube equipment, performed the impacts, blasts, and behavioral testing on mice for various experiments, and managed lab demonstrations for visitors
- Learned how to sacrifice mice and rats to harvest brains, blood, and other tissue as needed per experiment
  - Standardized our sacrifice/perfusion and tissue harvest protocol for both mice and rats and taught these techniques to new technicians and students
- Assisted lab technician and radiology scientist with MRI and LA-ICP-MS scans on live rats and rat brain tissue slices respectively.
  - Worked in collaboration with BUMC radiology scientist on a year-long gadolinium exposure experiment using rats

**Dr. Ryan Gilbert Lab, RPI, Troy, NY** – Undergraduate Student Researcher

Fall 2013-Spring 2015

- Worked with U251 human glioblastoma cell line learning cell culturing methods, cell viability staining procedures, and image analysis using ImageJ
- Utilized electrospinning techniques to create polymer scaffolds and films for the lab's projects
- Performed a 6-aminonicotinimide (6AN) drug release and solvent retention study on electrospun PLLA fibers to determine the effects of different sample treatment conditions on 6AN release profiles
- Learned how to use Gen5 Data Analysis Software to characterize 6AN drug release profiles using a 96-well plate reader
- Proposed a new *in vitro* model emulating a neuron's environment using PLLA electrospun fibers seeded with U251 human glioblastoma cells to study the effects of magnetic iron oxide nanoparticle hyperthermia

## PUBLICATIONS

Minaeva, O., [and 22 other, including [Franz, E.S.](#)] Nonhomogeneous Gadolinium Retention in the Cerebral Cortex after Intravenous Administration of Gadolinium-based Contrast Agent in Rats and Humans. *Radiology* 294, 377–385 (2020)

[Franz, E.](#), Chancellor, S., & Goldstein, L. Considerations for Translational Research in the Study of Adult Cognitive Disorders: In *The Oxford Handbook of Adult Cognitive Disorders*. Oxford University Press. (2019-06-03).

Chancellor, S. E., [Franz, E. S.](#), Minaeva, O. V., & Goldstein, L. E. Pathophysiology of Concussion. *Semin. Pediatr. Neurol.* **30**, 14–25 (2019).

Tagge, C. A., [and 44 others, including [Franz, E. S.](#)] Concussion, microvascular injury, and early tauopathy in young athletes after impact head injury and an impact concussion mouse model. *Brain* **141**, 422–458 (2018).

D'Amato, A. R., Schaub, N.J., Cardenas, J. M., [Franz, E.](#), Rende, D., Ziemba, A. M., Gilbert, R. J. Evaluation of procedures to quantify solvent retention in electrospun fibers and facilitate solvent removal. *Fibers Polym.* **18**, 483–492 (2017).

## CONFERENCE PRESENTATIONS

[Erich S. Franz](#), Chad A. Tagge, Andrew M. Fisher, Olga Minaeva, Mark W. Wojnarowicz, Juliet A. Moncaster, Lee E. Goldstein. Concussion, Microvascular Injury, and Phosphorylated Tauopathy in an Impact Concussion Mouse Model. *Poster presented at the BU/VA Chronic Traumatic Encephalopathy Conference Meeting*, Boston, MA. October 2018.

[Erich S. Franz](#), Chad A. Tagge, Andrew M. Fisher, Olga Minaeva, Mark W. Wojnarowicz, Juliet A. Moncaster, Andrew T. Anderson, Robin Cleveland, William C. Moss, Lee E. Goldstein. Concussion, Microvascular Injury, and Phosphorylated Tauopathy in an Impact Concussion Mouse Model. *Poster presented at the International/National Neurotrauma Society Symposium*, Toronto, ON, Canada. August, 2018.

[Erich S. Franz](#), Chad A. Tagge, Andrew M. Fisher, Olga Minaeva, Mark W. Wojnarowicz, Juliet A. Moncaster, Andy Anderson, Robin Cleveland, William C. Moss, Lee E. Goldstein. Biomechanics of Concussion, Traumatic Brain Injury, and Chronic Traumatic Encephalopathy in a Mouse Model of Closed-Head Impact Injury. *Data Blitz Presentation and Poster presented at the National Neurotrauma Society Symposium*, Snowbird, UT. July, 2017.

**INTERESTS:** Ice hockey, writing, hiking, history