

JOSHUA MAYOURIAN

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EDUCATION

Cooper Union for the Advancement of Science and Art

Projected May 2014

M.E., B.E. in Chemical Engineering

Minor in Biomedical Engineering

Overall GPA: 3.84/4.00

Major GPA: 4.00/4.00

BIOMEDICAL ENGINEERING-RELEVANT COURSEWORK

Bioelectricity, Bioengineering Applications to Sports Medicine, Process Simulation, Heat and Mass Transfer, Fluid Mechanics and Flow Systems, Biological Systems, Neuroscience and Biophysics I/II, Biochemistry, Engineering Design

PROJECT WORK/RESEARCH

Icahn School of Medicine at Mount Sinai

June 2013 - Present

Electrophysiology Researcher

New York, NY

- Mathematically modeled the electrical interactions of human mesenchymal stem cells (hMSCs) and cardiomyocytes (CMs)
- Developed a novel mathematical model of the electrophysiological activity of hMSCs
- Learned how to patch clamp in a whole-cell configuration for excitable and non-excitable cells
- Designed patch clamping experiments to examine electrophysiological interactions of hMSCs and CMs empirically

Icahn School of Medicine at Mount Sinai

June 2012 - October 2012

Tissue Engineering Researcher, Bioreactor Designer and Researcher

New York, NY

- Examined the role of paracrine signaling in MSCs improving CM function
- Developed a biomathematical model of paracrine signaling between MSCs and CMs using biotransport phenomena
- Grew and electrically paced Engineered Cardiac Tissue (ECT) with and without MSC supply to examine cardiac function
- Used ELISA, an immunoassay, to determine total protein levels within the ECT dishes
- Designed a novel bioreactor for culturing multiple ECTs together

Cooper Union for the Advancement of Science and Art

January 2012 - May 2012

Organic Chemistry Research

New York, NY

- Examined the conditions that would optimize percent yield of substituted guanidines
- Synthesized substituted guanidines using microwave irradiation
- Used NMR to analyze the percent yield of substituted guanidines

Elmhurst Hospital

June 2011 - September 2011

Orthopedic Clinical Researcher

Elmhurst, NY

- Learned to read X-rays to classify intertrochanteric fractures with AO classifications after a percutaneous compression plating

Cooper Union for the Advancement of Science and Art

September 2010 - December 2010

Biomedical Engineering Researcher

New York, NY

- Designed an exercise machine that would stimulate obese users
- Tracked a user's peddling speed, and outputted this result into a racing video game

PUBLICATIONS/PRESENTATIONS

Role of Paracrine Signaling in Mesenchymal Stem Cells Improving Cardiomyocyte Function

Joshua Mayourian, Timothy Cashman, Kevin Costa, Ph.D.

- Podium presentation at the BMES National Meeting in Atlanta, 2012
- Poster presentation at the Icahn School of Medicine at Mount Sinai, 2012

Mathematically Modeling the Role of Electrophysiological Coupling in Mesenchymal Stem Cell Enhancement of Cardiomyocyte Function

Joshua Mayourian, Ruben Savitzky, Ph.D., Kevin Costa, Ph.D.

- Poster presentation at the Icahn School of Medicine at Mount Sinai, 2013
- Master's thesis with Ruben Savitzky, Ph.D. as my advisor and Kevin Costa, Ph.D. as my co-advisor (in progress)

Design of Stimulating Exercise Machines for Obese Teens

Joshua Mayourian, Joseph Kreitingner, Eric Leong, Jonathan Ostrander, Kristof Toth, Ellie Rappaport, David Wootton, Ph.D.

- Podium presentation at the Cooper Union for the Advancement of Science and Art, 2010

INVENTIONS

Length Controlled Bioreactor

Joshua Mayourian (co-inventor), Kevin Costa (co-inventor), Ph.D.

September 2013 - Present
New York, NY

- Designed a novel length controlled bioreactor to analyze ECTs activation threshold, stress, and force at different tissue lengths (technology disclosure form in progress)

EXPERIENCE

Cooper Union for the Advancement of Science and Art

Graduate Bioelectricity Course Teacher Assistant

January 2013-June 2013
New York, NY

- Volunteered as a teaching assistant in a graduate bioelectricity class as a junior
- Created homework assignments and solutions, and graded both homework assignments and exams throughout the semester
- Assisted students out of class with any questions they had regarding the course material

Icahn School of Medicine at Mount Sinai

Summer Undergraduate Research Fellow

Summer 2012 & 2013
New York, NY

- Tissue engineering researcher at the Costa lab in an extremely competitive and intensive research summer program
- Attended journal club and weekly research presentations

Elmhurst Hospital

Volunteer/Clinical Researcher

June 2011 - September 2011
Elmhurst, NY

- Observed Orthopedic surgeons, and assisted in orthopedic clinic
- Assisted data collection for Intertrochanteric fractures treated with PCCP following AO classification system

Self-Employed

Tutor

September 2009 - June 2010
Roslyn, NY

- Instructed high school students in Physics, Mathematics, Chemistry, and Spanish

Beth Shalom Day Camp

Lifeguard

June 2010 - August 2010
Roslyn, NY

- Obtained 1A lifeguard and CPR certification
- Instructed children on all different levels how to swim

Sid Jacobson Jewish Community Center

Hurricane Katrina Relief Volunteer

February 2008
New Orleans, LA

- Assisted in cleaning up and rebuilding numerous households in New Orleans after Hurricane Katrina

SKILLS

Laboratory Equipment

- Patch Clamp, Gas Chromatograph, Mass Spectrometer, Absorption Spectrometer, IR Spectrometer, Fluorescence Spectroscopy, Flame Atomic Absorption Spectroscopy, HPLC, UV-Vis Spectroscopy, ELISA Immunoassay

Computer Programs

- MATLAB, CellML, COMSOL, Pro/II Processing Engineering Software, AutoCAD, Solidworks, Mastercam, Python, QBasic64, LaTeX, Microsoft Office

Languages

- Fluent in Hebrew and English and conversant in Spanish and Persian

HONORS

Accepted Early Assurance into the Icahn School of Medicine at Mount Sinai M.D./Ph.D. Program

Daniel Okrent Cooper Fund Scholar, Cooper Union 2013

Responsible for Greatness Award, Cooper Union 2013

Goldwater Scholarship Honorable Mention, 2013

Deans List, The Cooper Union, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012, Spring 2013

Full-tuition scholarship, The Cooper Union, 2010-2014

Unsung Hero, Long Island Sports Awards, 2010

Long Island Math Fair, Silver Medal, 2009, Bronze Medal, 2008

MEMBERSHIPS

Cooper Union Basketball Team, Starting Point Guard, Captain

September 2010 - Present

Tau Beta Pi, Secretary, Member, Engineering Honors Society

September 2012 - Present

Cooper Union Pre-Medicine Mentorship Club, Founder

September 2013 - Present

Zeta Psi Fraternity, Treasurer and Athletic Chair

January 2011 - Present

American Institute of Chemical Engineers, Member

September 2011 - Present

Biomedical Engineering Society, Member

September 2012 - Present

Biophysical Society, Member

August 2013 - Present