Curriculum Vitae

Date Prepared: March 30, 2020

Name: Joshua Mayourian

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Place of Birth: Manhasset, NY

Education:

9/10-5/14	B.E. (summa cum laude)	Chemical Engineering	Cooper Union for the Advancement of Science and Art
9/13-5/14	M.E.	Chemical Engineering	Cooper Union for the Advancement of Science and Art
7/14-5/20	M.D.	Medicine	Icahn School of Medicine at Mount Sinai
7/14-5/20	Ph.D.	Biomedical Sciences	Icahn School of Medicine at Mount Sinai

Postdoctoral Training:

06/20-Present	Internship	Pediatrics	Boston Combined Residency Program (Boston Children's Hospital/Boston Medical Center)

Appointments at Hospitals/Affiliated Institutions:

06/20-Present	Clinical Fellow	Pediatrics	Boston Children's Hospital/Harvard Medical School
06/20-Present	Teaching Fellow	Pediatrics	Boston Medical Center/Boston University School of Medicine

Other Professional Positions:

2016	Internship	IBM Thomas J. Watson

Professional Societies:

2011-Present	American Institute of Chemical Engineers	Member
2012-2014	Tau Beta Pi (Engineering Honors Society)	Member
2012-Present	Biomedical Engineering Society	Member
2013-Present	Biophysical Society	Member
2014-Present	American Physician Scientists Association	Member
2016-Present	American Heart Association	Member
2017-Present	International Society of Extracellular Vesicles	Member

Editorial Activities:

- **Ad hoc Reviewer**

Frontiers in Physiology: Computational Physiology and Medicine, 2017-2019

Journal of the American College of Cardiology, 2018-Present

Journal of the American College of Cardiology: Basic to Translational Science, 2018-Present

- **Other Editorial Roles**

2019 – Present	Review Editor	Frontiers in Physiology: Computational Physiology and Medicine

Honors and Prizes:

2010-2014	Full Tuition Scholarship	Cooper Union for the Advancement of Science and Art
2010-2014	Dean's List	Cooper Union for the Advancement of Science and Art
2012	Early Assurance Acceptance	Icahn School of Medicine at Mount Sinai
2014	Goldwater Scholarship Honorable Mention	Barry Goldwater Scholarship and Excellence in Education
2014	Responsible for Greatness Award	Cooper Union for the Advancement of Science and Art
2014	Daniel Okrent Cooper Fund Scholar	Cooper Union for the Advancement of Science and Art
2014	Herbert Baldwin Fund Prize	Cooper Union for the Advancement of Science and Art
2014	Elmer J. Badin Chemistry Award	Cooper Union for the Advancement of Science and Art

2014-2015	Rudin Fellowship Awardee	Icahn School of Medicine at Mount Sinai
2015, 2016, 2019	Graduate School Travel Award	Icahn School of Medicine at Mount Sinai
2015	Travel Award	American Physician Scientists Award
2016	Education Committee Travel Award	Biophysical Society
2016	Cover Photo	PLoS Computational Biology
2016	Editor's Pick	PLoS Computational Biology
2017	Travel Award	International Society of Extracellular Vesicles
2017, 2018	Editor's Pick	Circulation Research
2018	Trainee in the Spotlight	Circulation Research
2018, 2020	Graduation with Research Distinction	Icahn School of Medicine at Mount Sinai
2018	Arthur Cederbaum Mentorship Award	Icahn School of Medicine at Mount Sinai
2020	Zeta Psi 40 Under 40 Award	Zeta Psi
2020	Dr. Howard Rappaport Pediatric Award	Icahn School of Medicine at Mount Sinai

Report of Funded and Unfunded Projects

Past

2015 Harnessing the Mesenchymal Stem Cell Secretome
Mount Sinai Institute of Technology
PI
Aim 1: To identify the most potent secreted factors for MSC-mediated enhancement of hECT function.
Aim 2: To evaluate the therapeutic potential of key MSC secreted factors in healthy and injured hECTs.

2017-2019 The Role of Exosomes in Mesenchymal Stem Cell-Mediated Enhancement of Cardiac Contractility
NIH/NHLBI 1 F30 HL134283-01A1
PI
Aim 1: To identify the role of exosomal miRNA-21 in hMSC paracrine mediated enhancement of healthy hECT contractility.

Aim 2: To test the inotropic potency of hMSC exosomes in the context of cardiomyopathy.

Training Grants and Mentored Trainee Grants

2014 Mount Sinai Medical Scientist Training Program
2T32GM007280-41

Trainee

2016-2017 NIGMS-funded Integrated Pharmacological Sciences Training Program
T32 GM062754
Trainee

Report of Local Teaching and Training

Teaching of Students in Courses:

2013	Bioelectricity	Teaching Assistant
2015-2016	Cardiovascular Physiology	Junior Teaching Assistant
2016-2017	Cardiovascular Physiology	Head Teaching Assistant
2016	Summer Undergraduate Research Program	Teaching Assistant

Other Mentored Trainees and Faculty:

2017 Kasoorelope Oguntuyo, BS / Laboratory Technician II, Washington University in St. Louis
Podium Presenter

2018 Sophia Salazar, BS / Graduate Student, Icahn School of Medicine at Mount Sinai
Poster Presenter

2018-2020 Katherine Phillips, BS / MD Student, Icahn School of Medicine at Mount Sinai
First Author of Manuscript Under Review, Podium Presenter

Report of Regional, National and International Invited Teaching and Presentations

☒ *No presentations below were sponsored by 3rd parties/outside entities*

Regional

2015 **Mayourian J**, and Costa KD. Computational and Human Engineered Cardiac Tissue Applications to Mesenchymal Stem Cell-Mediated Heart Therapies. IBM T.J. Watson Research Center, Multiscale Systems Biology and Modeling Group. (Invited seminar).

2017 **Mayourian J**, Ceholski DK, Costa KD. Human Mesenchymal Stem Cells Increases Cardiac Tissue Contractility Through Exosomal Paracrine Signaling. Mount Sinai Medical Research Day. (Podium Presentation & Abstract).

2018 **Mayourian J**, Ceholski DK, Costa KD. Exosomal microRNA-21-5p Mediates Mesenchymal Stem Cell Paracrine Effects on Human Cardiac Tissue Contractility. Mount Sinai Medical Student Research Day. (Poster Presentation & Abstract).

Report of Scholarship

Peer-Reviewed Scholarship in print or other media:

Publications:

1. **Mayourian J**, Savizky RM, Sobie EA, Costa KD. Modeling Electrophysiological Coupling and Fusion between Human Mesenchymal Stem Cells and Cardiomyocytes. PLoS Comput Biol. 2016;12(7):e1005014. doi:10.1371/journal.pcbi.1005014
2. **Mayourian J**, Cashman TJ, Ceholski DK, Johnson BV, Sachs D, Kaji DA, Sahoo S, Hare JM, Hajjar RJ, Sobie EA, Costa KD. Experimental and Computational Insight into Human Mesenchymal Stem Cell Paracrine Signaling and Heterocellular Coupling Effects on Cardiac Contractility and Arrhythmogenicity. Circulation Research. 2017;121(4),411-423.
3. **Mayourian J**, Ceholski DK, Gonzalez DM, Cashman TJ, Sahoo S, Hajjar RJ, Costa KD. Physiologic, Pathologic, and Therapeutic Paracrine Modulation of Cardiac Excitation-Contraction Coupling. Circulation Research. 2018; 122(1),167-183.
4. **Mayourian J**, Ceholski DK, Gorski P, Mathiyalagan P, Murphy JF, Salazar SI, Stillitano F, Hare JM, Sahoo S, Hajjar RJ, Costa KD. Exosomal microRNA-21-5p Mediates Mesenchymal Stem Cell Paracrine Effects on Human Cardiac Tissue Contractility. Circulation Research. 2018;122(7):933-944.
5. Golberg-Smith P. **Joshua Mayourian**: Rising to the Challenge. Circulation Research. 2018;122(11):1494-1495.
6. Ceholski DK, Turnbull IC, Kong CW, Koplev S, **Mayourian J**, Gorski PA, Stillitano F, Skodras AA, Nonnenmacher M, Cohen N, Bjrkegren JLM, Stroik DR, Cornea RL, Thomas DD, Li RA, Costa KD, Hajjar RJ. Functional and transcriptomic insights into pathogenesis of R9C phospholamban mutation using human induced pluripotent stem cell-derived cardiomyocytes. JMCC. 2018;119:147-154.
7. **Mayourian J**, Sobie EA, Costa KD. An Introduction to Computational Modeling of Cardiac Electrophysiology and Arrhythmogenicity. Methods in Molecular Biology. 2018;1816:17-35.
8. Turnbull IC, **Mayourian J**, Murphy JF, Stillitano F, Ceholski DK, Costa KD. Cardiac Tissue Engineering Models of Inherited and Acquired Cardiomyopathies. Methods in Molecular Biology. 2018;1816:145-159.
9. Mathiyalagan P, Adamiak M, **Mayourian J**, Sassi Y, Liang Y, Agarwal N, Jha D, Zhang S, Kohlbrenner E, Chepurko E, Chen J, Trivieri MG, Singh R, Bouchareb R, Fish K, Ishikawa K, Lebeche D, Hajjar RJ, Sahoo S. FTO-Dependent m6A Regulates Cardiac Function During Remodeling and Repair. Circulation. 2018;139(4):5168-532.
10. Murphy JF, **Mayourian J**, Stillitano F, Munawar S, Broughton KM, Agullo-Pascual E, Sussman MA, Hajjar RJ, Costa KD, Turnbull IC. Adult human cardiac stem cell supplementation effectively increases contractile function and maturation in human engineered cardiac tissues. Stem Cell Res Ther. 2019 Dec 4;10(1):373. doi: 10.1186/s13287-019-1486-4.

Thesis:

1. Master's Thesis: Mathematical Modeling of the Role of Electrophysiological Coupling in Mesenchymal Stem Cell Enhancement of Cardiomyocyte Function.
2. Doctoral Dissertation: Experimental and Computational Insight into Human Mesenchymal Stem Cell Effects on Cardiac Contractility and Arrhythmogenicity.

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings:

1. **Mayourian J**, Cashman TJ, and Costa KD. Role of Paracrine Signaling in Mesenchymal Stem Cells Improving Cardiomyocyte Function. BMES. 2012 (Podium Presentation & Abstract).
2. Cashman TJ, **Mayourian J**, and Costa KD. Secretion of Angiogenic and Anti-Apoptotic Factors Accompanies Mesenchymal Stem Cell-Mediated Enhancement of Contractile Function in Engineered Cardiac Tissues. Circulation Research. 2013;113(4): A130 (Abstract).
3. **Mayourian J**, Savizky RM, Sobie EA, and Costa KD. Modeling Electrophysiological Interactions Between Mesenchymal Stem Cells and Cardiomyocytes for Improved Cell Delivery Cardiotherapeutics. Biophysical Society. 2016; 110(3): Supplement 1:271a (Poster Presentation & Abstract).
4. **Mayourian J**, Savizky RM, Sobie EA, and Costa KD. Modeling Electrophysiological Coupling and Fusion between Human Mesenchymal Stem Cells and Cardiomyocytes. APSA. 2016 (Poster Presentation & Abstract).
5. **Mayourian J**, Cashman TJ, Johnson BV, Sachs D, Kaji DA, Sobie EA, Costa KD. Human Mesenchymal Stem Cell Paracrine Signaling Counteracts Heterocellular Coupling Effects on Cardiac Contractility and Arrhythmogenicity. Biophysical Society. 2017; 112(3): Supplement 1:162a (Podium Presentation & Abstract).
6. **Mayourian J**, Ceholski DK, Turnbull IC, Costa KD. Human Mesenchymal Stem Cells Enhance Cardiac Contractility Through Exosomal Paracrine Signaling. NYSTEM. 2017 (Poster Presentation & Abstract).
7. **Mayourian J**, Ceholski DK, Turnbull IC, Costa KD. The Role of Exosomes in Mesenchymal Stem Cell Mediated Enhancement of Cardiac Contractility. ISEV. 2017 (Podium Presentation & Abstract).
8. Stilitano F, **Mayourian J**, Dave J, Hulo JS, Hajjar RJ. (April 2018). Development of Human Cell-based Screening Assays to Detect Subject-specific Drug-response Variability Poster presented at: Translational Science; Washington, DC, USA.
9. Costa KD, Turnbull IC, Murphy J, **Mayourian J**, Salazar S, Ceholski D, Pothula V, Stillitano F, Broughton K, Sussman M, Hajjar R. (June 2018). Heterocellular Coupling Mediates Pro-Contractile Effects of Cardiac Progenitor Cells in Human Engineered Cardiac Tissue Poster presented at: International Society for Stem Cell Research; Melbourne, AUS.
10. Mathiyalagan P, Adamiak M, **Mayourian J**, Liang Y, Sassi Y, Agarwal N, Jha D, Ishikawa K, Zhang S, Kohlbrenner E, Yin X, Chepurko E, Chen J, Trivieri MG, Singh R, Mayr M, Fish K, Lebeche D, Hajjar RJ, Sahoo S. (July 2018). FTO-Dependent m6A Regulates Cardiomyocyte and Cardiac Function During Remodeling and Repair Poster presented at: American Heart Association's Basic Cardiovascular Sciences; San Antonio, TX, USA.
11. Mathiyalagan P, Adamiak M, **Mayourian J**, Liang Y, Sassi Y, Agarwal N, Jha D, Ishikawa K, Zhang S, Kohlbrenner E, Yin X, Chepurko E, Chen J, Trivieri MG, Singh R, Mayr M, Fish K, Lebeche D, Hajjar RJ, SAhoo S. (July 2018). An m6A Demethylase, FTO Mediates Post-transcriptional mRNA Modifications to Regulate Cardiac and Cardiomyocyte Function Poster presented at: American Heart Association's Basic Cardiovascular Sciences; San Antonio, TX, USA.
12. Mathiyalagan P, Adamiak M, **Mayourian J**, Sassi Y, Liang Y, Agarwal N, Jha D, Zhang S, Kohlbrenner E, Yin X, Chepurko E, Chen J, Trivieri MG, Singh R, Bouchareb R, Fish K, Ishikawa K, Mayr M, Lebeche D, Hajjar RJ, Sahoo S. (November 2018). Modulation of m6A in RNA by Fat Mass and Obesity-Associated (FTO) Regulates Cardiac Homeostasis and Contractile Function Poster presented at: American Heart Association's Scientific Sessions; Chicago, IL, USA.
13. Salazar SI, **Mayourian J**, Chionuma H, Murphy JF, Costa KD, Turnbull IC. (February 2019). Comparison of Cell Culturing Conditions and Extracellular Vesicles Preservation Techniques to

Maximize Cardioactive Potency of the Adult Stem Cell Secretome Poster presented at: New York Academy of Science Symposium; New York, NY, USA.

14. Phillips K, **Mayourian J**, Costa KD. (March 2019). Restoration of Failing Human Cardiomyocyte Electrophysiology and Calcium Handling by Adult Stem Cells: A Computational Approach to Therapeutic Optimization Poster presented at: Mount Sinai Medical Student Research Day; New York, NY, USA.
15. Wickramasinghe NM, Turnbull I, Sachs D, Dhanan P, Weiner R, **Mayourian J**, Houten S, Costa KD, Dubois N. (May 2019). Enhancing Metabolic and Structural Maturation of PSC-Derived Cardiomyocytes by Induction of PPAR Signaling Oral Presentation presented at: Weinstein Cardiovascular Development Conference; Indianapolis, IN, USA.
16. **Mayourian J**, Phillips K, Costa KD. (October 2019). Adult Stem Cells Restore Healthy Function in Failing Human Cardiomyocytes: A Computational Study Poster presented at: Biomedical Engineering Society; Philadelphia, PA, USA.