Margaret Ferrari 59 Old Westport Rd, North Dartmouth, MA 02747 • m.ferrari@rochester.edu • 508.742.5150

Education

University of Rochester, Rochester, NY — Anticipated May 2017
Masters of Science in Biomedical Engineering
Center for Medical Technology and Innovation

- Identify and evaluate unmet clinical needs through cardiovascular surgery observations
- Work directly with physicians to generate concept designs
- Research and apply FDA regulatory processes and market IP assessments
- Execute scientifically proven prototypes

Union College, Schenectady, NY — June 2016
Bachelor of Science in Bioengineering, Minor in Electrical Engineering
3.5/4.0 GPA, Departmental Honors

Study Abroad

- **New Zealand**: three-week mini-term abroad to study development and transmission of electrical power and its sociopolitical and economic effects on both the North and South Island
- **Palermo, Italy**: term abroad to do research in nationally recognized biophysics laboratory while learning the Italian language and Sicilian culture through travel around the island

Research Experience

Biomedical Ultrasonics and Biophotonics Laboratory, Union College, Schenectady, NY — Fall 2014-Fall 2015

- Worked extensively with optical equipment, MATLAB, and LabVIEW to capture and process light through filters of different wavelengths in order to calibrate the photoacoustic microscopy (PAM) setup
- Performed photo-acoustic functional imaging on IR-820 dye with Takashi Buma, PhD in order to support the hypothesis that oxygenation levels in target tissues, other than blood, can be determined using PAM and an outside agent with a peak absorption level of 800 nm

Biophysics Cell Culture Laboratory, Consiglio Nazionale delle Ricerche, Palermo, Italy — Spring 2015

- Worked with Rosa Pasantino, PhD and Mary Costa, PhD to purify and characterize exosomes derived from Lan5 cell mutants based on biochemical and physical properties

Publications

T. Buma, J. Farland, and **M. Ferrari** (2016), "Near-infrared multispectral photoacoustic microscopy using a graded-index fiber amplifier", *Photoacoustics*. 4.3: 83-90.

Abstracts

T. Buma, J. Farland, **M. Ferrari**, *Photoacoustic microscopy using four-wave mixing in a multimode fiber,* IEEE International Ultrasonics Symposium (Presentation Abstract), Taipei, Taiwan (2015, October).

T. Buma J. Farland, and **M. Ferrari**, *Photoacoustic microscopy of lipids using a graded-index multimode fiber amplifier,* IEEE International Ultrasonics Symposium (Presentation Abstract), Taipei, Taiwan (2015, October).

Presentations

I. Baranowski, **M. Ferrari**, K. Meyers, and L. Seitz (2016, October), *External Needs Review for Cardiovascular Device Design Project Options*. Presented at the Vista Collaboratory at the University of Rochester, Rochester, NY.

J. Farland, **M. Ferrari**, and J. Galina (2016, March), *Capstone Design Project Final Presentation: Pediatric Feed Pump Wearable Device*. Presented at Union College, Schenectady, NY.

M. Ferrari and S. Soroka (2015, May), *Generation and selection of LAN5 cellular models overexpressing the native or mutant forms of CLN8 protein and the wild type ERG28 protein*. Presented at Consiglio Nazionale delle Ricerche, Parlermo, Italy.

Clinical Experience

Cardiovascular Surgery, Strong Memorial Hospital, Rochester, NY Summer 2016

- Observed and collaborated with several surgeons in order to better comprehend their practice and clinical needs

Electrophysiology Lab, Charlton Memorial Hospital, Fall River, MA Winter 2015

- Viewed procedures performed by Nitesh Sood, MD to enhance applied understanding of medical heart devices

Procedures observed: Coronary Artery Bypass Graft, Minimally Invasive Aortic Valve Replacement, Left Ventricular Assist Device Implantation (Heartmate and HeartWare), Pulmonary Embolectomy, Vascular Ring Repair, Carotid Endarterectomy, Minimally Invasive Mitral Valve Replacement, Maze Procedure, Minimally Invasive Tricuspid Valve Replacement, Right Ventricular Outflow Patch, Abdominal Aortic Aneurysm Repair, Thoracic Aneurysm Repair, Radio Frequency Ablation, Cryoablation, Pacemaker Implantation, Implantable Cardioverter Defibrillator Implantation, Cardioversion

Academic Engineering Projects

Pediatric Feed Pump Winter 2016

- Interacted with professionals and developmentally disabled children to create feeding system that would not limit movement through weight redistribution, utilized Arduino to simulate feed pump

Biometric Recognition System Spring 2016

- Created voice recognition system using MATLAB that identified an unknown speech sample by comparison to a large sample database

Detection of Coronary Artery Disease through Autocorrelation Winter 2015

- Evaluated ECG signals of healthy patients and diseased patients using nonlinear signal analysis method in MATLAB, created video presentation

Leadership Experience

Biomedical Engineering Society President, Union College, Schenectady, NY Spring 2015-Spring 2016

- Planned and led programs within surrounding community to promote science and technology in children, organized weekly bioengineering help desk, enhanced on-campus awareness of bioengineering through career and alumni events

Group Leader, Camp Walden, Diamond Point, NY Summer 2015

- Managed 11 staff members and 40 young girls ages 10 to 11 while building strong, individual relationships with each camper and staff member in order to create a fluid group dynamic

Teaching Experience

Project Manager/Teaching Assistant, University of Rochester, Rochester, NY Fall 2016-Current

- Manage and guide multiple capstone design projects in collaboration with course directors Amy Lerner, PhD and Scott Seidman, PhD through constructive feedback on written reports, meeting observation, oral presentations and design control documentation

Education/Outreach Intern, The Lloyd Center for the Environment, Dartmouth, MA Summer 2013-Winter 2014

- Prepared age appropriate lesson plans for children ranging ages 4 to 12 in partnership with other staff members to teach hands-on science programs, educated the local community on their natural surroundings through outreach

Coursework

Cardiovascular Biology and Disease	Medical Imaging Systems	Biomedical Instrumentation
Biosolid Mechanics	Biometric Signal Processing	Engineering Acoustics
FDA and Intellectual Property	Advanced Mechanics	Orthopedic Biomechanics
Medical Device Design	Computer and Logic Design	Computer and Logic Design
Cell-Tissue Interaction	Exercise Physiology	Molecular Biology of the Cell