

Sara S. Nunes Vasconcelos, Ph.D.

Contact Information

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Education

PhD - 2006 Cellular Biology Graduate Program, Universidade do Estado do Rio de Janeiro, Brazil. Major area: Vascular Biology. Minor area: Cancer Biology. PhD training fellowship (Oct/2003 - Dec/2004). University of Alabama at Birmingham, Dr. Anne Woods's laboratory.

MS - 2002 Universidade do Estado do Rio de Janeiro, Brazil. Major: Cellular Biology. Minor: Molecular Biology.

BA - 2000 Universidade do Estado do Rio de Janeiro, Brazil. Major: Biology. Minor: Biochemistry.

Work and Training Experience

12/2022-present **Senior Scientist**, Toronto General Hospital Research Institute, University Health Network.

07/2022-present **John Kitson McIvor Endowed Chair in Diabetes Research.**

07/2021-present **Associate Professor**, Institute of Biomedical Engineering, University of Toronto.

04/2018-11/2022 **Scientist**, Toronto General Hospital Research Institute, University Health Network.

07/2014-06/2021 **Assistant Professor**, Institute of Biomaterials and Biomedical Engineering, University of Toronto.

07/2012-03/2018 **Assistant Scientist**, Toronto General Research Institute, University Health Network.

01/2011-06/2012 **Postdoctoral fellow**, Institute of Biomaterials and Biomedical Engineering, University of Toronto, Dr. Milica Radisic's laboratory.

06/2008-12/2010 **Postdoctoral fellow**, Cardiovascular Innovation Institute, University of Louisville, Dr. James B. Hoying's laboratory.

03/2008-05/2008 **Visiting scientist**, Institut National de la Santé et de la Recherche Medicale (INSERM), Paris, FR.

03/2007-02/2008 **Postdoctoral fellow**, University of Alabama at Birmingham, Cell Biology Department, Dr. Anne Woods' laboratory.

Affiliations

2022 – Member of the Ajmera Transplant Center, Toronto General Hospital, University Health Network. Toronto, ON.

2022 – Member of the Collaborative Specialization in Developmental Biology, University of Toronto, Toronto, ON.
 2017 – Member of the Cardiovascular Sciences Collaborative Program, University of Toronto, Toronto, ON.
 2016 – Laboratory of Medicine and Pathobiology, University of Toronto, Toronto, ON (cross-appointment).
 2016 – Member of the Banting and Best Diabetes Center (BBDC), University of Toronto, Toronto, ON.
 2014 – Member of Ontario Institute for Regenerative Medicine (OIRM), Toronto, ON.
 2013 – Member of Heart & Stroke/Richard Lewar Centre of Excellence (HSRLCE), University of Toronto

Research Funding History

Active support

2023-2029 **New Frontiers in Research Fund**, Transformation 2022 (NFRFT-2022-00447).
 “Enabling novel cardiac therapies with pluripotent stem cells”
\$18,932,607 (direct costs) + 4,733,149 indirect costs
Co-Principal Investigator (Laflamme, NPI; Biktashev, Bub, Epelman, Feinberg, Garton, Haller, Keller, Kimmelman, Protze, Yau, co-PIs; Amon, Broomell, Gepstein, Nanthakumar, Noiseux, Rac, Sarvazyan, Schoichet, Tavallaei Yoo, co-Applicants).

2022-2025 **Stem Cell Network**, Horizon Award (SCN - HZN C4R1 3)
 “Advancing microvessel-based cardiac regeneration into a large pre-clinical animal model”
\$3,000,000 (\$2,270,110 to SV)
Principal Investigator (Laflamme, Korbutt; co-Applicants; Ghugre, collaborator).

2022-2027 **Canadian Institutes of Health Research**, Project grant (CIHR - PJT 180641)
 “Myocardial regeneration in a pre-clinical model of type 2 diabetes”
\$965,430
Principal Investigator (Cheng, Epelman; Co-PIs)

2021-2027 **New Frontiers in Research Fund**, Transformation 2021 (NFRFT-2020-00787)
 “The Next Frontier in Transplantation: Ex vivo Strategies to Repair and Rebuild Organs”
\$19,200,000 (direct costs) + 4,800,000 indirect costs
Co-Applicant (Keshavjee, NPI; Humar, Juvet, Chrome, Cypel, Selzner, Liu, Gross, Kumar, Haykal, Rogers, Waddell, Withers, Davidson, Chan, Reichman, Jaeckel, Kleinstiver, MacParland, Amon, Zhang, Badiwala, Karoubi, Parent, Sinclair, Yeung)

2021-2026 **Canadian Institutes of Health Research-JDRF, Team grant** (CIHR - ASD 173662, JDRF - 5 SRA 2020 1058)
 “Accelerating stem cell-based therapies for type I diabetes”
\$3,000,000 (\$720,000 to SV)
Co-Principal Investigator (Nostro (NPI), Drucker, Corbutt, Pepper, co-PIs)

2020-2025 **Canadian Institutes of Health Research**, Project grant
 “Contribution of fatty acid metabolism to diabetes-associated heart failure with preserved ejection fraction”
\$822,376 (\$0 to SV)
Co-Applicant (Fish, PI; Billia, Olguin co-applicants)

2016-2023 **Natural Sciences and Engineering Research Council of Canada**, Collaborative Research and Training Experience Program (CREATE)

“Training program in organ-on-a-chip engineering and entrepreneurship (TOeP)”

\$1,650,000

Co-Principal Investigator (Radisic (NPI), Vasconcelos, Gilbert, Guenther, McGuigan, Santerre, Simmons, Wheeler, Young)

2017-2024 **Canadian Institutes of Health Research**, Project grant

“Accelerating vascularization and blood perfusion for cell transplantation and myocardial regeneration”

\$753,525

Principal Investigator

2017-2024 **Natural Sciences and Engineering Research Council of Canada**, Discovery Grant (RGPIN-201)

“Investigating the influence of biomimetic cues in cardiovascular system formation”

\$231,000

Principal Investigator

Completed support

2018-2023 **Early Researcher Award**, Ministry of Research, Innovation and Science

“Neovascularization strategies for utilization in ischemic diseases and in cell transplantation”

\$190,000

Principal Investigator

2020-2021 **Canada Foundation for Innovation** (CFI), John R. Evans Leaders Fund

“Cardiac regeneration and *in vitro* disease modeling”

\$625,826

Principal investigator

2019-2022 **Canada First Research Excellence Fund, Medicine by Design**, Team Project Award

“Cloaking to allow cellular cures: diabetes as a prototype”

\$1,950,000 (\$225,000 to SV)

Co-Investigator (Nagy (PI), Zuniga-Pflucker, Hirano, Chrome, McGaha, Nostro, Vasconcelos)

2021-2022 **Industry agreement**, Advanced Solutions

“Analysis of human fat microvessels”

\$15,000

2019-2020 **Industry agreement**, Cydan

“Autoantibodies in cardiac disease”

\$13,286

Principal Investigator

2016-2021 **Major Research Project Management (MRPM) fund**, University of Toronto

“Training program in organ-on-a-chip engineering and entrepreneurship (TOeP)”

\$100,000

Co-Principal Investigator (Radisic (NPI), Vasconcelos, Gilbert, Guenther, McGuigan, Santerre, Simmons, Wheeler, Young)

2019-2020 **Banting and Best Diabetes Center**, Pilot and Feasibility Grant

"Elucidating the pleiotropic cardioprotective mechanisms of empagliflozin on heart failure in type 2 diabetes mellitus."
\$97,420 (\$34,000 to SV)
Co-Principal Investigator (Fish (PI), Billia, Cherney, collaborators)
2019-2020 **Ted Rogers Centre for Heart Research Innovation Fund, Seed grant**
"Development of in vitro models of human heart failure"
\$100,000 (\$95,000 to SV)
Principal Investigator (Gramolini, Billia (co-PIs), Fish, Young, (collaborators))
2016-2019 **Canada First Research Excellence Fund, Medicine by Design**, Team Project Award
"Characterization of the neurovascular islet "niche" and its role on beta cell function and maturation"
\$409,425 (\$185,175 to SV)
Co-Principal Investigator (Nostro (PI), Vasconcelos, van der Kooy, Cattral)
2016-2019 **JDRF USA**, International call for "Developing and Testing Retrievable Devices and Scaffolds for Beta Cell Replacement Therapies"
"Prevascularized device for islet transplantation"
\$940,000 (\$300,000 to SV)
Co-Principal Investigator (Nostro (PI), Vasconcelos, van der Kooy)
2015-2016 **Ontario Institute of Regenerative Medicine**, Disease Team Accelerator Grant
"Preclinical evaluation of a bioengineered human islet"
\$100,000 (\$41,732 to SV)
Co-Principal Investigator (Nostro, PI)
2015-2016 **Canada First Research Excellence Fund, Medicine by Design**
"Generation of a bioengineered human islet"
\$50,000 (\$0 to SV)
Co-Investigator (Nostro, PI)
2015-2016 **Canadian Institutes of Health Research**, Operating Grant – Bridge funding
"Accelerating vascularization and blood perfusion for cell transplantation and myocardial regeneration"
\$100,000
Principal Investigator
2015-2016 **JP Bickell Foundation**, Medical Research Award
"Preclinical evaluation of a vascularized cardiac patch for improvement of heart function post myocardial infarction through the effective delivery of human stem cell-derived cardiomyocytes"
\$65,000
Principal Investigator
2014-2015 **Canadian Institutes of Health Research**, Operating Grant – Bridge funding
"Arterial-venous specification in adult neovascularization and in arterio-venous malformations."
\$100,000
Principal Investigator
2014-2017 **Heart and Stroke Foundation of Canada**, Grant-in-Aid
"Arterial-venous specification in adult neovascularization in health and diabetes"
\$296,700
Principal Investigator

- 2014-2015 **Canadian Institutes of Health Research**, Operating Grant – Bridge funding
"Arterial-venous specification in adult neovascularization in health and diabetes."
\$100,000
Principal Investigator (*Declined due to overlap with HSF, above*)
- 2012-2014 **Heart and Stroke Foundation of Canada**, Grant-in-Aid
"Arterial-venous specification in adult neovascularization."
\$136,800
Principal Investigator
- 2011-2015 **American Heart Association (National competition)**, Scientist Development Grant
"Arterial-venous specification in adult neovascularization." (*Declined due to relocation to Canada*).
\$400,000
Principal Investigator
- 2011-2015 **American Heart Association**, Scientist Development Grant 11SDG7500025
"Microvascular Repair using Adipose-Derived Stromal Vascular Fraction Cells."
\$400,000 (\$0 to SV)
Co-Investigator (Boyd, PI)

Submitted

- 2023-2028 NIH UC2HD113037
"Elucidating Novel Roles of ABC/SLC Transporters at Human Placental and Fetal Barriers across Gestation"
\$3,746,445.00 US
Co-Investigator (BENDAYAN, REINA, PI; SERGHIDES, LENA, MPI)

Awards, Recognitions and Scholarships (to S. Vasconcelos)

- 2023-present Scientific Advisory Committee, Rare diseases models and mechanisms network, Canada.
- 2022-2027 John Kitson McIvor Endowed Chair in Diabetes Research, University Health Network.
2020 2020 Outstanding Young Investigator Travel Award, The Microcirculatory Society. USA. Deferred to 2022 due to COVID-19 pandemic.
- 2019 Young Innovators in Cellular and Molecular Bioengineering Award, Cellular and Molecular Bioengineering journal and the Biomedical Engineering Society. USA.
- 2018-2020 Scientific Advisory Committee, Sharon Francis Institute for Regenerative Medicine. Canada.
- 2018 Early Researcher Award, Minister of Research, Innovation and Science. Canada.
- 2015 Early-Stage Faculty Travel Award, European Society of Microcirculation, Tokyo, Japan. 10th World Congress of Microcirculation.
- 2015 Medical Research Award, JP Bickel Foundation, Toronto, CA.
- 2014 Early-Stage Faculty Travel Award, Tissue Engineering and Regenerative Medicine International Society (TERMIS), Washington D.C., USA.
- 2014 Best manuscript award, Institute of Biomaterials and Biomedical Engineering, University of Toronto. "Biowire: a platform for maturation of human pluripotent stem cell derived cardiomyocytes". Toronto, CA.
- 2013 Innovation and Career Development Travel Award, Biomedical Engineering Society (BMES), Seattle, USA.
- 2012 Travel award distinction, Till & McCulloch Stem Cell Research Meeting, Montreal, CA.
- 2011 Scientist Development Grant Award, American Heart Association. USA
- 2011 Travel award distinction, 9th World Congress of Microcirculation, Paris, FR.

- 2010 Research Merit Award, Post-Doctoral Poster Competition, University of Louisville. "Vessel arterial-venous plasticity in adult neovascularization". Louisville, USA.
- 2009 Research Merit Award, Post-Doctoral Poster Competition, University of Louisville. "Neovascular outcome is influenced by the cellular composition of the originating microvessels". Louisville, USA.
- 2008 Research Merit Award, Post-Doctoral Oral Presentation Competition. University of Alabama at Birmingham. "Syndecan-4 core protein binds fibronectin HepII domain and modulates focal adhesion formation". Birmingham, USA.
- 2008 International Collaboration Training Award, CNPq (Brazilian NIH equivalent) to Institut National de la Santé et de la Recherche Medicale (INSERM), Paris, FR.
- 2005 Research merit award, graduate school poster competition, Universidade do Estado do Rio de Janeiro. "Endothelial cell adhesion to thrombospondin-1 and fibronectin: role of syndecan-4 proteoglycan". Rio de Janeiro, Brazil.
- 2004-2006 Graduate Student Research Scholarship (PhD), CNPq (Brazilian CIHR equivalent). Rio de Janeiro, Brazil.
- 2003 Ph.D. Student Training Fellowship for graduate studies abroad from CNPq (Brazilian NIH equivalent), Brazil to University of Alabama at Birmingham, USA.
- 2001-2002 Graduate Student Research Scholarship (Master's), FAPERJ foundation, Brazil.
- 2000 Research merit award, Undergraduate Research Poster Competition, Universidade do Estado do Rio de Janeiro. Interaction of *Sporothrix schenckii* with endothelial cells in culture". Rio de Janeiro, Brazil.
- 1998-2000 Undergraduate Student Research Scholarship, CNPq (Brazilian NIH equivalent). Rio de Janeiro, Brazil.

Awards, Honors and Scholarships (to mentees while in the lab)

- 2023 Postdoctoral fellowship to Sonia Taib from the Banting and Best Diabetes Center (BBDC) Toronto, Canada. \$50,000.
- 2023 Travel award to Safwat Khan from the Stem Cell Network. \$2,500
- 2022 Sonia Taib nominated finalist of the International Stem Cell SpaceShot program - nominated via a competitive mechanism
- 2022 Research merit award (3rd place poster presentation) to Omar Mourad from the 7th Bioengineering and translational medicine conference from Aiche.
- 2022 Post-doctoral award to Sonia Taib. TGHRI PDF Fellowship. University Health Network. Canada. \$25,000.
- 2022 PhD Scholarship to Robin Wolman from the Banting and Best Diabetes Center, Toronto, Canada. \$22,000.
- 2022 MSc Scholarship to Ryan Yee from the Canadian Institute of Health Research. Ottawa, Canada. \$17,500.
- 2021 TOeP scholarship to Safwat Khan. University of Toronto. Canada. \$9,000.
- 2021 TOeP Scholarship to Ryan Yee. University of Toronto. Canada. \$6,000.
- 2021 3rd place, Business Pitch Competition at the TOeP program to Safwat Khan, Omar Mourad, Kayla Soon. 2021 CRAFT Symposium (Virtual).
- 2021 Research Merit Award (first place, CIHR Postdoctoral) to Yasaman Aghazadeh. Insulin 100 A Scientific Symposium: In celebration of the 100th anniversary of the University of Toronto's discovery of insulin.
- 2020 Nahom Berhane Undergraduate Scholarship for Leadership and Inclusion to Blessing Nkennor. Canada. \$8,500
- 2020 TOeP Scholarship to Safwat Khan. University of Toronto. Canada. \$12,500.
- 2019 RNA-seq Analysis Workshop Travel Grant to Safwat Tahmin Khan. Stem Cell Network. Canada. \$2,000
- 2019 TOeP Scholarship to Omar Mourad. University of Toronto. Canada. \$12,500.
- 2019 PhD. award to Safwat Khan. Paul and Sally Wang Fund. University of Toronto. Canada. \$1,352

- 2019 PhD. award to Safwat Khan. Wildcat Scholarship. University of Toronto. Canada. \$10,000
- 2019 Research merit award to Kenneth Williams (1st Place Oral Presentation) at the Cardiovascular Sciences Collaborative Specialization Conference. "Skipping a Beat: Development of a 3D in vitro model of human cardiac arrhythmia". Toronto, Canada
- 2019 Travel award to Yasaman Aghazadeh from Medicine by Design to attend the 17th World Congress of the International Pancreas & Islet Transplant Association. Lyon, France. \$2,000
- 2018-2020 Post-doctoral award to Yasaman Aghazadeh. Medicine by Design PDF Fellowship. University of Toronto. Canada. \$135,000
- 2018 Research merit award to Yasaman Aghazadeh (best poster) at the 11th World Congress of Microcirculation. "Using pre-vascularization strategies in cell therapy for the treatment of type 1 diabetes". Vancouver, Canada. \$200
- 2018 MSc Scholarship to Kenneth Williams from the 2018-2019 Heart & Stroke/Richard Lewar Centre of Excellence Studentship Award (*GSEF-Sanofi Aventis Graduate Fellowship*). Toronto, Canada. \$15,000
- 2018 MSc Scholarship to Olya Mastikhina from the National Sciences and Engineering Research Council. Canada. \$17,500
- 2018 MSc Scholarship to Kenneth Williams from the Canadian Institute of Health Research. Ottawa, Canada. \$17,500
- 2018 Undergraduate Summer Research Program Award to Margaret Koo from the Institute of Biomaterials and Biomedical Engineering: Director's Summer Research Opportunity. Toronto, Canada.
- 2017 Research merit award to Yasaman Aghazadeh (best poster) at the Toronto General Hospital Research Institute research day. "Using pre-vascularization strategies in cell therapy for the treatment of type 1 diabetes". Toronto, Canada. \$100
- 2017 Research merit award to Yasaman Aghazadeh, poster competition (3rd place) at the Medicine by Design Annual Symposium. "Using pre-vascularization strategies in cell therapy for the treatment of type 1 diabetes". Toronto, Canada.
- 2017 Travel award to Xuetao Sun from Medicine by Design to present at the 2017 Till & McCulloch Meeting. Mount Tremblant, Canada.
- 2017 1st place winner of video competition to Byeong-Ui Moon from the 11th Ontario-on-a-chip Symposium. Heart (shapped drop)-on-a-Chip. Toronto, Canada.
- 2017 MSc Scholarship to Olya Mastikhina from the Training Program in Organ-on-a-Chip Engineering & Entrepreneurship. Toronto, Canada. \$13,500
- 2017 Barbara and Frank Milligan Graduate Fellowships to Olya Mastikhina. University of Toronto. Canada. \$5,460
- 2017 MSc Scholarship to Kenneth Williams from the Ontario Graduate Scholarship. Toronto, Canada. \$15,000
- 2016 Post-doctoral award to Yasaman Aghazadeh. JDRF Clinical Trials PFD Fellowship. \$64,000
- 2016 Travel award to Wafa Altalhi from the Canadian Institute of Health Research to attend the International Vascular Biology Meeting. Boston, USA. \$1,000
- 2012-2017 PhD Scholarship to Wafa Altalhi from the King Abdullah Schlarship Program. Saudi Arabia.
- 2012 Research Allowance to Wafa Altalhi from the Saudi Arabian Cultural Bureau. Saudi Arabia.

Teaching, Mentoring and Advisory Activities

Teaching

Undergraduate Level

LMP 406 – Guest lecturer, Laboratory Medicine and Pathobiology. Winter 2022. University of Toronto.

LMP 406 – Guest lecturer, Laboratory Medicine and Pathobiology. Winter 2021. University of Toronto.

LMP406 – Guest lecturer, Cardiovascular Pathobiology. Winter 2018. University of Toronto.

Guest lecturer, Laboratory Medicine & Pathobiology Undergraduate lecture series. Summer 2017. University of Toronto.

BME499Y – Applied Research in Biomedical Engineering (1 student). Winter 2017. Institute of Biomaterials and Biomedical Engineering. University of Toronto.

HMB499 – Project in Human Biology. Winter 2015, 2016 and 2017 (1 student each term). Faculty of Medicine. University of Toronto.

Graduate Level

BME1550H – Course co-director, Institute of Biomedical Engineering, Winter 2023 (11 students)

MSC7000Y – Guest lecturer, Institute of Medical Sciences. Winter 2022. (21 students)

MSC7000Y – Grader, Institute of Medical Sciences. Winter 2022. (8 students)

JCV3063 – Guest lecturer, Department of physiology, Cardiovascular Sciences Collaborative Specialization, Advanced Topics: Vascular. Vascular regenerative medicine. Spring 2021.

MSC7000Y – Guest lecturer, Institute of Medical Sciences. Spring 2021. (21 students)

MSC7000Y – Grader, Institute of Medical Sciences. Spring 2021. (8 students)

MSC7000Y – Grader, Institute of Medical Sciences. Spring 2020. (7 students).

JCV3063 – Guest lecturer, Department of physiology, Advanced Topics in Cardiovascular Sciences: Vascular. Topic: Vascular regenerative medicine. Spring 2019. (20 students).

JTC 1331 – Instructor, IBBME, Biomaterial Sciences. Winter 2018.

LMP1404 – Guest lecturer, Laboratory Medicine & Pathobiology, Molecular and Cellular Mechanisms of Disease. Topic: Microvascular biology and regeneration. Winter 2018. (25 students).

JCV3064 – Guest lecturer, Department of physiology, Advanced Topics in Cardiovascular Sciences: Microvascular Medicine. Topic: Neovascularization. Fall 2017. (15 students).

Mentoring

Bachelor's

May 2019-present	Blessing Nkennor, University of Toronto Thesis/Project title: Engineered tissue revascularization
May 2017- May 2019	Margaret Koo, University of Toronto Thesis/Project title: "Role of immune system in the integration of engineered tissues"
May 2015 – May 2017	Julia Da Kim, University of Toronto Thesis/Project title: "Microvasculature-on-a-chip" Present Position: Graduate Student, University of Toronto. Toronto, Canada.
May 2014 – Mar 2016	Adrian Lee, University of Toronto Thesis/Project title: "Micro-device engineering" Present Position: Graduate Student, University of British Columbia Vancouver, Canada.
May 2013 – Aug 2013	Sevan Evren, University of Toronto

Thesis/Project title: "Vascular maturation in diabetes"
Present Position: Medical Student, Lincoln Memorial University, Tennessee, USA

May 2010 – Aug 2010 Heywood Chu, University of Toronto
Thesis/Project title: In vivo vascularization models
Present Position: Senior Coordinator, MediSystem Pharmacy Toronto, Canada.

Master's
Sep 2021 – present Ryan Yee, Institute of Biomedical Engineering
Thesis/Project title: Ischemia-reperfusion effects in multicellular tissues

Sep 2019- Dec 2021 Kayla Soon, Institute of Biomedical Engineering
Thesis/Project title: Human arterio-venous malformation-on-a-chip
Present Position: Technical Officer, National Research Council (NRC)

Jul 2017- Aug 2019 Olga Mastikhina, Institute of Biomedical Engineering
Thesis/Project title: Cardiac fibrosis-on-a-chip
Present Position: Graduate Student (PhD track), University of Toronto

Jul 2017- Jun 2019 Kenneth Williams, Laboratory Medicine and Pathobiology
Thesis/Project title: Skipping a Beat: Development and Characterization of a 3D in vitro Model of Human Cardiac Arrhythmia
Present Position: Medical Student, University of Toronto

2011-2012 Jason Miklas, Institute of Biomedical Engineering
Co-mentorship Thesis/Project title: Bioreactor for modulation of cardiac microtissue phenotype by combined mechanical and electrical stimulation

Doctorate
Sep 2021 – present Mengyuan (Melody) Li, Institute of Biomedical Engineering
Thesis/Project title: Increasing complexity in biomimetic in vitro models

Sep 2019-present Safwat Khan, Institute of Biomedical Engineering
Thesis/Project title: Human models of heart failure-on-a-chip

Sep 2019- present Omar Mourad, Institute of Biomedical Engineering
Thesis/Project title: In vivo inosculation of engineered microvasculatures

Sep 2012 – Sep 2017 Wafa Altalhi, Laboratory Medicine and Pathobiology
Co-Supervisor Thesis/Project title: "Vessel arterio-venous specification in engineered tissues in health and disease"
Present Position: Postdoctoral fellow, Harvard University, Harald Ott lab

Jan 2011 – Jul 2017 Boyang Zhang, Institute of Biomedical Engineering
Co-mentorship Thesis/Project title: "Microfluidic approach to tissue vascularization"
Present Position: Assistant Professor (start date July 1/2018), McMaster University

Post-doctorate
Jan 2023 – present Chao Wang, MD
Project title: "Cardiac remuscularization in large animal model"

May 2022 – present	Sonia Taib, PhD Project title: “Defining the requirements for tissue-specific vascularization”
Jul 2021 – present	Shabana Vohra, PhD Project title: “Single cell transcriptomic analysis”
Mar 2018 – Feb 2019 Co-supervisor	Khalil Heileman, PhD Project title: “Complex tissue modeling in vitro: recreating cardiac composition” Current position: Engineer, Angle Biosciences
Dec 2015 – Oct 2021 Co-Supervisor	Yasaman Aghazadeh, PhD Project title: “Engineered islet for treatment of diabetes” Current position: Assistant Professor, McGill University
Aug 2016 – Oct 2017 Co-Supervisor	Byeong-Ui (Ben) Moon, PhD Project title: Perfusable, microfluidics-based heart-on-a-chip platform for assessment of tissue force of contraction Current Position: Researcher at National Research Council Montreal
Oct 2014 – present	Xuetao Sun, PhD Project title: “Cardiac tissue regeneration post myocardial infarction”

Thesis advisory committees and exams

2022-present	Thesis Advisory Committee for PhD candidate Coulter Montague (supervisor: Michael Laflamme), Department Biomedical Engineering, University of Toronto.
2021-present	Thesis Advisory Committee for PhD candidate Negar Khosraviani (supervisor: Jason Fish), Department Laboratory Medicine and Pathobiology, University of Toronto.
2021	External Thesis Examiner for MSc candidate Nhien Tran-Nguyen (supervisor: Piero Triverio). Department Biomedical Engineering, University of Toronto.
2021-present	Thesis Advisory Committee for PhD candidate Shirley Chung (supervisors: Paul Santerre and Jason Maynes), Department Biomedical Engineering, University of Toronto.
2021-present	Thesis Advisory Committee for PhD candidate Bella (Bin) Xu (supervisors: Alison McGuigan and Penney Gilbert), Department Biomedical Engineering, University of Toronto.
2020-present	Thesis Advisory Committee for PhD candidate Han Shao (supervisor: Edmond Young), Department of Mechanical & Industrial Engineering (MIE), University of Toronto.
2020-present	Thesis Advisory Committee for PhD candidate Doris Adao (supervisors: Phyllis Billia and Craig Simmons), Department Biomedical Engineering, University of Toronto.
2020-present	Thesis Advisory Committee for PhD candidate Fatemeh Mirshafiei (supervisor: Jason Maynes), Department of Biochemistry, University of Toronto.
2020	External Examiner of Qualifying Exam for PhD candidate Vera Pieters (supervisors: Alisson McGuigan and Penney Gilbert), Institute of Biomaterials and Biomedical Engineering, University of Toronto.
2019-2021	Thesis Advisory Committee for MSc candidate Coulter Montague (supervisor: Michael Laflamme), Laboratory medicine and pathobiology (LMP), University of Toronto.
2019-2021	Thesis Advisory Committee for MSc candidate Olivia Pezzutti (supervisor: Sonya MacParland), Department of Immunology, University of Toronto.

- 2019 External Examiner for MSc candidate Xavier Lee (supervisor: Anthony Gramolini), Department of Physiology, University of Toronto.
- 2019-2021 Thesis Advisory Committee for MSc candidate Avishai Gasner (supervisor: Clifford L. Librach), Department of Physiology, University of Toronto.
- 2019-2021 Thesis Advisory Committee for MSc candidate Christian Paniccia (supervisor: Craig Simmons), Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2019 External Examiner for PhD candidate Ross Fitzsimmons (supervisor: Craig Simmons), Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2019 External Thesis Examiner for PhD candidate Tyler Cooper (supervisor: David Hess), Department of Physiology and Pharmacology, Western University.
- 2019 Thesis Defense Committee member for PhD candidate Mohsen Afshar (supervisor: Penney Gilbert), Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2019-present Thesis Advisory Committee for PhD candidate Sadi Loai (supervisor: Hai-Ling Margaret Cheng), Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2019-present Thesis Advisory Committee for PhD candidate Jonah Burke-Kleinman (supervisor: Michelle Bendeck), Laboratory Medicine & Pathobiology, University of Toronto.
- 2018 External Thesis Examiner for MSc candidate Aisha Mohamed (supervisor: Ian Rogers), Lunenfeld-Tanenbaum Research Institute/University of Toronto.
- 2018-2019 Thesis Advisory Committee for PhD candidate Alisa Ugodnikov (supervisors: Craig Simmons and Phyllis Billia), Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2017 External examiner of PhD transfer exam for Dakota Gustafson (supervisor: Jason Fish), Department of Laboratory Medicine and Pathobiology, University of Toronto.
- 2017-2019 Thesis Advisory Committee for PhD candidate Farwah Iqbal (supervisors: Ren-Ke Li and Clifford L. Librach), Department of Physiology, University of Toronto.
- 2016-2021 Thesis Advisory Committee for PhD candidate Noosheen Walji (supervisor: Edmond Young), Department of Mechanical & Industrial Engineering, University of Toronto.
- 2016 Chair, PhD transfer exam for Amanda Mohabeer (supervisor: Michelle Bendeck), Laboratory of Medicine & Pathobiology, University of Toronto.
- 2016 External Thesis Examiner for PhD candidate Erin Mandel (supervisor: Tara Haas), York University.
- 2014-2015 Mentor, Biomedical Engineering Faculty Mentorship program at University of Toronto. Providing one-on-one meetings with Undergraduate students for career mentorship.
- 2014 Mentor, Girls e-mentorship program, Toronto, CA. Providing guidance for at-risk girls (high school level) that have an interest in science (Outreach).
- 2014 External Examiner of Qualifying Exam for PhD candidate Moshen Afshar (supervisor: Penney Gilbert), University of Toronto.
- 2014 Msc Defense committee for Zhen Qi Lu (supervisor: Anthony Gramolini), University of Toronto.

Professional Service

Grant Review Activities (national and international)

- 2023 Reviewer and committee member, Banting and Best Diabetes Center – Graduate and PDF level. Canada.
- 2022 Reviewer and committee member, NIH F30-31-32.
- 2021 Reviewer, Ted Rogers Center for Heart Research, 7th Annual Education Fund – PDF level. Canada.
- 2020 Reviewer, Ted Rogers Center for Heart Research, 6th Annual Education Fund – PDF level. Canada.

- 2020 Reviewer, University Health Network internal review, TD Ready challenge grants. Canada.
- 2020 Reviewer and committee member, NASA ROSBio 3D culture space biology, NASA, USA.
- 2020 Reviewer, Dutch Research Council (NWO), Research along Routes by Consortia (NOW-ORC) grant. Netherlands.
- 2020 Reviewer, Swiss 3R Competence Centre, Research project grant. Switzerland.
- 2020 Committee member, Medicine by Design Healthy and Inclusive Labs Committee. University of Toronto.
- 2019 Reviewer and committee member, Cardiovascular System C (CSC), Canadian Institutes of Health Research, Fall Project Grant competition.
- 2019 Reviewer, Heart Institute Initiative, University of Ottawa Heart Institute, ORACLE Innovation hub funding opportunity. Mar-Apr 2019.
- 2019 Reviewer and committee member, NIH study section: Myocardial Ischemia and Metabolism (MIM), February 21-22. USA.
- 2018 Reviewer and committee member, Cell Biology & Mechanisms of Disease (CBM), Canadian Institutes of Health Research, Fall Project Grant competition.
- 2018 Reviewer and committee member (invited), Sub-Committee IVa, Heart and Stroke Foundation, Grant-in-Aid 2019/20 competition.
- 2018 Reviewer, European Research Council, ERC Synergy Grants – 2018. Panel: SyG2LSb. Europe.
- 2018-2021 Member, College of Reviewers, Canadian Institutes of Health Research.
- 2018 Reviewer and committee member, Cardiovascular System C (CSC), Canadian Institutes of Health Research, Spring Project Grant competition.
- 2018 Reviewer, Wellcome Trust/Department of Biotechnology India Alliance, Early Career Fellowship. UK-India partnership.
- 2018 External reviewer, Natural Sciences and Engineering Research Council of Canada, Discovery Grant.
- 2017 Reviewer and committee member, Canadian Institutes of Health Research, Fall Project Grant competition, Cardiovascular System C (CSC) committee.
- 2012, 2017 Reviewer, Toronto General Hospital Research Institute internal grant review program.
- 2014 Reviewer, Medical Research Council, UK.
- 2014 Reviewer, Ottawa Heart Institute internal grant review program.

Manuscript Peer Review Activities (*ad hoc*)

Circulation, Nature Cardiovascular Diseases, Nature Materials, JCI insight, Nature Protocols, Small, Nature Communications, NPJ Regenerative Medicine, Stem Cell Reports, Cell Systems, Biomaterials, Advanced Drug Delivery Reviews, Acta Biomaterialia, ACS Applied Materials & Interfaces, Biomaterials Science, Scientific Reports, PNAS, Stem Cells and Development, Journal of Stem Cell Research & Therapy, Tissue Engineering, Stem Cells, Lab-on-a-chip, International Journal of Nanomedicine, FASEB Journal, Biomaterials Science, British Journal of Applied Science & Technology, Congenital Heart Disease, Biomedical Materials, Life Sciences, Biomatter, Journal of Visualized Experiments (JoVE), Experimental gerontology, Cellular Physiology and Biochemistry.

2021-2022 Editorial board member, AJP- Heart and Circulatory Physiology.

2021-present Review editor, Frontier in Drug Discovery – Cardiovascular and Hematologic Drugs.

2020-present Review editor, Frontiers in Physiology – Vascular Physiology.

Professional Association Memberships (national and international)

Biomedical Engineering Society (BMES)

International Society for Applied Cardiovascular Biology (ISACB)

Tissue engineering and regenerative medicine international society (TERMIS)

Society for Biological Engineering (SBE)
Microcirculatory society (MCS)
North American Vascular Biology Organization (NAVBO)
European Society of Biomechanics (ESB)

Service

2023-2026 Member, Meritorious Awards Committee, North American Vascular Biology Organization (NAVBO)

2023-present Member, Scientific Advisory Committee, Rare diseases models and mechanisms network, Canada.

2023-2024 Member, Scientific Organizing Committee, Vascular Biology 2024, North American Vascular Biology Organization (NAVBO).

2023 Member, Scientific Program Committee for the 2023 Till and McCulloch Meetings (TMM2023)

2022-2025 Member, Programs and Meetings Committee for the Microcirculatory Society.

2022 Session chair, “Sex aspects of microvascular diseases”, International Society for Applied Cardiovascular Biology (ISACB), Memphis, USA

2022 Conference co-chair, Aiche Bioengineering and Translational Medicine. Boston, USA.

2022-2026 Member, Banting & Best Diabetes Center (BBDC) Training & Research Excellence Committee. Toronto, CA.

2022 Member, Program committee for the 18th meeting of the International Society for Applied Cardiovascular Biology (ISACB), Memphis, USA.

2021 Abstract reviewer, International Society for Applied Cardiovascular Biology (ISACB) annual meeting.

2022 Panelist, “Early career café” workshop at the XXIV International Society for Heart Research (ISHR) World Congress, Berlin, Germany.

2022 Co-chair of the travel award committee for the Tissue Engineering and Regenerative Medicine International Society (TERMIS-AM) 2022

2022-present Chair of the Women’s Leadership Committee, International Society for Applied Cardiovascular Biology (ISACB).

2022 Abstract reviewer, Tissue Engineering and Regenerative Medicine International Society (TERMIS-AM) 2022

2022 Abstract reviewer, International Society for Stem Cell Reserch (ISSCR) annual meeting

2021 Member of the Planning Committee for the 6th Bioengineering & Translational Medicine Conference of the Society for Biological Engineering (SBE).

2021 Member of the Planning Committee for the 6th annual Medicine by Design symposium.

2021-2023 Councillor, The Microcirculatory Society.

2021 Session chair, A Scientific Symposium: In celebration of the 100th anniversary of the University of Toronto’s discovery of insulin. Session: All About Insulin: From the Gene to Stem Cells to the Receptor. Virtual.

2021 Abstract reviewer, International Society for Stem Cell Reserch (ISSCR) annual meeting

2020 Session chair, Keystone Symposia Charting a New Course for Heart Failure: From Discovery to Data. Workshop: In vitro Models of Heart Failure

2020 Session co-chair, Biomedical Engineering Society (BMES) annual meeting, Stem Cell Engineering synchronous and asynchronous sessions. Virtual, originally USA-based.

2020 Moderator, International Symposium for applied cardiovascular biology (ISACB) virtual roundtable: Career navigation in a time of COVID-19.

2020 Track co-chair, Biomedical Engineering Society (BMES) annual meeting, Stem Cell and Bioengineering track.
San Diego, USA.

2020 Member, Medicine by Design working group 'Grand Questions'.

2019-2020 Member of the Planning Committee for the 5th Annual Heart Failure Symposium by the Ted Rogers Centre for Heart Research and Heart & Stroke/Richard Lewar Centre of Excellence in Cardiovascular Research.

2019 Moderator, AHA Basic Cardiovascular Sciences 2019 - Integrative Approaches to Complex Cardiovascular Diseases. Concurrent Session 1A: HFpEF: Unraveling the Gordian Knot.

2019 Abstract reviewer and Session co-chair, Biomedical Engineering Society (BMES) annual meeting.

2019 Session co-chair, Experimental Biology 2019. Poster Session. Orlando, USA.

2018-2020 Member of the Scientific Advisory Committee of the Sharon Francis Institute for Regenerative Medicine (SFIRM). Canada.

2018-2022 Member of the Communications' Committee of the North American Vascular Biology Organization (NAVBO).

2018-2021 Member of the Communications' Committee of the Microcirculatory Society (MCS).

2018-2022 Member of the Women's Leadership Committee of the International Society for Applied Cardiovascular Biology.

2018 Session chair, Heart Failure Update 2018. Cardiac Signaling and Metabolism session. Toronto, Canada.

2018 Let's talk science, youth outreach science fair. UofT.

2017 Session chair, International Symposium on the Future of Regenerative Medicine. Advances in tissue engineering and regenerative medicine session. Tuscania, Italy.

2017 Session Chair, 2017 Keystone Symposia on Engineered Cells and Tissues as Platforms for Discovery and Therapy. The Next Wave: Cells as Building Blocks session. Boston, USA.

2017 Abstract reviewer, Biomedical Engineering Society (BMES) annual meeting

2016-2018 Member of the Planning Committee for the 2018 World Congress of Microcirculation (500-600 attendees)

2017 Member of the Scientific Committee for the 2017 Medicine by Design Symposium (350 attendees)

2016 Abstract reviewer, Biomedical Engineering Society (BMES) annual meeting

2016 Poster judge, IBBME Graduate Student Research Day, University of Toronto, CA

2015-2016 Member of the Planning Committee for Ted Rogers Centre for Heart Research 1st Scientific Symposium

2014 Session chair, Biomedical Engineering Society (BMES) annual meeting, Angiogenesis Platform Session

2014 Abstract reviewer, Biomedical Engineering Society (BMES) annual meeting

2013 Session chair, Biomedical Engineering Society (BMES) annual meeting, Microvascular and Lymphatic System Session

2013 Abstract reviewer, Biomedical Engineering Society (BMES) annual meeting

2013 Poster judge, Heart and Stroke/Richard Lewar Centre of Excellence, Toronto, CA

2013 Poster judge, LMP Graduate Student Research Day, University of Toronto, CA

- 2011 Poster judge, IBBME Graduate Student Research Day, University of Toronto, CA
- 2010 Poster judge, Research!Louisville, University of Louisville, USA
- 2007 Poster judge, High School Student Research Day (Outreach), University of Alabama at Birmingham, CA

Invited presentations

Oral Presentations

- 1 Gordon Conference on Advanced Cell and Tissue Biomanufacturing, session Moving from the Bench to Bedside: Lessons Learned and the Promise of Regenerative Medicine. Declined due to scheduling conflict with ISHR-NAS. (June 2023)
Newry, USA.
- 2 “Cell-based vascularization in cardiovascular diseases and diabetes” Vascular Medicine Institute at the University of Pittsburgh. (May 2023)
Pittsburgh, USA.
- 3 Keynote speaker. “The best path between A & B is not necessarily a straight line” Stem Cell Network Early Career Research Symposium, Montreal QC. (May 2023)
Montreal, CA.
- 5 “Cell-based vascularization in regenerative medicine”. University of Nottingham. (Mar 2023)
Nottingham, UK.
- 6 “Cardiac regeneration in a complex disease model of myocardial infarction in rats with type 2 diabetes”. TERMIS-EU (Mar 2023)
Manchester, UK.
- 7 “CardioVascular tissue engineering: from *in vitro* disease models to regenerative medicine strategies”. University of Ottawa Heart Institute Regenerative Medicine Research Day. (Mar 2023).
Ottawa, CA.
- 8 “Vascular regeneration in cardiovascular disease and diabetes”. Collaborative Specialization in Developmental Biology University of Toronto (Feb 2023)
Toronto, CA.
- 9 “Cardiovascular tissue engineering: from in vitro disease models to regenerative medicine strategies”. Ottawa Heart Institute (Mar 2023)
Ottawa, CA.
- 10 “Vascular regeneration in cardiovascular diseases and diabetes”. Harvard University and Boston Children’s Hospital. (Dec 2022)
Boston, USA.
- 11 “Cell-based vascularization in regenerative medicine”. Medicine by Design mini-symposium - From Single-Cells to Tissue: Complex Models of Human Disease. (Nov 2022)
Toronto, CA.
- 12 “Cell-based vascularization for cell transplantation and tissue regeneration”. Ajmera Transplant Center grand rounds (Oct 2022)
Toronto, CA.
- 13 “Cell-based vascular regeneration in diabetes”. International Vascular Biology Meeting (IVBM) 2022 (Oct 2022)
Oakland, USA.
- 14 Keynote speaker “Stem cells, diabetes and vascular regeneration”. Tissue engineering and regenerative medicine international society (TERMIS-AM); session: Engineering the vasculature for tissue regeneration (July 2022)
Toronto, CA.
- 15 “Cardiac disease modeling and drug testing”. 2022 International Society for Heart Research (ISHR) World Congress (Jun 2022)
Berlin, Germany.

- 16 “Multicellular living systems as fundamental tools in discovery and translation”. iPSZurich lecture series. Institute for Regenerative Medicine, University of Zurich. (Jun 2022)
Zurich, Switzerland.
- 17 “Cell-based vascularization in regenerative medicine: the next frontier”. 2022 Ted Rogers Translational Biology and Engineering Program PI talks. (Jun 2022)
Toronto-ON.
- 18 Keynote speaker. “Engineered multicellular living systems as fundamental tools in discovery and translation” The Gabriel L. Plaa Research Day in the Department of Pharmacology and Physiology at the University of Montreal. (May 2022)
- 19 “Engineering Microenvironments for Biological Discovery and Regeneration”. University of Washington, Center for Cardiovascular Biology. (Apr 2022)
Seattle, USA.
- 20 “Stem cells, diabetes and vascular regeneration” Banting and Best Diabetes Center Scientific day (May 2022)
Toronto, CA.
- 21 “Multicellular vascular systems as fundamental tools in discovery and regeneration” Lecture series “Vascular Networking” of the Berlin Center for Translational Vascular Biomedicine, Max Delbrück Center for Molecular Medicine, Charité Universitätsmedizin Berlin and Berlin institute of Health at Charité. (Feb 2022)
Berlin (virtual), Germany.
- 22 “The vasculature in Islet regeneration for the treatment of Type 1 diabetes”. Diabetes Canada 2021 professional conference. (Nov 2021)
Virtual.
- 23 “Microvessels support engraftment and function of human islets and hESC-derived pancreatic progenitors in diabetes models”. 3rd International Symposium on the Future of Regenerative Medicine. (Sep 2021)
Virtual.
- 24 “Microvessels support engraftment and function of human pancreatic progenitors in diabetic animal models” IPITA (Oct 2021)
Virtual.
- 25 “Cell-based revascularization in regenerative medicine: the next frontier”. The McEwen Institute Stem cell rounds (Jul 2021).
Toronto, CA.
- 26 “Vascular regeneration in cell-based therapies”. Ted Rogers Center for Heart Research. (May 2021)
Toronto, CA.
- 24 “Terapias celulares com células pluripotentes: passado, presente e futuro”. Universidade Veiga de Almeida (May 2021).
Brazil.
- 25 “Cardiac Revascularization Post Myocardial Infarction Enhances Remuscularization and Improves Function”. Experimental Biology 2020 (Apr 2021)
San Diego, USA.
- 26 Effective vascularization supports engraftment and function of hESC-derived pancreatic progenitors and human islets in diabetes models, International Symposium for applied cardiovascular biology (ISACB) 17th Biennial Meeting.
(Mar 2021)
- 27 Vascular regeneration in cell-based therapies. Department of physiology, University of Toronto.
(Feb 2021)
- 28 “*Therapeutic vascularization for tissue regeneration*”. University of Ottawa Heart Institute.
(Feb 2021)
- 29 “It’s Not Just Vessel Sprouting: Type I Diabetes has Compounding Effects in Vessel Formation”. Diabetic foot Europe (Dec 2020).

- 30 Breaking Barriers in Cardiovascular Regeneration, Innovations in Cardiovascular Sciences and Therapeutics during a Pandemic e-symposium. (Sep 2020).
- 31 Regenerating the cardiac vasculature. Microvascular exchange, Fall seminar series. The microcirculatory Society. (Sep 2020).
- 32 “Therapeutic vascularization for tissue regeneration”. North American Vascular Biology Organization (NAVBO) webinar series (July 2020).
- 33 “Effective vascularization for regenerative medicine”. SunnyBrook MicroVascular Group Meeting. (Apr 2020)
- 34 “Developing a human cardiac fibrosis-on-a-chip model”. Global Fibrosis Network Special seminar - Biomaterials/Tissue Engineering and Fibrosis. (Feb 2020)
Toronto, CA.
- 35 “Ready-made Microvessels Integrate into The Infarcted Coronary Vasculature Promoting Perfusion, Remuscularization and Function”. TERMIS-AM 2019 (Dec 2019)
Orlando, USA.
- 36 “Type I Diabetes Delays Perfusion and Engraftment Of 3D Constructs By Impinging On Angiogenesis; Which Can Be Rescued By Hepatocyte Growth Factor Supplementation”. Young Innovators II session at the Biomedical Engineering Society (BMES). (Oct 2019)
Philadelphia, USA.
- 37 “Engineering Microenvironments for Biological Discovery and Cardiovascular Regeneration”
Robarts Research Institute, Western University
London, CA. (Jul 2019)
- 38 “Ready-made microvessels robustly integrate into the infarcted coronary vasculature promoting graft perfusion, enhancing rat cardiac remuscularization and function”.
International Symposium for applied cardiovascular biology and vascular tissue engineering (ISACB+ISVTE 2019), Bench to Bedside: From Basic Research to Clinical Translation session. (Jun 2019)
Zurich, Switzerland.
- 39 OIRM Annual Stem Cell and Regenerative Medicine Symposium, Breakout session on functional characterization. (May 2019)
Toronto, CA.
- 40 “Organ-on-a-chip: 3D modeling of disease”, 22nd annual LMP Research Conference. (Apr 2019)
Toronto, CA.
- 41 “Therapeutic vascularization for tissue regeneration” Experimental Biology 2019, Session: Emerging Topics: Adaptation of Microvessels and Lymphatics. (Apr 2019)
Orlando, USA.
- 42 “Modelling cardiac fibrosis in heart-on-a chip devices.” Induced pluripotent stem cells: from disease models to mini-organs. (Jan 2019)
Tours, France.
- 43 “Methodology Basics: Stem Cell Biology and the Microcirculation” workshop at the 11th World Congress of Microcirculation. (Sep 2018)
Vancouver, CA.
- 44 “Human fibrosis-induced heart failure-on-a-chip recapitulates disease hallmarks and can serve as a platform for drug screening.” 2nd International Symposium on the Future of Regenerative Medicine. (Oct 2018)
Ostuni, Italy.
- 45 “Bioengineering Approaches Towards Vascular Regeneration.” Gordon Research Conference on Lipoprotein Metabolism. (Jun 2018)
Waterville, USA.
- 46 “Human cardiac fibrosis-on-a-chip.” World Congress Biomechanics. (July 2018)
Dublin, Ireland.
- 47 “Neovascularization and cardiac regeneration”. Heart Failure Update, Canadian Heart Failure Society & Ted Rogers Center for Heart Research (May 2018)
Toronto, CA.

- 48 Keynote speaker. "Towards organ-on-a chip and disease modeling", 9th International Conference on Microtechnologies in Medicine and Biology (March 2018). Monterrey, USA.
- 49 "Diabetes impairs vessel arterio-venous specification in engineered vascular tissues in a perivascular cell-dependent manner", Biomedical Engineering Society 2017 Annual Meeting. (Oct 2017) Phoenix, USA.
- 50 "Isolated microvessels significantly improve iPSC-derived cardiomyocyte survival and heart function in a pre-clinical model of MI", International Symposium on the Future of Regenerative Medicine. (Oct 2017) Tuscania, Italy.
- 51 "Closing the Gap Between Biological Discovery and Cardiovascular Regeneration". Centre for Regenerative Medicine [Barcelona]. (Oct 2017) Barcelona, Spain.
- 52 "Engineering microenvironments for biological discovery and cardiovascular regeneration". McMaster University. (Sep 2017) Hamilton, CA.
- 53 "Cardiovascular tissue engineering and regeneration: building complexity", Medicine by Design Organoid Discussion Group. University of Toronto. (Aug 2017). Toronto, Canada.
- 54 "Biomechanical forces as cues for differential regulation of perivascular cell recruitment in arteries vs. veins" at the 23rd Congress of the European Society of Biomechanics. (Jul 2017) Seville, Spain.
- 55 "Engineering vascularization" at the Centre Medical Universitaire, University of Geneva. (Jun 2017) Geneva, Switzerland.
- 56 "Engineering Microenvironments for Biological Discovery and Cardiovascular Regeneration" at the Centre for Heart Lung Innovation, St. Paul's Hospital, University of British Columbia. (Jun 2017) Vancouver, CA.
- 57 "Engineering Microenvironments for Biological Discovery and Cardiovascular Regeneration" at the Translational Biology and Engineering Program (TBEP) Research Seminar Series. (Apr 2017) Toronto, CA.
- 58 "Diabetes impairs arterio-venous specification in engineered vascular tissues in a perivascular cell recruitment-dependent manner" at the 2017 Keystone Symposia on Engineered Cells and Tissues as Platforms for Discovery and Therapy. (Mar 2017) Boston, USA.
- 60 "Arterial-venous identity specification in pre-vascularized engineered implants requires perivascular cell recruitment and is impaired in diabetes" at the 10th World Congress for Microcirculation. (Sep 2015) Kyoto, Japan.
- 60 "Stem cell-derived cardiomyocyte maturation by biomimetic topographical and electrical cues". Muscle Health Awareness Day" (MHAD) at the Muscle Health Research Centre (MHRC). York University. (May 2015) Toronto, CA.
- 61 "Tissue engineering strategies for myocardial regeneration". University of Toronto. (Jul 2014) Toronto, CA.
- 62 "Tissue engineering strategies for cardiovascular regeneration". 4th Lugano Stem Cell Meeting-Cardiac Regeneration. (Jul 2014) Lugano, Switzerland.
- 63 "Overcoming the main obstacles in cardiac regeneration by re-establishing a functional vasculature and replacing lost cardiomyocytes". University of Western Ontario. (May 2014) London, CA.
- 64 "Stem cell-derived cardiomyocyte maturation by biomimetic topographical and electrical cues". Ontario on a chip meeting. (May 2014)

- Toronto, CA.
- 65 "Regenerating the cardiovascular system". Queen's University. (Dec 2014)
Kingston, CA.
- 66 "Regenerating the cardiovascular system". Victor Chang Cardiac Research Institute. (Nov 2014)
Sydney, Australia.
- 67 "Tissue engineering strategies for cardiovascular regeneration". University of Louisville. (Nov 2014)
Louisville, USA.
- 68 "Stem cell-derived cardiomyocyte maturation by biomimetic topographical and electrical cues".
Vascular biology 2013, Vascular matrix biology and bioengineering track. (Oct 2013)
Cape Cod, USA.
- 69 "Stem cell-derived cardiomyocyte maturation by biomimetic topographical and electrical cues".
Toronto General Research Institute. (Oct 2013)
Toronto, CA.
- 70 "Biological Wire: a new platform for maturation of human pluripotent stem cell-derived
cardiomyocytes in vitro. 2013 Annual Meeting of the Biomedical Engineering Society (BMES).
(Sep 2013)
Seattle, USA.
- 71 "Stem cell-derived cardiomyocyte maturation by biomimetic topographical and electrical cues".
Cardiovascular Innovation Institute, University of Louisville/Jewish Hospital. (Aug 2013)
Louisville, USA.
- 72 "Differentiation of functional cardiomyocytes from human induced pluripotent stem cells". Human
Induced Pluripotent Stem Cell Workshop. Centre for commercialization of regenerative medicine.
(Jun 2011)
Toronto, CA.
- 73 "Angiogenic potential of isolated microvessel fragments is independent of their tissue of origin"
Experimental Biology. (Apr 2009)
New Orleans, USA.
- 74 "Syndecan-4 core protein binds fibronectin HepII domain and modulates focal adhesion
formation". 5th International Conference on Proteoglycans. (Sep 2007)
Mangaratiba, Brazil.
- 75 "Syndecan-4 core protein binds fibronectin HepII domain and modulates focal adhesion
formation". Post-Doctoral Oral Presentation Competition. University of Alabama at Birmingham.
(Jan 2008)
Birmingham, USA.
- 76 "Cell adhesion to thrombospondin-1 and fibronectin: role of syndecan-4". 2006 series Chá
científico Hugo Caire de Castro Faria, Universidade do Estado do Rio de Janeiro. (Oct 2006)
Rio de Janeiro, Brazil.

Contributed talks (by mentees/co-authors. * marks corresponding authors)

- 1 Khan ST, Ahuja N, Cleaver O, **Nunes SS***. "Deciphering Pancreatic Endothelial Cell
Transcriptomic Profile for Regenerative Medicine Applications", 2023 Vascular Cell
Biology - Gordon Research Seminar. (2023)
Ventura, USA
- 2 Khan ST, Ahuja N, Cleaver O, Nunes SS*. "Deciphering pancreatic endothelial cell
transcriptomic profile for regenerative medicine applications", Medicine by Design - Cycle
2 Investigators Mini Symposium (2023)
- 3 Soon K, Wu R, Fish J and **Nunes SS***. "Development and Characterization of Vessel
Arteriovenous Malformations (AVM)-on-a-Chip", CRAFT research symposium (2021).
Toronto, ON

- 4 Aghazadeh Y, Poon F, Sarangi F, Sun X, Hatkar R, Brian Cox, **Nunes SS***, Nostro C*. "Vascular regeneration approaches for type 1 diabetes cell replacement therapy", Insulin 100 Scientific Symposium, (2021)
Toronto, ON (Virtual).
- 5 Khan ST, Nunes SS*. "Deciphering the genetic signature of pancreatic endothelial cells for regenerative medicine application", Centre for Research and Applications in Fluidic Technologies (CRAFT) Virtual Symposium (2021)
- 6 Khan ST, Agazadeh Y, Nostro C, Nunes SS*. "Elucidating the role of pancreatic islet endothelial cells in glucose homeostasis by uncovering its transcriptomic signature" – Toronto Biomedical Engineering Conference (ToBE) (2021)
- 7 Khan ST, Agazadeh Y, Nostro C, Nunes SS*. "Elucidating the role of pancreatic islet endothelial cells in glucose homeostasis by uncovering its transcriptomic signature" – Cardiovascular Sciences Collaborative Specialization (CSCS) Student Research Day (2021)
- 8 Aghazadeh Y, Poon F, Sarangi F, Sun X, Hatkar R, Nunes SS*, Nostro C*. "Vascular regeneration approaches for type 1 diabetes cell replacement therapy", International Society for Applied Cardiovascular Biology (ISACB), (2020)
Virtual.
- 9 Kenneth Williams and **Nunes SS***. Skipping a Beat: Development of a 3D in vitro model of human cardiac arrhythmia. Laboratory Medicine and Pathobiology Conference. (2019)
Toronto, Canada.
- 10 Aghazadeh, Y, **Nunes SS*** and Nostro, C*. "Strategies to improve hPSC-derived pancreatic cells engraftment and functionality". 24th EASD-HAGEDORN OXFORD WORKSHOP. (2019)
Oxford, UK.
- 11 Aghazadeh, Y, **Nunes SS*** and Nostro, C*. "Novel vascularization strategies to improve stem cell derived pancreatic progenitor engraftment for type 1 diabetes treatment". Islet and pancreas transplantation association, IPITA (2019)
Lyon, France.
- 12 Aghazadeh, Y, Nostro, C and **Nunes SS***. "Using pre-vascularization strategies for stem cell therapy for the treatment of type 1 diabetes". World Congress of Microcirculation. (2018)
Vancouver, Canada
- 13 Sun X and **Nunes SS***. "Improvement of iPSC-derived cardiomyocyte survival and integration into a pre-clinical model of MI using isolated microvessels significantly recovers cardiac function". 2017 Till & McCulloch Meeting. (2017)
Mont Tremblant, Canada.
- 14 Boyd NL*, **Nunes SS**, Maijub JG, Ramakrishnan VM, Hoying JB and Williams SK. "Vascularizing the Engineered Tissue". Materials Research Society (MRS) Spring Meeting. (2013)
San Francisco, USA.
- 15 Krishnan L, **Nunes SS**, Chang CC, Williams SK and Hoying JB*. "Potentiation of neovascularization across tissue interfaces by stromal vascular fraction cells is VEGF dependent". International Federation of Adipose Therapeutics and Science (IFATS). (2011)
Miami, USA.

Interviews and Media Features

Beats podcast and YouTube interview (2023):

<https://beatsresearchradio.buzzsprout.com/591520/12532961-episode-151-beats-research-radio-regenerative-medicine-to-treat-cardiovascular-diseases-and-diabetes-dr-sara-vasconcelos>
<https://www.youtube.com/watch?v=G52vbYFCwMI>

CTV news, live interview (2022):

<https://www.ctvnews.ca/video?clipId=2567153>

Globe and Mail, print interview (2022):

https://www.theglobeandmail.com/canada/article-heart-cancer-and-diabetes-projects-among-winners-of-funding-boost-for/?utm_medium=twitter&utm_source=dlvr.it

The scientist podcast, recorded interview (2021):

<https://www.podbean.com/ew/pb-gak2j-f8b622>

Pre-lights article on the cardiac fibrosis-on-a-chip model (2019):

<https://prelights.biologists.com/highlights/human-cardiac-fibrosis-on-a-chip-model-recapitulates-disease-hallmarks-and-can-serve-as-a-platform-for-drug-screening/>

Publications (publication name: Sara S. Nunes)

Published Journal Articles (* marks corresponding authors)

1. Khan ST, Ahuja N, Taib S, Vohra S, Cleaver O and **Nunes SS**. “Uncovering the transcriptomic heterogeneity of pancreatic endothelial cells using integrative and comparative single cell gene expression analysis”. *BioRxiv* 2023. Under review at EMBO Journal.
2. Mourad O, Mastikhina O, Khan S, Hatkar R, Williams K, and **Nunes SS***. “Anti-senescence therapy improves function in a human model of cardiac fibrosis-on-a-chip”. *ACS Materials Au*. (2023).
3. Mourad O, Yee R, Li M and **Nunes SS***. “Modelling heart diseases on a chip: advantages and future opportunities” *Circulation Research*. Accepted (2023).
4. Soon K, Li M, Wu R, Zhou A, Khosraviani N, Turner WD, Wythe J, Fish J and **Nunes SS***. “A human model of arteriovenous malformation (AVM)-on-a-chip reproduces key disease hallmarks and enables drug testing in perfused human vessel networks” *Biomaterials*. (2022).
5. Sun X, Aghazadeh Y and **Nunes SS*** “Isolation of ready-made microvessels and its applications in effective *in vivo* vascularization and in angiogenic studies *in vitro*”. *Nature Protocols*. (2022).
6. Pieters VM, Rjaibi ST, Singh K, Li NT, Khan ST, Nunes SS, Cin AD, Gilbert PM and McGuigan A. “A three-dimensional human adipocyte model of fatty acid-induced obesity”. *Biofabrication*. In press. (2022)
7. Loai S, Sun X, Husain M, Laflamme MA, Yeger H, **Nunes SS**, Cheng HL*. “Microvascular Dysfunction in Skeletal Muscle Precedes Myocardial Vascular Changes in Diabetic Cardiomyopathy: Sex-Dependent Differences”. *Frontiers in Cardiovascular Medicine, section Cardiovascular Metabolism*. (2022)
8. Aghazadeh Y, Sarangi F, Poon F, Nkennor B, **Nunes SS**, Nostro MC*. “GP2+ pancreatic progenitors generate functional beta cells and do not form teratoma *in vivo*”. *Stem Cell Reports* (2022) (17) 1-15.
9. Tracy EP, Stielberg V, Rowe G, Benson D, **Nunes SS**, Hoying JB, Murfee WL, LeBlanc AJ*. “State of the Field: Cellular Therapy Approaches in Microvascular Regeneration”. *APJ-Heart and Circulatory Physiology*. Accepted. (2022)
10. Aghazadeh Y, Poon F, Sarangi F, Wong F, Khan S, Sun X, Hatkar R, Cox B, **Nunes SS***, Nostro MC* “Microvessels support engraftment and functionality of human islets and hESC-derived pancreatic progenitors in diabetes models”. *Cell Stem Cell*. (2021). 28 (11) 1936-1949.e8. **Featured on the cover of Cell Stem Cell Nov 2021 issue. Selected for the 2021 issue of “Best of Cell Stem Cell”.**
11. Aghazadeh Y, Khan S, Soon K and **Nunes SS***. “Cell-based therapies for vascular regeneration”. *Pharmacology and Therapeutics* – invited review. (2021).
12. Sun X and Nunes SS*. Development and characterization of a type 2 diabetes model in immunocompromised rats for application in xenotransplantation studies”. *bioRxiv*. (2021)
13. Funakoshi S, Fernandes I, Mastikhina O, Wilkingson D, Tran T, Dhahri W, Mazine A, Yang D, Burnett B, Lee J, Protze S, Bader G, **Nunes SS**, Laflamme M and Keller G*. (2021). “Generation of mature compact ventricular cardiomyocytes from human pluripotent stem cells”. *Nature Communications*. 12 (1) 1-23.

14. Williams K, Liang T, Massé S, Hatkar R, Keller G, Nanthakumar K, **Nunes SS***. "A three-dimensional model of human cardiac arrhythmias". *Acta Biomaterialia*. (2021). 21 (S1742-7061) 00145-8. <https://doi.org/10.1016/j.actbio.2021.03.004>.
15. Soon K, Mourad O, and **Nunes SS***. "Engineered cardiac microtissues: The state-of-the-(he)art". *Stem Cells* – invited review. (2021). 39 (8) 1008-1016. DOI: 10.1002/stem.3376.
16. Sun X, Wu J, Romagnuolo R, Gagliardi M, Keller G, Laflamme M, Li R, **Nunes SS***. "Transplanted microvessels improve pluripotent stem cell-derived cardiomyocyte engraftment and cardiac function after infarction in rats". *Science Translational Medicine*. (2020) 12 (562). *Recommended in Faculty Opinions (previously F1000Prime)*.
17. Sun X, Nkenor B, Mastikhina O, Soon K, **Nunes SS***. "Endothelium-mediated contributions to fibrosis". *Seminars in Cell and Developmental Biology*. 2020.
18. Mastikhina O, Moon B-U, Williams K, Gustafson G, Hatkar R, Sun X, Koo M, Lam A, Simmons C, Sun Y, Fish J, Young E, and **Nunes SS***. "Human cardiac fibrosis- on-a-chip model recapitulates disease hallmarks and can serve as a platform for drug testing". *Biomaterials*. March 2020.
19. Altalhi W, Hatkar R, Hoying JB, Aghazadeh Y and **Nunes SS***. "Type I diabetes delays perfusion and engraftment of 3D constructs by impinging on angiogenesis; which can be rescued by hepatocyte growth factor supplementation". Invited submission to the **2019 Young Innovators Special Issue of the Cellular and Molecular Bioengineering journal**. doi.org/10.1007/s12195-019-00574-3. Sep 2019.
20. Sun X and **Nunes SS***. "Maturation of human stem cell-derived cardiomyocytes in biowires using electrical stimulation". *J Vis Exp*. Issue 123. May 2017.
21. Altalhi A, Sun X, Sivak J, Husain M and **Nunes SS***. Diabetes impairs arterio-venous specification in engineered vascular tissues in a perivascular cell recruitment-dependent manner". *Biomaterials*., 119, 23-32. Mar 2017
22. Sun X and **Nunes SS***. "Bioengineering Approaches to Mature Human Pluripotent Stem Cell-derived Cardiomyocytes". *Front Cell Dev Biol*, section Stem Cell Research. Mar 2017. 5:19.
23. **Nunes SS***, Miklas JC, Feric N, Pahnke A, Li M, Coles J, Gagliardi M, Keller G and Radisic M*. Human stem cell-derived cardiac model of chronic drug exposure". *ACS Biomaterials Science & Engineering*. 2017. 3, 9, 1911-1921.
24. Zhang B, Montgomery M, Chamberlain D, Wells LA, **Nunes SS**, Nanthakumar K, Sefton MV and Radisic M*. "AngioChip: a biodegradable scaffold with built-in vasculature for organ-on-a-chip engineering and direct surgical anastomosis". *Nature Materials*. Mar 2016. 1-10.
25. Sun, X and **Nunes SS***. Biowire platform for maturation of human pluripotent stem cell-derived cardiomyocytes. *Methods*. May 2016. (101)21-26.
26. Sun, X, Altalhi W and **Nunes SS***. "Vascularization strategies of engineered tissues and their application in cardiac regeneration". *Advanced Drug Delivery Reviews* special issue: Tissue engineering of the heart: from in vitro models to regenerative solutions (Invited). Jan 2016. 96:183-194.
27. Sun, X and **Nunes SS***. "Overview of hydrogel-based strategies for application in cardiac tissue regeneration". *Biomedical Materials*. June 2015. 10 (3): 034005.
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30. Miklas JW, **Nunes SS**, Sofla A and Radisic M*. "Bioreactor for modulation of cardiac microtissue phenotype by combined mechanical and electrical stimulation". *Biofabrication*. Special issue: Micro and nano materials for tissue engineering. 2014, 6(2):024113.
31. Krishnan L, Chang CC, **Nunes SS**, Clayton L, Williams SK, Weiss JA and Hoying JB*. "Manipulating the microvasculature and its microenvironment" *Critical Reviews in Biomedical Engineering*. Dec 2013. 2(41):91-123.

32. Nunes SS*, Miklas JW and Radisic M. "Maturation of stem cell-derived human heart tissue by mimicking fetal heart rate". Editorial, *Future Cardiology*. Nov 2013. 9(6):751-754.
33. Nunes SS, Miklas JW, Liu J, Aschar-Sobi R, Xiao Y, Zhang B, Jiang J, Masse S, Gagliardi M, Hsieh A, Thanavadiran N, Laflamme MA, Nanthakumar K, Gross G, Backx P, Keller G and Radisic M*. "Biowire: a platform for maturation of human pluripotent stem cell derived cardiomyocytes". *Nature Methods*. Aug 2013. 10:781-787.
34. Miklas JM, Nunes SS, Radisic M*. "Engineering cardiac tissues from pluripotent stem cells for drug screening and studies of cell maturation". Invited review by the *Israel Journal of Chemistry – New Biomaterials* honoring the 2013 Wolf Prize to Robert Langer. Oct 2013. (53) 680-694.
35. Nunes SS, Maijub JG, Krishnan L, Ramakrishnan VM, Clayton LR, Williams SK, Hoying, JB and Boyd NL*. "Generation of a functional liver tissue mimic using adipose stromal vascular fraction cell-derived vasculatures". *Scientific Reports*. Jul 2013. 3:2141.
36. Thavandiran N, Nunes SS, Xiao Y and Radisic M*. "Topological and electrical control of cardiac differentiation and assembly" *Stem Cell Research & Therapy*. Feb 2013. 14;4(1):14.
37. Martin C, Sofla A, Zhang B, Nunes SS and Radisic M*. "Fusible core molding for fabrication of branched three-dimensional perfusable microvessels for vascular tissue engineering". *International Journal of Artificial Organs*. 2013, 36(3):159-65.
38. Boyd NL*, Nunes SS, Krishnan L, Jokinen JD, Bugg AR and Hoying JB. "Dissecting the role of human embryonic stem cell derived mesenchymal cells in human umbilical vein endothelial cell network stabilization in 3-dimensional environments". *Tissue Engineering part A*. 2013, 19(1-2):211-23.
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40. Chiu LLY, Iyer RK, Reis LA, Nunes SS and Radisic M*. "Cardiac tissue engineering: current state and perspectives". *Frontiers in Cardiovascular Research*. 2012. (17):1533-50.
41. Nunes SS*, Rekapally HR, Chang CC and Hoying JB. "Vessel arterial-venous plasticity in adult neovascularization". *PLoS ONE*. 2011. 6(11):e27332.
42. Nunes SS*, Song H, Chiang CK and Radisic M*. "Stem cell-based cardiac tissue engineering". *J. of Cardiovascular Translational Research*, 2011. 4(5):592-602.
43. Boyd NL*, Nunes SS, Jokinen JD, Krishnan L, Chen Y, Smith KH, Stice SL, Hoying JB. "Microvascular mural cell functionality of human embryonic stem cell-derived mesenchymal cells". *Tissue Engineering part A*. 2011, (17) 1537-1548.
44. Alves TR, Fonseca AC, Nunes SS, Silva AO, Dubois L, Faria J, Kahn SA, Viana NB, Marcondes J, Legrand C, Moura Neto V*, Morandi V*. "Tenascin-C in the extracellular matrix promotes the selection of highly proliferative and tubulogenesis-defective endothelial cells". *Experimental Cell Research*, 2011. 10;317 (15):2073-85.
45. Nunes SS, Krishnan L, Gerard CS, Dale JR, Maddie MA, Benton RL, Hoying JB*. "Angiogenic potential of microvessel fragments is independent of tissue of origin and can be influenced by the cellular composition of the implants". *Microcirculation*. 2010, 17(7) 557-567.
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47. Chang CC, Nunes SS, Sibole SC, Krishnan L, Williams SK, Hoying, JB*. "Angiogenesis in a microvascular construct for transplantation depends on the method of chamber circulation". *Tissue Engineering Part A*. 2010, 16(3): 795-805.
48. Nunes SS, Outeiro-Bernstein MA, Juliano L, Vardiero F, Nader HB, Woods A, Legrand C, Morandi V*. "Syndecan-4 contributes to endothelial tubulogenesis through interactions with two motifs inside the pro-angiogenic N-terminal domain of thrombospondin-1". *J Cell Physiology* 2008, 214(3): 828-37.
49. Outeiro-Bernstein MAF, Nunes SS, Andrade ACM, Alves TR, Legrand C, Morandi V*. "A recombinant NH₂-terminal heparin-binding domain of the adhesive glycoprotein thrombospondin-

1, promotes endothelial tube formation and cell survival: a possible role for syndecan-4 proteoglycan". *Matrix Biology*. 2002, 21: 311-324.

Book Chapters

1. Mourad O, Nkenkor B and **Nunes SS***. "Compounding Effects of Diabetes in Vessel Formation in Microvessel fragment-based Engineered Constructs" in **Mechanobiology of diabetes and its complications: from cells to systems**. 375-387. 2021.
2. Miklas JW, **Nunes SS***, Zhang B and Radisic M. "Design and fabrication of biological wires" in **Cardiac Tissue Engineering Methods and Protocols**. Volume 1181. 2014, 157-165. 2014.

Intellectual Property and Licenses

1. Provisional patent US63/147,744. Sara S. Nunes de Vasconcelos and Kenneth Williams, February 9, 2021: "A 3D human model of complex cardiac arrhythmias".
2. Invention Disclosure on November 7th, 2018 Vasconcelos S, Williams K: "3D human model of cardiac arrhythmia and its applications".
3. Invention Disclosure disclosed November 9th, 2018 Vasconcelos S, Moon BU, Mastikhina O and Young E.: "3D model of human cardiac fibrosis in vitro and its applications".
4. Miklas J, Radisic M, Thavandiran N, Vasconcelos S, Xiao Y, Zhang B, Zhao Y: "Compositions and methods for making and using three-dimensional tissue systems" PCT Utility Patent Filed on October 28th, 2014 US61/897,276 (licensed to Valo Health).
5. Invention Disclosure 10002844, November 27, 2014 Miklas J, Radisic M, Thavandiran N, Vasconcelos S, Xiao Y, Zhang B, Zhao Y: "Compositions and methods for making and using three-dimensional tissue systems".
6. Provisional Patent Application # 61/897, 276 filed with USPTO on October 30th, 2013 Miklas J, Radisic M, Thavandiran N, Vasconcelos S, Xiao Y, Zhang B, Zhao Y "Platform for Cultivation of Tissue".
7. Invention Disclosure RIS #2355 disclosed October 24th, 2011 Radisic M, Vasconcelos S, Xiao Y: "Self-Assembling Cardiac Tissue Around Template (Biowire™)".

Conference Presentations/Abstracts (publication name: Sara S. Nunes)

Selected. Underline marks presenting author. * marks corresponding authors.

1. Khan ST, Ahuja N, Taib S, Vohra S, Cleaver O, Nunes SS*. "Elucidating the role of pancreatic islet endothelial cells in glucose homeostasis and diabetes by uncovering its transcriptomic signature", Banting and Best Diabetes Center (BBDC) Scientific Day (2023). Toronto, ON. Canada. **2nd place poster prize**.
2. Khan ST, Ahuja N, Cleaver O, Nunes SS*. "Deciphering Pancreatic Endothelial Cell Transcriptomic Profile for Regenerative Medicine Applications", 2023 Vascular Cell Biology - Gordon Research Seminar. Jan 2023, Ventura, CA, USA. **Selected for oral presentation**.
3. Khan ST, Ahuja N, Cleaver O, Nunes SS*. "Deciphering Pancreatic Endothelial Cell Transcriptomic Profile for Regenerative Medicine Applications", MbD Cycle 2 Investigators Mini-Symposium, Jan 2023, Toronto, ON, Canada (Virtual). **Oral presentation**.
4. Mourad O, Nunes SS. "Modeling diastolic dysfunction in a heart-on-a-chip platform", AiChE 7th Annual Bioengineering and Translational Medicine Conference, Dec 2022, Boston, USA. **3rd place poster prize**.
5. Mourad O, Nunes SS. "Modeling diastolic dysfunction in a heart-on-a-chip platform", TERMIS-AM 2022 Conference, July 2022, Toronto, Canada.
6. Khan ST, Ahuja N, Cleaver O, Nunes SS*. "Elucidating the transcriptomic profile of pancreatic endothelial cells", 7th annual Medicine By Design Symposium, Dec 2022, Toronto, ON.
7. Aghazadeh Y, Poon F, Sarangi F, Sun X, Hatkar R, Brian Cox, Nunes SS*, Nostro C*. "Vascular regeneration approaches for type 1 diabetes cell replacement therapy", Insulin 100 Scientific Symposium, Apr 2021, Toronto, ON (Virtual). **Selected for oral presentation**.

8. Aghazadeh Y, Poon F, Sarangi F, Sun X, Hatkar R, Nunes SS*, Nostro C*. "Vascular regeneration approaches for type 1 diabetes cell replacement therapy", International Society for Applied Cardiovascular Biology (ISACB), Dec 2020, Virtual, Invited oral presentation.
9. Aghazadeh Y, Poon F, Sarangi S, Sun X, Hatkar R, Nunes SS*, Nostro C*, "Vascular regeneration approaches for type 1 diabetes cell replacement therapy", Juvenile Diabetes Research Foundation (JDRF) Post-doctoral meeting, Dec 2020, Virtual. **Invited oral presentation.**
10. Aghazadeh Y, Poon F, Sarangi F, Sun X, Hatkar R, Nunes SS*, Nostro C*. "Microvessels support engraftment and functionality of hESC-derived pancreatic progenitors and human islets in diabetes models". Medicine by Design, Toronto, ON (Virtual), Dec 2020, **Selected for podium presentation.**
11. Aghazadeh Y, Poon F, Sarangi F, Sun X, Hatkar R, Nunes SS*, Nostro C*. "Microvessels support engraftment and functionality of hESC-derived pancreatic progenitors and human islets in diabetes models", North American Vascular Biology meeting, Virtual, October 2020, Podium presentation.
12. Aghazadeh Y, Poon F, Sarangi F, Sun X, Hatkar R, Nunes SS*, Nostro C*. "Microvessels support engraftment and functionality of hESC-derived pancreatic progenitors and human islets in diabetes models", Till and McCullough meeting, Oct 2020. Vancouver, BC (Virtual). **Selected for podium presentation.**
13. Sun X and Nunes SS*. "Ready-made microvessels integrate into the infarcted coronary vasculature promoting perfusion, remuscularization and function". TERMIS-AM 2019. Dec 2019. Orlando, USA. **Top 50 highest scored abstract.**
14. Williams K and Nunes SS*. Skipping a Beat: Development of a 3D in vitro model of human cardiac arrhythmia. Cardiovascular Sciences Collaborative Specialization Conference. Apr 2019. Toronto, CA. **Selected for oral presentation.**
15. Mastikhina O, Moon B, Williams K, Gustafson D, Hatkar R, Sun X, Koo M, Lam A, Simmons C, Sun Y, Fish J, Young E, **Nunes SS***. "On-a-chip heart failure through fibrosis". 3rd Annual Medicine by Design Symposium. Dec 2018. Toronto, CA.
16. Sun X, Wu J, Li R and **Nunes SS***. Isolated microvessels promote human induced pluripotent stem cell-derived cardiomyocyte survival and cardiac functional recovery in post-infarcted rat hearts. TGHRI Research Day. Oct 2018. Toronto, CA.
17. Mastikhina O, Moon B, Williams K, Gustafson D, Hatkar R, Sun X, Koo M, Lam A, Simmons C, Sun Y, Fish J, Young E, **Nunes SS***. "On-a-chip heart failure through fibrosis". TGHRI Research Day. Oct 2018. Toronto, CA.
18. Aghazadeh Y, Nostro C and **Nunes SS***. "Using pre-vascularization strategies in cell therapy for the treatment of type 1 diabetes". World Congress for Microcirculation. Sep 2018. Vancouver, CA. **Oral and poster presentations.**
19. Sun X, Wu J, Li R and **Nunes SS***. Isolated microvessels promote human induced pluripotent stem cell-derived cardiomyocyte survival and cardiac functional recovery in infarcted rat hearts. 11th World Congress for Microcirculation. Sep 2018. Vancouver, CA.
20. Aghazadeh Y, **Nunes SS*** and Nostro CM. "hES Directed Differentiation to Pancreatic Lineages". Toronto Stem Cell symposium. Sep 2018. Toronto, CA. **Selected for oral presentation.**
21. Williams K and **Nunes SS***. "Development of a phenotypically accurate human in vitro model of diabetic cardiomyopathy". Canadian Heart Failure Society: Heart Failure Update 2018. May 2018. Toronto. CA.
22. Williams K and **Nunes SS***. "Development of a phenotypically accurate human in vitro model of diabetic cardiomyopathy". 21st Annual Laboratory Medicine & Pathobiology Conference 2018. April 2018. Toronto. CA. **Placed 3rd in poster competition.**
23. Aghazadeh Y, Nostro C and **Nunes SS***. "Using pre-vascularization strategies in cell therapy for the treatment of type 1 diabetes". Toronto General Hospital Research Institute. Oct 2017. Toronto, CA. **Best poster award.**

24. Aghazadeh Y; Nostro C and **Nunes SS***. "Using pre-vascularization strategies in cell therapy for the treatment of type 1 diabetes". Medicine by Design Annual Symposium. Dec 2017. Toronto, CA. **Placed 3^d in poster competition.**
25. Sun X and **Nunes SS***. "Improvement of iPSC-derived cardiomyocyte survival and integration into a pre-clinical model of MI using isolated microvessels significantly recovers cardiac function". 2017 Till & McCulloch Meeting. Nov 2017. Mont Tremblant. CA. **Selected for oral presentation**
26. Moon B, Sun X, Young EWK, **Nunes SS***. "Heart-on-a-chip: a microfluidic platform for probing cardiac tissue function". 12th Ontario-on-a-chip symposium. May 2017. Toronto, CA. **1st place winner of the OOAC video competition**
27. Altalhi W, Husain M and **Nunes SS***. "Diabetes impairs arterio-venous specification in engineered vascular tissues in a perivascular cell recruitment-dependent manner" Keystone Symposia on Engineered Cells and Tissues as Platforms for Discovery and Therapy, March 2017. Boston, USA
28. Altalhi W, Sun X, Sivak J, Husain M, and **Nunes SS***. "Vessel arterio-venous specification in engineered vascular tissues requires perivascular cell recruitment and is impaired in diabetes" 19th International Vascular Biology Meeting, October 2016. Boston, USA.
29. Aghazadeh Y, Nostro MC and **Nunes SS***. "Using vascularized devices in stem cell therapy for type 1 diabetes" Toronto General Research Institute Scientific Day, October 2016. Toronto, Canada.
30. Zhang B, Montgomery M, Chamberlain D, Wells LA, **Nunes SS**, Nanthakumar K, Sefton MV and Radisic M*. "AngioChip: a biodegradable scaffold with built-in vasculature for organ-on-a-chip engineering and direct surgical anastomosis" International Conference on Stem Cell Engineering, October 2016. Toronto, Canada.
31. Altalhi W, Husain M and **Nunes SS***. "Specification of Arterio-Venous Identity in Engineered Constructs Requires Mural Cell Recruitment". Laboratory Medicine and Pathobiology Graduate Research Day, April 2016. Toronto, Canada.
32. Altalhi W, Husain M and **Nunes SS***. "Microvascular Specification of Arterio-Venous Identity in Engineered Constructs Requires Mural Cell Recruitment". Michael J. Sole Annual Scientific Day, Heart & Stroke/Richard Lewar center Research Day, April 2016. Toronto, Canada.
33. Sun, X. and **Nunes, SS***. "Innovative prevascularization model for improving transplantation of human stem cell derived cardiomyocytes". Michael J. Sole Annual Scientific Day, Heart & Stroke Richard Lewar Centre of Excellence, Apr 2016. Toronto, Canada.
34. Zhang B, Montgomery M, Chamberlain D, Wells LA, **Nunes SS**, Nanthakumar K, Sefton MV and Radisic M*. "AngioChip: a biodegradable scaffold with built-in vasculature for organ-on-a-chip engineering and direct surgical anastomosis". 10th World Conference on Biomaterials, May 2016. Montreal, Canada.
35. Altalhi W, Sun, X, Husain M and **Nunes SS***. "Specification of Arterio-Venous Identity in Engineered Constructs Requires Mural Cell Recruitment". Biomedical Engineering Society (BMES), Oct 2015. Tampa, Florida.
36. Altalhi W, Sun, X, Husain M and **Nunes SS***. "Arterial-venous identity specification in pre-vascularized engineered implants requires perivascular cell recruitment and is impaired in diabetes". 10th World Congress for Microcirculation, Sep 2015. Kyoto, Japan.
37. Sun X and **Nunes SS***. "Innovative prevascularization model for improving transplantation of human embryonic stem cell-derived cardiomyocytes". 6th annual muscle health awareness day (MHAD6); York University, May 2015. Toronto, Canada.
38. Altalhi W, Husain M and **Nunes SS***. "Diabetes Impairs Vessel Arterio-Venous Specification in Pre-vascularized Engineered Implants that Support the Transplantation and Robust Survival of Stem Cell-Derived Cardiomyocytes". 6th Annual Muscle Health Awareness Day (MHAD5). May 2015. Toronto, Canada.
39. Altalhi W, Husain M and **Nunes SS***. "Arterial and Venous Specification during Angiogenesis in health and diabetes". 18th Annual LMP Graduate Research Conference. 2015. Toronto, Canada.
40. Altalhi W, Husain M and **Nunes SS***. "Arterial and Venous Specification during Angiogenesis in health and diabetes". Heart & Stroke/Richard Lewar Centre of Excellence in Cardiovascular Research Annual Scientific Day, 2015. Toronto, Canada.

41. **Nunes SS***. "Tissue engineering strategies for cardiovascular regeneration". CIHR New Principal Investigators 13, Nov 2014. Montreal, Canada.
42. Altalhi W, Husain M and **Nunes SS***. "Perivascular Cells Modulate Arterial and Venous Identity Acquisition in Growing Microvessels". Heart & Stroke/Richard Lewar Centre of Excellence in Cardiovascular Research Annual Scientific Day, 2014. Toronto, Canada.
43. Altalhi W, Husain M and **Nunes SS***. "Arterial and Venous Specification in Adult in Health and Disease" LMP Graduate research day, 2014. Toronto, Canada.
44. Altalhi W, Husain M and **Nunes SS***. "Arterial and Venous Specification in Adult in Health and Disease" Toronto General Research Institute Scientific Day, 2014. Toronto, Canada.
45. **Nunes SS**, Miklas JW, Liu J, Aschar-Sobi R, Xiao Y, Zhang B, Jiang J, Masse S, Nanthakumar K, Gross G, Backx P, Keller G and Radisic M*. "Stem cell-derived cardiomyocyte maturation by biomimetic topographical and electrical cues". North American Vascular Biology Organization and Vascular Matrix and Bioengineering joint meeting. 2013. Cape Cod, USA. **Selected for oral presentation.**
46. **Nunes SS**, Miklas JW, Liu J, Aschar-Sobi R, Xiao Y, Zhang B, Jiang J, Masse S, Nanthakumar K, Gross G, Backx P, Keller G and Radisic M*. "Biowire: a platform for maturation of human pluripotent stem cell derived cardiomyocytes". Biomedical Engineering Society (BMES), 2013. **Selected for oral presentation** – cardiovascular engineering track.
47. Zhang B, Montgomery M, Pahnke A, **Nunes SS** and Radisic M*. "Microfluidic tissue: a biodegradable scaffold with built-in vasculature for cardiac tissue vascularization and surgical vascular anastomosis. 7th International conference on miniaturized chemical and biochemical analysis systems (μ TAS) 2013.
48. Altalhi W, Husain M and **Nunes SS***. "Arterial and Venous specification during adult angiogenesis". Heart & Stroke/Richard Lewar Centre of Excellence in Cardiovascular Research Annual Scientific Day, 2013.
49. Boyd NL*, **Nunes SS**, Maijub JG, Ramakrishnan VM, Hoying JB and Williams SK. "Vascularizing the Engineered Tissue". Materials Research Society (MRS) Spring Meeting, 2013. **Selected for oral presentation.**
50. Maijub JG, Ramakrishnan VM, **Nunes SS**, Dale J, Bugg AR, Morris ME, Hoying JB, Williams SK and Boyd NL*. "Development of an Engineered Implantable Vascularized Cell-Based LDL Apheresis Device". Biomedical Engineering Society (BMES), 2012.
51. Miklas JW, **Nunes SS**, Xiao Y, Gagliardi M, Keller G and Radisic M*. "An in vitro model of hypertrophic engineered heart tissue". Ontario Stem Cell Network, Till & McCulloch Meeting, 2012.
52. **Nunes SS**, Miklas JW, Xiao Y, Gagliardi M, Keller G and Radisic M*. "Electrical field stimulation promotes maturation of human embryonic stem cell-derived cardiomyocytes". Ontario Stem Cell Network Till & McCulloch Meetings. 2012.
53. **Nunes SS**, Dang L, Gagliardi M, Keller G and Radisic M*. "Use of human embryonic stem cell-derived cardiomyocytes as an in vitro model of human cardiovascular hypertrophy". Personalized Medicine in the Genomics Era, 2011.
54. Krishnan L, **Nunes SS**, Chang CC, Williams SK and Hoying JB*. "Potentiation of neovascularization across tissue interfaces by stromal vascular fraction cells is VEGF dependent". International Federation of Adipose Therapeutics and Science (IFATS), 2011. **Selected for oral presentation.**
55. Krishnan L, **Nunes SS**, Williams SK and Hoying JB*. "Quantification of interactions of adipose derived stromal cells and the microvasculature". International Federation of Adipose Therapeutics and Science (IFATS), 2011.
56. Krishnan L, **Nunes SS**, Chang CC, Clayton L, Williams SK and Hoying JB*. "Role of adipose derived stromal vascular fraction cells in tissue transplantation" Plastic Surgery Research Council's 56th Annual Meeting, 2011.

57. **Nunes SS**, Shumate KE, Williams SK and Hoying JB*. "Differential vascularizing potential of different preparations of adipose-derived cells" International Federation of Adipose Therapeutics and Science (IFATS), 2010, Dallas.
58. **Nunes SS**, Rekapally HR, Chang CC and Hoying JB*. "Vessel arterial/venous plasticity during adult neovascularization". 9th World Congress for Microcirculation, 2010, Paris, FR.
59. **Boyd NL***, **Nunes SS**, Krishnan L, Chang CC, Jokinen JD and Hoying JB. "hESC derived mesenchymal cells functionally stabilize HUVEC networks in 3D collagen I constructs". Biomedical Engineering Society Annual Meeting, 2010, USA.
60. **Boyd NL***, **Nunes SS**, Cheng CC, Jokinen JD and Hoying JB. "hESC derived mesenchymal cell perivascular association with endothelium and rat fat isolated microvessels is TGFbeta/Alk5 dependent". International Society for Stem Cell Research, 2010, USA
61. **Nunes SS**, Maddie MA, Benton RL, Hoying JB*. "Angiogenic potential of isolated microvessel fragments is independent of their tissue of origin". Experimental Biology, 2009, USA. **Selected for oral presentation.**
62. **Boyd NL***, **Nunes SS**, Hoying JB, Stice, ST. " α -Smooth muscle actin differential regulation in human embryonic stem cell derived mesenchymal cells". Experimental Biology, 2009, USA.
63. **Alves TR**, Amaral J, Viana N, **Nunes SS**, Takya C, Marcondes J, Moura Neto V*, Morandi, V*. "Modulation of endothelial apoptosis and differentiation in the context of human gliomas: role of tumor extracellular matrix". Brazilian Society of Cell Biology, 2008, Brazil.
64. **Nunes SS**, Klass, C, Morandi, V, Woods, A*. "Syndecan-4 core protein binds fibronectin HepII domain and modulates focal adhesion formation". 5th International Conference on Proteoglycans, 2007, Brazil. **Selected for oral presentation.**
65. **Nunes SS**, Outeiro-Bernstein MAF, Juliano L, Nader HB, Woods A, Legrand C, Morandi V*. "Syndecan-4 contributes to endothelial tubulogenesis through interactions with two motifs inside the pro-angiogenic N-terminal domain of TSP-1". XXIst Congress of the International Society on Thrombosis and Haemostasis, 2007, Geneva, Switzerland. **Selected for oral presentation.**
66. **Nunes SS**, Outeiro-Bernstein MAF, Juliano L, Nader HB, Woods A, Legrand C, Morandi V*. "Syndecan-4 contributes to endothelial tubulogenesis and survival through interactions with two motifs inside de pro-angiogenic N-terminal domain of thrombospondin-1". IV International Symposium on extracellular matrix, 2006, Brazil.
67. **Nunes SS**, Klass CM, Woods A*. "Syndecan-4 proteoglycan binding to fibronectin". 2nd National Meeting of the American Society for Matrix Biology, 2004, USA.
68. **Nunes SS**, Nader HB, Juliano L, Legrand C, Morandi V*. "Identification of syndecan-4 proteoglycan as a receptor for heparin-binding motifs of the N-terminal domain of human Thrombospondin-1". II International Symposium on Extracellular Matrix, 2002, Brazil.
69. **Outeiro MAF**, **Nunes SS**, Andrade ACM, Legrand Y, Legrand C, Morandi V*. "Preliminary Characterization of the Cellular Mechanisms Involved in the in vitro Angiogenesis by the Heparin-Binding Domain of Human Thrombospondin-1". XXIX Meeting of the Brazilian Society of Biochemistry and Molecular Biology, 2000, Brazil.
70. **Outeiro MAF**, **Nunes SS**, Nader HB, Legrand C, Morandi V*. "Dual effect of thrombospondin-1 on the modulation of in vitro angiogenesis: regulation of matrix metalloproteinases (MMP-2) and cell junction components. International Symposium on Extracellular Matrix, 2000, Brazil.
71. **Morandi V***, Andrade ACM, Outeiro MAF, Alves TR, Legrand C, **Nunes SS**. "Induction of in vitro angiogenesis and modulation of endothelial cell viability by a N-terminal fragment of thrombospondin-1". American Society for Cell Biology, 1998, USA.