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**Template:** CIHR Academic

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## **Dr. Jason Fish**

Correspondence language: English

Sex: Male

Date of Birth: 3/12

Canadian Residency Status: Canadian Citizen

Country of Citizenship: Canada

## **Contact Information**

The primary information is denoted by (\*)

### **Address**

#### Courier (\*)

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MaRS Building  
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Canada

#### Primary Affiliation

Toronto General Hospital Research Institute  
University Health Network  
Princess Margaret Cancer Research Tower  
MaRS Centre  
101 College Street, Suite 3-308  
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Corporate <https://www.uhnresearch.ca/researcher/jason-fish>



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## Dr. Jason Fish

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### Language Skills

Language	Read	Write	Speak	Understand
English	Yes	Yes	Yes	Yes
French	No	No	No	No

### User Profile

Disciplines Trained In: Cell Biology, Molecular Biology

Research Disciplines: Cardiology, Molecular Biology

Areas of Research: Cardiovascular Diseases

Fields of Application: Pathogenesis and Treatment of Diseases

Research Specialization Keywords: angiogenesis, atherosclerosis, biomarker, cardiotoxicity, endothelial biology, gene expression, heart failure, inflammation, microRNA, vascular disease

### Degrees

- 2001/9 - 2006/9      Doctorate, PhD, Medical Biophysics, University of Toronto  
Degree Status: Completed  
Supervisors: Philip A. Marsden
- 1997/9 - 2001/4      Bachelor's, Honours Bachelor of Science, Biology and Chemistry, Wilfrid Laurier University  
Degree Status: Completed

### Recognitions

- 2024/5 - 2024/5      Institute of Medical Science Faculty Recognition Award for Strong Mentorship (Canadian dollar)  
University of Toronto  
Distinction
- 2023/6      Award for Undergraduate Teaching (Canadian dollar)  
Department of Laboratory Medicine & Pathobiology, University of Toronto  
Distinction
- 2022/5      Teaching Excellence in Graduate Education (nominated)  
Department of Laboratory Medicine & Pathobiology, University of Toronto  
Distinction

2022/5	CIHR-ICRH/CCS Mid-Career Lecturer Award in Cardiovascular Sciences (nominated) (Canadian dollar) CIHR Institute of Circulatory and Respiratory Health Prize / Award
2022/4	Lab of the Month North American Vascular Biology Organization Distinction
2022/2	CIHR-ICRH/CSATVB Mid-Career Excellence Award in Blood and Blood Vessel Research (Nominated) (Canadian dollar) CIHR Institute of Circulatory and Respiratory Health Prize / Award
2021/5 - 2021/9	Outstanding Reviewer, Fall 2020 and Spring 2021 Project Grant Competitions Canadian Institutes of Health Research Distinction
2018/6	Richard Hegele Award for Excellence in Research and Innovation, Department of Laboratory Medicine & Pathobiology, University of Toronto - 1,000 (Canadian dollar) University of Toronto Prize / Award
2015/10	Young Investigator Award - Basic Science - 1,000 Canadian Cardiovascular Society Prize / Award
2014/10	Springer Junior Investigator Award - 750 (United States dollar) North American Vascular Biology Organization Prize / Award
2014/5	Dr. Subash C. Verma Young Investigator Award - 1,500 Heart and Stroke Richard Lewar Centre of Excellence in Cardiovascular Research Prize / Award
2013/9 - 2023/8	Tier 2 Canada Research Chair in Vascular Cell and Molecular Biology - 1,000,000 Canadian Institutes of Health Research Prize / Award
2012/7 - 2012/7	New Investigator Award (Declined) Canadian Institutes of Health Research Prize / Award
2012/7 - 2013/8	New Investigator Award - 60,000 Heart and Stroke Foundation of Canada Prize / Award
2012/4 - 2017/3	Early Researcher Award - 150,000 Ontario Ministry of Research and Innovation Prize / Award

## Employment

2016/11	Senior Scientist Toronto General Hospital Research Institute, Toronto General Hospital Research Institute, University Health Network
2016/7	Associate Professor Laboratory Medicine and Pathobiology, University of Toronto, University of Toronto

2010/7 - 2016/10	Scientist Toronto General Hospital Research Institute, Toronto General Hospital Research Institute, University Health Network
2010/7 - 2016/6	Assistant Professor Department of Laboratory Medicine and Pathobiology, Faculty of Medicine, University of Toronto
2006/10 - 2010/6	Postdoctoral Fellow Gladstone Institute of Cardiovascular Disease, J. David Gladstone Institutes, UCSF

## Affiliations

The primary affiliation is denoted by (\*)

2018/1	Member, Peter Munk Cardiac Centre, University Health Network
(*) 2016/11	Senior Scientist, Toronto General Hospital Research Institute, University Health Network
2016/9	Member, Banting and Best Diabetes Centre, University of Toronto
2016/7	Associate Professor, Laboratory Medicine and Pathobiology, University of Toronto
2014/9	Member, Canadian Society for Atherosclerosis, Thrombosis and Vascular Biology, CSATVB
2010/7	Member, Heart and Stroke Richard Lewar Centre for Excellence in Cardiovascular Disease, University of Toronto
2010/7	Member, Cardiovascular Sciences Collaborative Program, University of Toronto
2008/9	Member, North American Vascular Biology Organization, NAVBO
2015/9 - 2018/10	Member, CIHR, Canadian Vascular Network

## Research Funding History

### Awarded [n=12]

2024/4 - 2029/3 Principal Investigator	Maintenance of endothelial identity guards against atherosclerosis (\$594,788 to Fish lab) Collaborator : Michael D. Wilson; Myron Cybulsky; Yun Fang; Principal Investigator : Jason Fish; Kathryn Howe <b>Funding Sources:</b> 2024/4 - 2029/3 Canadian Institutes of Health Research (CIHR) Project Grant Total Funding - 1,189,575 (Canadian dollar) Funding Competitive?: Yes
2022/4 - 2027/3 Co-investigator	TRACE STUDY: An RCT using transexamic acid in the treatment of subdural hematoma (no funding to Fish lab) Co-investigator : Jason Fish (+20 others); Principal Investigator : Michael Cusimano <b>Funding Sources:</b> 2022/4 - 2027/3 Canadian Institutes of Health Research (CIHR) Project Grant Total Funding - 1,542,792 (Canadian dollar) Funding Competitive?: Yes

- 2021/10 - 2026/9  
Co-investigator
- Understanding cell-cell communication via extracellular vesicles to detect and treat vulnerable carotid atherosclerotic plaques (no funding to Fish lab)
- Co-investigator : Jason Fish;  
Principal Investigator : Kathryn Howe
- Funding Sources:**  
2021/10 - 2026/9 Canadian Institutes of Health Research (CIHR)  
Project Grant  
Total Funding - 707,626 (Canadian dollar)  
Funding Competitive?: Yes
- 2022/9 - 2026/8  
Co-investigator
- Using novel approaches for early recognition of TIA, heart failure and connections with vascular dementia (UNEARTH CVD) (\$450,000 total to the Billia, Connelly, Bolz and Fish labs)
- Co-investigator : Heather Ross; Jason Fish; Kim Connelly; Moira Kapral; Nadia Khan; Phyllis Billia; Richard Swartz; Shelagh Coutts; Steffen-Sebastian Bolz; Thalia Field;  
Principal Investigator : Doug Lee; Gustavo Saposnik
- Funding Sources:**  
2022/9 - 2026/8 Heart & Stroke Foundation and Brain Canada  
Heart-Brain IMPACT Award  
Total Funding - 2,900,000 (Canadian dollar)  
Funding Competitive?: Yes
- 2022/4 - 2026/3  
Principal Investigator
- Decoding the molecular and cellular mechanisms of KRAS-driven brain arteriovenous malformations (\$427,000 USD to Fish lab)
- Co-applicant : Patrick Devine; Sean Marrelli;  
Principal Investigator : Jason Fish; Joshua Wythe
- Funding Sources:**  
2022/4 - 2026/3 National institutes of health  
R01 Grant  
Total Funding - 2,592,355 (United States dollar)  
Funding Competitive?: Yes
- 2021/4 - 2026/3  
Principal Investigator
- Predicting risk and identifying mechanisms of cardiotoxicity in breast cancer patients: application of novel biomarkers (\$475,000 to Fish lab)
- Co-applicant : Eitan Amir; Filio Billia; Husam Abdel-Qadir;  
Principal Investigator : Jason Fish; Paaladinesh Thavendiranathan
- Funding Sources:**  
2021/4 - 2026/3 Canadian Institutes of Health Research (CIHR)  
Project Grant  
Total Funding - 826,200 (Canadian dollar)  
Funding Competitive?: Yes
- 2020/10 - 2025/9  
Principal Investigator
- Contribution of endothelial fatty acid metabolism to diabetes-associated heart failure with preserved ejection fraction
- Co-applicant : Filio Billia; Paul Delgado-Olguin; Sara Vasconcelos

**Funding Sources:**

2020/10 - 2025/9 Canadian Institutes of Health Research (CIHR)  
Project Grant  
Total Funding - 822,375 (Canadian dollar)  
Funding Competitive?: Yes

2022/9 - 2025/8 Confocal microscope for cardiovascular research (no funding to Fish lab)

Principal Investigator  
Principal Investigator : Clinton Robbins; Jason Fish; Myron Cybulsky

**Funding Sources:**

2022/9 - 2025/8 Canada Foundation for Innovation (CFI)  
John Evans Leadership Fund  
Total Funding - 1,028,562 (Canadian dollar)  
Funding Competitive?: Yes

2022/7 - 2025/6 Precision cardiovascular disease profiling and risk prediction in cancer survivors  
Co-investigator (PROGRESS): A prospective cohort study (no funding to Fish lab)

Co-investigator : Anup Gupta; Barbara Cifra; Catherine Sabiston; Daniel Santa Mina; Eitan Amir; Heather Edgell; Heather Ross; Husam Abdel-Qadir; Jason Fish; Jenna Gillen; John Floras; L. Lega; Leanna Lee; Luc Mertens; Paul Nathans; Yas Moayed;

Principal Applicant : Paaladinesh Thavendiranthan; Scott Adams

**Funding Sources:**

2022/7 - 2025/6 Heart and Stroke Foundation of Canada (HSFC)  
Grant in aid  
Total Funding - 207,900 (Canadian dollar)  
Funding Competitive?: Yes

2024/7 - 2025/6 Regeneration of the coronary microvasculature in diabetes-induced heart failure with  
Principal Investigator preserved ejection fraction

Co-applicant : Omar Khan;

Principal Investigator : Jason Fish

**Funding Sources:**

2024/7 - 2025/6 Drucker Family  
Innovation Grant  
Total Funding - 75,000 (Canadian dollar)  
Funding Competitive?: Yes

2023/3 - 2025/3 Bioengineered vascular composite allografts for tracheal revascularization (no funding to  
Collaborator Fish lab)

Collaborator : Cristina Amon;

Principal Investigator : Golnaz Karoubi; Siba Haykal

**Funding Sources:**

2023/3 - 2023/3 New Frontiers in Research Fund  
Exploration grant  
Total Funding - 250,000 (Canadian dollar)  
Funding Competitive?: Yes

2023/3 - 2025/3 Synthetic nucleic acid nanoparticles that leverage the bone marrow as an unprecedented  
Co-applicant therapeutic target for the on-demand control of chronic inflammation (no funding to Fish lab)

Co-applicant : Clinton Robbins; Jason Fish;

Principal Investigator : Omar Khan

**Funding Sources:**

2023/3 - 2025/3      New Frontiers in Research Fund  
Exploration grant  
Total Funding - 250,000 (Canadian dollar)  
Funding Competitive?: Yes

**Completed [n=13]**

2013/9 - 2023/8      Tier 2 Canada Research Chair in Vascular Cell and Molecular Biology

Principal Investigator

**Funding Sources:**

2013/9 - 2023/8      Canadian Institutes of Health Research (CIHR)  
Canada Research Chairs Program  
Total Funding - 1,000,000 (Canadian dollar)  
Funding Competitive?: Yes

2018/4 - 2023/3      Identifying therapeutic vulnerabilities of brain arteriovenous malformations

Co-investigator

Principal Investigator : Ivan Radovanovic; Joshua Wythe

**Funding Sources:**

2018/6 - 2023/5      Canadian Institutes of Health Research (CIHR)  
Project Grant  
Total Funding - 1,113,075 (Canadian dollar)  
Funding Competitive?: Yes

2019/9 - 2022/12      The endothelial-macrophage niche: a novel concept in the regulation of macrophage  
Principal Investigator abundance and phenotype in tissue homeostasis, injury and regeneration

Principal Investigator : Clinton Robbins; Jason Fish; Myron Cybulsky

**Funding Sources:**

2019/9 - 2022/12      CFREF-Medicine by Design  
Team Project Award  
Total Funding - 800,000 (Canadian dollar)  
Funding Competitive?: Yes

2018/9 - 2021/8      Defining the role of the RAS signalling pathway in brain arteriovenous malformations

Co-investigator

Principal Investigator : Ivan Radovanovic; Joshua Wythe

**Funding Sources:**

2018/9 - 2021/8      Department of Defense (USA)  
Congressionally Directed Medical Research Program  
Total Funding - 1,498,692 (United States dollar)  
Funding Competitive?: Yes

2020/7 - 2021/6      Making survivorship matter: novel blood biomarkers to identify cardiotoxicity risk in women  
Principal Investigator with HER2+ breast cancer

Co-applicant : Eitan Amir; Filio Billia; Husam Abdel-Qadir;

Principal Investigator : Jason Fish; Paaladinesh Thavendiranathan

**Funding Sources:**

2020/9 - 2021/8 Heart and Stroke Foundation of Canada (HSFC)  
Grant-in-aid  
Total Funding - 50,000 (Canadian dollar)  
Funding Competitive?: Yes

2016/7 - 2021/6 Functional and evolutionary dissection of vascular endothelial cell responses to  
Principal Investigator inflammation

Co-investigator : Jennifer Mitchell; Myron Cybulsky;

Principal Investigator : Jason Fish; Michael Wilson

**Funding Sources:**

2016/7 - 2021/6 Canadian Institutes of Health Research (CIHR)  
Project Grant  
Total Funding - 760,680 (Canadian dollar)  
Funding Competitive?: Yes

2016/7 - 2021/6 Contribution of circulating microRNAs to the etiology of vascular disease  
Principal Investigator

Co-investigator : Clinton Robbins; Katey Rayner; Michael Wilson

**Funding Sources:**

2016/7 - 2021/6 Canadian Institutes of Health Research (CIHR)  
Project Grant  
Total Funding - 684,229 (Canadian dollar)  
Funding Competitive?: Yes

2020/6 - 2021/5 Cardiovascular disease and outcomes among patients with SARS-Co-V-2 infection during  
Co-investigator hospital admission and post discharge: the COVID study

Co-investigator : Anna Woo; Bernd Wintersperger; Eddy Fan; Jason Fish; Patrick Lawler;  
Phyllis Billia; Slava Epelman; Wayne Gold;

Principal Investigator : Kathryn Howe; Paaladinesh Thavendiranathan

**Funding Sources:**

2020/6 - 2021/5 University Health Network  
Peter Munk Cardiac Centre Innovation Grant  
Total Funding - 249,300 (Canadian dollar)  
Funding Competitive?: Yes

2020/6 - 2021/5 Cardiovascular disease and outcomes among patients with SARS-Co-V-2 infection during  
Co-investigator hospital admission and post discharge: the COVID study

Co-applicant : Idan Roifman; Jason Fish; Kim Connelly; Michael Wilson;

Principal Investigator : Kate Hanneman; Kathryn Howe; Paaladinesh Thavendiranathan

**Funding Sources:**

2020/6 - 2021/5 Ted Rogers Centre for Heart Research  
Innovation Grant  
Total Funding - 150,000 (Canadian dollar)  
Funding Competitive?: Yes

2018/9 - 2020/8 Elucidating the pleiotropic cardioprotective mechanisms of empagliflozin on heart failure in  
Principal Investigator type 2 diabetes mellitus

Co-investigator : Sara Nunes de Vasconcelos



**Funding Sources:**

2018/9 - 2020/8 BBDC/HSRLCE  
 Pilot and Feasibility Grant - Cardiovascular and Diabetes  
 Total Funding - 97,420 (Canadian dollar)  
 Funding Competitive?: Yes

2019/5 - 2020/4 Functional biomarkers of microvascular dysfunction in diabetic cardiomyopathy  
 Principal Investigator

Co-applicant : David Cherney; Filio Billia; Rulan Parekh;

Principal Investigator : Jason Fish; Paul Delgado-Olguin

**Funding Sources:**

2019/5 - 2020/4 Ted Rogers Centre for Heart Research  
 Seed Grant  
 Total Funding - 100,000 (Canadian dollar)  
 Funding Competitive?: Yes

2018/9 - 2019/9 Novel mechanisms of heart failure: discovery to translation

Principal Investigator Principal Investigator : Filio Billia; Jason Fish

**Funding Sources:**

2018/9 - 2018/12 Canada Foundation for Innovation (CFI)  
 John R. Evans Leaders Fund/Ontario Research Fund  
 Total Funding - 666,050 (Canadian dollar)  
 Funding Competitive?: Yes

2016/7 - 2019/6 Deciphering and manipulating cell-specific regulatory networks to produce therapeutic  
 Principal Investigator designer cells

Co-investigator : Jennifer Mitchell; Markus Selzner; Michael Hoffman; Michael Wilson

**Funding Sources:**

2016/7 - 2019/6 Medicine By Design  
 Team Grant  
 Total Funding - 314,309 (Canadian dollar)  
 Funding Competitive?: Yes

**Student/Postdoctoral Supervision****Bachelor's [n=10]**

Principal Supervisor Keshini Srirulnathan (Co-op student) (Completed) , University of Toronto  
 Student Degree Start Date: 2022/5  
 Student Degree Received Date: 2022/12  
 Present Position: Undergraduate student

Principal Supervisor Papina Gnaneswaran (In Progress) , University of Toronto  
 Student Degree Start Date: 2020/9  
 Student Degree Expected Date: 2024/4  
 Present Position: Undergraduate student

Co-Supervisor Isabel de Verteuil (Completed) , McGill University  
 Student Degree Start Date: 2019/5  
 Student Degree Received Date: 2019/8  
 Present Position: Clinical Research Project Assistant

Principal Supervisor Crizza Ching (Completed) , University of Toronto  
 Student Degree Start Date: 2019/4  
 Student Degree Received Date: 2019/12  
 Present Position: Graduate student

Co-Supervisor Michael Dewar (Completed) , University of Toronto  
 Student Degree Start Date: 2017/9

Principal Supervisor Bobak Mahtash (Undergraduate Project Student) (Completed) , University of Toronto  
 Student Degree Start Date: 2017/9  
 Student Degree Received Date: 2018/4

Principal Supervisor Sabrina Cancelliere (Vic One Program) (Completed) , University of Toronto  
 Student Degree Start Date: 2017/1  
 Student Degree Received Date: 2017/5  
 Present Position: Medical School, University of Toronto

Principal Supervisor Melvin Khor (Undergraduate Project Student) (Completed) , University of Toronto  
 Student Degree Start Date: 2015/8  
 Student Degree Received Date: 2017/7  
 Present Position: Medical Student, Australia

Principal Supervisor Saul Feinstein (Undergraduate Volunteer) (Completed) , University of Toronto  
 Student Degree Start Date: 2011/9  
 Student Degree Received Date: 2012/8  
 Present Position: Research Associate, Occupational Cancer Research Centre, Cancer Care Ontario

Principal Supervisor Jennifer Wong (Undergraduate Volunteer) (Completed) , University of Toronto  
 Student Degree Start Date: 2011/3  
 Student Degree Received Date: 2013/12  
 Present Position: School of Pharmacy, USA

**Master's Thesis [n=6]**

Co-Supervisor Kristen Schulz (In Progress) , University of Toronto  
 Student Degree Start Date: 2023/9  
 Present Position: same

Principal Supervisor Suejean Park (In Progress) , University of Toronto  
 Student Degree Start Date: 2022/9  
 Present Position: same

Co-Supervisor Kunze (Mandy) Guo (In Progress) , University of Toronto  
 Student Degree Start Date: 2022/9  
 Present Position: Graduate student

Principal Supervisor Nickie Mak (Completed) , University of Toronto  
 Student Degree Start Date: 2021/9  
 Present Position: Medical School

Co-Supervisor Azad Alizada (Completed) , University of Toronto  
 Student Degree Start Date: 2014/9  
 Student Degree Received Date: 2017/7  
 Present Position: Postdoctoral Fellow, Francis Crick Institute, UK

Principal Supervisor Heng Wang (Completed) , University of Toronto  
 Student Degree Start Date: 2010/9  
 Student Degree Received Date: 2012/8  
 Present Position: Emergency Medicine Physician, Bon Secour Medical Centre,  
 Petersburg, VA, USA

### Doctorate [n=13]

Co-Supervisor Majed Abdul-Samad (In Progress) , University of Toronto  
 Student Degree Start Date: 2023/9  
 Present Position: same

Principal Supervisor Priya Mistry (In Progress) , University of Toronto  
 Student Degree Start Date: 2022/9  
 Present Position: same

Principal Supervisor Cori Lau (In Progress) , University of Toronto  
 Student Degree Start Date: 2022/9  
 Present Position: same

Co-Supervisor Kai Ellis (In Progress) , University of Toronto  
 Student Degree Start Date: 2022/1  
 Present Position: same

Principal Supervisor Negar Khosraviani (In Progress) , University of Toronto  
 Student Degree Start Date: 2021/5  
 Present Position: same

Co-Supervisor Steven Botts, MD (In Progress) , University of Toronto  
 Student Degree Start Date: 2020/9  
 Present Position: same

Principal Supervisor Crizza Ching (In Progress) , University of Toronto  
 Student Degree Start Date: 2020/1  
 Present Position: same

Principal Supervisor Ruilin Wu (In Progress) , University of Toronto  
 Student Degree Start Date: 2019/9  
 Present Position: same

Co-Supervisor Sneha Raju, MD (In Progress) , University of Toronto  
 Student Degree Start Date: 2019/6  
 Present Position: Same

Principal Supervisor Dakota Gustafson (Completed) , University of Toronto  
 Student Degree Start Date: 2016/9  
 Present Position: Medical student, Queens University

Principal Supervisor Shawn Veitch (Completed) , University of Toronto  
 Student Degree Start Date: 2015/9  
 Student Degree Received Date: 2021/7  
 Present Position: Medical Communications Writer, Sixsense Strategy Group

Principal Supervisor Nadiya Khyzha (Completed) , University of Toronto  
 Student Degree Start Date: 2013/9  
 Student Degree Received Date: 2020/2  
 Present Position: Postdoctoral Fellow: Fred Hutch Cancer Center, Seattle

Principal Supervisor Henry Cheng (Completed) , University of Toronto  
 Student Degree Start Date: 2010/9  
 Student Degree Received Date: 2017/9  
 Present Position: Postdoctoral Fellow, Harvard

### Post-doctorate [n=9]

Co-Supervisor Sarvatit Patel (In Progress) , University Health Network  
 Student Degree Start Date: 2022/9  
 Present Position: same

Principal Supervisor Kumaragurubaran Rathnakumar (Completed) , University Health Network  
 Student Degree Start Date: 2017/3  
 Student Degree Received Date: 2022/2  
 Present Position: Genomics Core Manager and Assistant Professor, Cincinnati Children's Hospital

Principal Supervisor Peter Distefano (Completed) , University Health Network  
 Student Degree Start Date: 2016/12  
 Student Degree Received Date: 2019/3  
 Present Position: Scientist II, Discovery Science, Dicerna Pharmaceuticals

Co-Supervisor Mark Chandy (Completed) , University Health Network  
 Student Degree Start Date: 2014/9  
 Student Degree Received Date: 2016/10  
 Present Position: Assistant Professor, University of Western Ontario, Scientist, Robarts Research Centre

Co-Supervisor Naomi De Silva (Completed) , University Health Network  
 Student Degree Start Date: 2014/7  
 Student Degree Received Date: 2016/5  
 Present Position: Evaluator, Centre for Biologics Evaluation, Health Canada

Principal Supervisor Lindsay Fitzpatrick (Visiting Scientist) (Completed) , University Health Network  
 Student Degree Start Date: 2014/4  
 Present Position: Assistant Professor, Queen's University

Principal Supervisor Makon-Sebastien Njock (Completed) , University Health Network  
 Student Degree Start Date: 2012/5  
 Student Degree Received Date: 2016/8  
 Present Position: Project Leader - Senior Researcher, University of Liege, Belgium

Principal Supervisor Lan Thi Hoang Dang (Completed) , University Health Network  
 Student Degree Start Date: 2012/4  
 Student Degree Received Date: 2015/4  
 Present Position: Senior Scientist, Alnylam Pharmaceuticals, Boston, MA

Principal Supervisor Nirojini Sivachandran (Completed) , University Health Network  
 Student Degree Start Date: 2012/1  
 Student Degree Received Date: 2013/4  
 Present Position: Physician, Division of Ophthalmology, McMaster University

### Research Associate [n=3]

Principal Supervisor Garry Yu (Research Technician II) (In Progress) , University Health Network  
 Student Degree Start Date: 2020/8  
 Present Position: Same

Principal Supervisor	Zhiqi Chen (Research Technician II) (Completed) , University Health Network Student Degree Start Date: 2015/7 Student Degree Received Date: 2020/8 Present Position: Retired
Principal Supervisor	Emilie Boudreau (Research Technician II) (In Progress) , University Health Network Student Degree Start Date: 2010/7 Present Position: Same

## Mentoring Activities

2021/2	Academic Mentor, Toronto General Hospital Research Institute Number of Mentorees: 1 Dr. Golnaz Karoubi, Assistant Scientist
2018/7	Academic Mentor, Peter Munk Cardiac Centre, Toronto General Hospital Research Institute Number of Mentorees: 1 Dr. Kathryn Howe, Surgeon-Scientist
2017/9 - 2018/4	Primary Supervisor, University Health Network, Toronto General Research Institute Number of Mentorees: 1 Bobak Mahtash, undergraduate research volunteer
2015/8 - 2017/7	Primary Supervisor, University Health Network, Toronto General Research Institute Number of Mentorees: 1 Melvin Khor, undergraduate research volunteer
2011/3 - 2013/12	Primary Supervisor, University Health Network, Toronto General Research Institute Number of Mentorees: 1 Jennifer Wong, undergraduate research volunteer.
2013/2 - 2013/2	Academic Advisor, University Health Network, Toronto General Research Institute Number of Mentorees: 4 Job shadowing - 4 students participated
2011/9 - 2012/8	Primary Supervisor, University Health Network, Toronto General Research Institute Number of Mentorees: 1 Saul Feinstein - undergraduate research volunteer
2012/2 - 2012/2	Academic Advisor, University Health Network, Toronto General Research Institute Number of Mentorees: 4 Job shadowing - 4 students participated

## Community and Volunteer Activities

2022/9	Departmental Representative, Cardiovascular Sciences Collaborative Program
2019/1	Co-chair, Laboratory Medicine and Pathobiology Speaker Series Advisory Board, University of Toronto
2018/1	Chair, Appointments Committee, Toronto General Hospital Research Institute
2017/9	Member, College of Reviewers, Canadian Institutes of Health Research
2017/9	Member, Executive Research Council, Toronto General Hospital Research Institute
2016/7	Member, Animal Care Committee, University Health Network

2010/7	Peer Reviewer, ATVB, Blood, Cell Reports, Circulation, Circ Research, Development, Nature Med, Nature Comm, etc.
2025/7 - 2026/6	Past-President, North American Vascular Biology Organization
2024/7 - 2025/6	President, North American Vascular Biology Organization
2023/7 - 2024/6	President-Elect, North American Vascular Biology Organization
2023/10 - 2023/10	Co-Chair Vascular Biology 2023 Meeting, North American Vascular Biology Organization
2020/9 - 2023/8	Council Member, ATVB Vascular Discovery Program Committee
2022/9 - 2022/12	Member - Planning Committee for TRCHR Heart Failure Symposium, Ted Rogers Centre for Heart Research
2022/1 - 2022/10	International Scientific Advisory Board, International Vascular Biology Meeting
2022/5 - 2022/5	Scientific Officer - Cardiovascular C Panel, Canadian Institutes of Health Research
2018/12 - 2022/5	Member, Scientific Review Committee Member, Project Grants, Cardiovascular System-C Panel, Canadian Institutes of Health Research
2020/10 - 2020/10	Co-Chair, Vascular Biology 2020 Meeting, North American Vascular Biology Organization
2020/5 - 2020/6	Reviewer - TRCHR 6th Annual Education Fund, Ted Rogers Centre for Heart Research
2016/9 - 2019/8	Councillor, North American Vascular Biology Organization

## Knowledge and Technology Translation

2015/1	Editorial Advisory Board, Arteriosclerosis, Thrombosis and Vascular Biology, Research Uptake Strategies Target Stakeholder: Academic Personnel Activity Description: Board member
2010/7	Expert Peer Reviewer, Research Uptake Strategies Target Stakeholder: Academic Personnel Activity Description: Ad hoc reviewer for: ATVB, Blood, Cell Reports, Circulation, Circulation Research, Nature Medicine, Developmental Cell, Development, Thrombosis and Haemostasis, Nature Communications, NEJM and others
2016/1 - 2022/9	Editorial Advisory Board, Frontiers in Cardiovascular Medicine, Research Uptake Strategies Target Stakeholder: Academic Personnel Activity Description: Board member
2016/7 - 2019/7	Council Member - North American Vascular Biology Organization, Community Engagement Target Stakeholder: Academic Personnel Activity Description: Executive Council Member

## International Collaboration Activities

2021/9	Co-Investigator, United States of America Collaboration with Dr. Elena Aikawa at Harvard Medical School utilizing proteomics to characterize extracellular vesicle cargo
2021/6	Co-investigator, Germany Collaboration with Dr. Lars Maegdefessel (University of Munich and Karolinska Institute). This is an ongoing collaboration assessing the mechanisms of aortic aneurysm.

2018/1

Co-investigator, United States of America

Collaboration with Dr. Joshua Wythe at the Baylor College of Medicine. This is an ongoing collaboration to understand the mechanisms of arteriovenous malformations.

## Presentations

1. (2024). Brain vascular malformations: from gene discovery to therapy. Sync: Advancement in Cardiovascular, Heart Disease & Stroke Research Conference, Health and Disease Student Association and Heart & Stroke Student Chapter, University of Toronto, Toronto, Canada  
Main Audience: Researcher
2. (2024). Modelling Sporadic Brain AVMs to Discover Mechanisms and Therapeutics. International Stroke Congress, United States of America  
Main Audience: Researcher  
Invited?: Yes
3. (2024). Somatic mutations and vascular malformations: Towards novel therapies. Department of Biomedical and Molecular Sciences, Queen's University, Kingston, Canada  
Main Audience: Researcher
4. (2024). Oncogenic signaling in the endothelium drives arteriovenous malformations. NAVBO Developmental Vascular Biology Workshop – 20th Anniversary, Virtual meeting, United States of America  
Main Audience: Researcher
5. (2024). Modelling sporadic brain AVMs to discover mechanisms and therapeutics. Hospital for Sick Children, Boston-London-Toronto Pediatric Neurovascular Meeting, Toronto, Canada  
Main Audience: Researcher
6. (2023). Involvement of KRAS in arteriovenous malformations. International Conference on Vascular Anomalies, Brussels, Belgium  
Main Audience: Knowledge User  
Invited?: Yes
7. (2023). Altered Endothelial Metabolism Drives Cardiac Dysfunction in Diabetes. Vascular Biology 2023, Annual meeting of the North American Vascular Biology Organization, United States of America  
Main Audience: Researcher  
Invited?: Yes
8. (2023). Cancer therapy-related cardiotoxicity: is the endothelium at the heart of the matter?. Cardiology Academic Rounds, Division of Cardiology, Peter Munk Cardiac Centre, Toronto, Canada  
Main Audience: Researcher
9. (2023). Endothelial metabolism at the heart of HFpEF. Ted Rogers Heart Failure Symposium, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
10. (2023). Somatic activating KRAS mutations in brain arteriovenous malformations. North American Vascular Biology Organization - IVBM Webinar, United States of America  
Main Audience: Researcher  
Invited?: Yes
11. (2023). Cancer therapy-related cardiotoxicity: is the endothelium at the heart of the matter?. Ted Rogers Centre for Heart Research – Laboratory Rounds, University Health Network, Toronto, Canada  
Main Audience: Researcher

12. (2023). Endothelial damage is at the heart of cancer therapy-related cardiac dysfunction. Toronto Cardio-Oncology Network Virtual Conference, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
13. (2023). Discovery of diagnostic and therapeutic approaches for cerebral microvascular dysfunction in heart failure. UNEARTH-CVD Team Meeting, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
14. (2023). Molecular mechanisms of brain arteriovenous malformations. Molecular and Developmental Biology Seminar Series, Cincinnati Children's Research Hospital Foundation, Cincinnati, United States of America  
Main Audience: Researcher  
Invited?: Yes
15. (2023). Brain vascular malformations: from gene discovery to therapy. Laboratory Medicine & Pathobiology Student Union – LMPSU Seminar and Networking Event, University of Toronto, Toronto, Canada  
Main Audience: Researcher
16. (2022). Mechanisms of cardiotoxicity: role of the endothelium. Laboratory Medicine & Pathobiology Graduate Research Conference, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
17. (2022). Zebrafish models of brain arteriovenous malformations. Greater Toronto Area Zebrafish Group Meeting, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
18. (2022). Transcriptional control of vascular inflammatory responses. Canadian Lipid and Vascular Summit, Whistler, Canada  
Main Audience: Researcher  
Invited?: Yes
19. (2022). KRAS somatic mutations in arteriovenous malformations. Lymphangiomas & Gorham's Disease Alliance Chan-Zuckerberg Initiative Seminar, Virtual, United States of America  
Main Audience: Researcher  
Invited?: Yes
20. (2022). Mechanisms of microvascular dysfunction in diabetic cardiomyopathy. Toronto Microvascular Group Meeting, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
21. (2022). Zebrafish models of brain arteriovenous malformations. 17th International Zebrafish Meeting (session chair and speaker), Montreal, Canada  
Main Audience: Researcher  
Invited?: Yes
22. (2022). Biology of brain arteriovenous malformations. 22nd International Vascular Biology Meeting, Oakland, United States of America  
Main Audience: Researcher  
Invited?: Yes
23. (2021). Functional biomarkers of microvascular dysfunction in diabetic cardiomyopathy. Ted Rogers Centre for Heart Research - Lab Meeting, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes



24. (2021). Transcriptional control of the inflammatory response in endothelial cells (postponed to 2022 due to COVID-19 pandemic). Canadian Lipid and Vascular Summit, Banff, Canada  
Main Audience: Researcher  
Invited?: Yes
25. (2021). Cancer therapy-related cardiotoxicity: is the endothelium at the heart of the matter?. Ted Rogers Centre 2021 Heart Failure Symposium, Virtual, Canada  
Main Audience: Researcher  
Invited?: Yes
26. (2021). Somatic oncogenic mutations in the endothelium drive vascular malformations. North American Vascular Biology Organization - Webinar Series, Online, United States of America  
Main Audience: Researcher  
Invited?: Yes
27. (2021). Discovering novel biomarkers and mechanisms of cardiovascular disease: focus on the endothelium. Peter Munk Cardiac Centre - Artificial Intelligence Group Meeting, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
28. (2020). Contribution of somatic oncogenic mutations to arteriovenous malformations. North American Vascular Biology Organization, Vascular Biology 2020 (Virtual Meeting), Newport, United States of America  
Main Audience: Researcher  
Invited?: Yes
29. (2020). Somatic oncogenic mutations in the endothelium drive vascular malformations. Angiogenesis Seminar Series, Simmons Cancer Center, UT Southwestern Medical Center, United States of America  
Main Audience: Researcher  
Invited?: Yes
30. (2020). Conserved regulatory elements that orchestrate vascular inflammatory responses and are linked to human disease. Vascular Discovery: From Genes to Medicine Scientific Sessions 2020 (Virtual Meeting), United States of America  
Main Audience: Researcher  
Invited?: Yes
31. (2020). Endothelial KRAS mutations drive MEK-dependent brain arteriovenous malformations. 11th Symposium on Vascular Anomalies for Clinicians and Researchers, Charleston, United States of America  
Main Audience: Researcher  
Invited?: Yes
32. (2019). MicroRNA-mediated metabolic reprogramming of endothelial cells in diabetic cardiomyopathy. North American Vascular Biology Organization, Vascular Biology 2019, United States of America  
Main Audience: Researcher  
Invited?: Yes
33. (2019). Decoding the contributions of non-coding RNA to vascular function. Harvard Medical School, Seminars in Vascular Biology, United States of America  
Main Audience: Researcher  
Invited?: Yes
34. (2019). How does the non-coding genome control inflammation?. Department of Pathology & Molecular Medicine, Queens University, Kingston, Canada  
Main Audience: Researcher  
Invited?: Yes
35. (2019). The role of the non-coding genome in the control of vascular function. Department of Physiology and Pharmacology, University of Western Ontario, London, Canada  
Main Audience: Researcher  
Invited?: Yes

36. (2019). Functional biomarkers of microvascular dysfunction. Aphaia Pharma, Toronto, Canada  
Main Audience: Decision Maker  
Invited?: Yes
37. (2019). MicroRNA-30 as a functional biomarker of microvascular dysfunction in HFpEF. 4th Annual Ted Rogers Centre for Heart Research - Scientific Sessions, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
38. (2019). Decoding the non-coding regulatory pathways of vascular inflammation. Symposium on Inflammation and Regenerative Medicine, Department of Laboratory Medicine and Pathobiology, Toronto, Canada  
Main Audience: Researcher  
Invited?: Yes
39. (2019). Extracellular vesicles as functional biomarkers of vascular disease. Codiak Biosciences, Boston, United States of America  
Main Audience: Researcher  
Invited?: Yes
40. (2019). Epigenetic regulation of vascular inflammation. Gordon Atherosclerosis Conference, Newry, United States of America  
Main Audience: Researcher  
Invited?: Yes
41. (2019). Decoding the non-coding regulatory pathways of vascular inflammation. Robarts Research Institute, University of Western Ontario, London, Canada  
Main Audience: Researcher  
Invited?: Yes

## Broadcast Interviews

- 2022/05/01                      Chromatin profiling of coronary artery illuminates genetic risk for heart disease, Nature Genetics - Expert opinion quoted about published article

## Publications

### Journal Articles

1. \*Dorian D, \*Gustafson D, Quinn R, Bentley RF, Dorian P, #Goodman J, #Fish JE, Connelly K. (2024). Exercise-dependent modulation of immunological response pathways in endurance athletes with and without atrial fibrillation. Journal of the American Heart Association (Impact Factor=6.1). \*Co-first authors; #Co-corresponding authors, equal contribution. 13(6): e033640.  
Last Author  
Published  
Refereed?: Yes
2. Xue XF, Vigouroux R, Syonov M, Baglaenk Y, Nikolakopoulou AM, Ringuette D, Rus H, DiStefano P, Dufour S, Shabanzadeh AP, Lee S, Mueller BK, Charish J, Harada H Fish JE, Wither J, Walchli T, Cloutier JF, Zlokovic BV, Carlen P, Monnier PP. (2024). The liver and muscle secreted Hfe2 protein maintains central nervous system blood vessel integrity. Nature Communications (Impact Factor=16.6). 15(1): 1037.  
Co-Author  
Published  
Refereed?: Yes

3. Raju S, Botts SR, Blaser M, Prajapati K, Ho TWW, Ching C, Galant NJ, Fiddes L, Wu R, Clift CL, Pham T, Lee WL, Singh SA, Aikawa E, Fish JE, Howe KL. (2024). Endothelial cells secrete small extracellular vesicles bidirectionally containing distinct cargo to uniquely reprogram vascular cells in the circulation and vessel wall. *Circulation Research (Impact Factor=23.2)*.134(3): 269-289.  
Co-Author  
Published  
Refereed?: Yes
4. \*Gustafson D, \*DiStefano PV, Wang XF, Wu R, Ghaffari S, Ching C, Rathnakumar K, Alibhai F, Syonov M, Fitzpatrick J, Boudreau E, Lau C, Galant N, Husain M, Li RK, Lee WL, Parekh R, Monnier P, Fish JE. (2024). Circulating small extracellular vesicles mediate diabetic vascular hyperpermeability. *Diabetologia (Impact factor=10.5)*. \*Co-first authors. \_: ePub ahead of print.  
Last Author  
Published  
Refereed?: Yes
5. Lu RXZ, Wagner KT, Landau S, Shawky SA, Zhao Y, Jiang R, Wang Y, Vosoughi D, Gustafson D, Fish JE, Cummins CL, Radisic M. (2024). Endothelial extracellular vesicles enhance vascular self-assembly in human engineered cardiac tissues. Submitted to *Biofabrication (Impact Factor = 10.5)*. \_: \_.  
Revision Requested
6. Guo X, Khosraviani N, Raju S, Ingh J, Farahani NZ, Abramian M, Torres VJ, Howe KL, Fish JE, Kapus A and Lee WL. (2023). Endothelial ACKR1 is induced by neutrophil contact and down-regulated by secretion in extracellular vesicles. *Frontiers in Immunology (Impact Factor = 8.8)*. 14: 1181016. Cites=2.  
Co-Author  
Published  
Refereed?: Yes
7. Ricciardelli AR, Robledo A, Fish JE, Kan PT, Harris TH, Wythe JD. (2023). The role and therapeutic implications of inflammation in the pathogenesis of brain arteriovenous malformations. *Biomedicines (Impact Factor=4.8)*. 11(11): 2876.  
Co-Author  
Published  
Refereed?: Yes
8. \*Aghel N, \*Gustafson D, Delgado D, Atenafu E, #Fish JE, #Lipton JH. (2023). High sensitivity C-reactive protein and circulating biomarkers of endothelial dysfunction inpatients with chronic myeloid leukemia receiving tyrosine kinase inhibitors. *Leukemia & Lymphoma (Impact Factor = 2.9)*. \*Co-first author, #Co-corresponding author, equal contribution. 9: 1-10.  
Co-Author  
Published  
Refereed?: Yes
9. Hanneman K, Houbois C, Kei T, Gustafson D, Thampinathan B, Sooriyanathan M, Fish JE, Howe KL, Cheung A, Wintersperger B, Gold W, Woo A, Thavendiranathan P. (2023). Multi-modality cardiac imaging, cardiac symptoms and clinical outcomes in patients who recovered from mild COVID-19. *Radiology (Impact Factor = 29.1)*. 308(1): e230767. Cites=1.  
Published  
Refereed?: Yes
10. Marschner CA, Thavendiranathan P, Gustafson D, Howe KL, Fish JE, Iwanochko RM, Wald RM, Abdel-Qadir H, Epelman S, Cheung AM, Hong R, Hanneman K. (2023). Myocardial inflammation on FDG PET/ MRI and clinical outcomes in symptomatic and asymptomatic participants after COVID-19 vaccination. *Radiology: Cardiothoracic Imaging (Impact Factor = 7.6)*. 5(2): e220247. Citations=5.  
Co-Author  
Published  
Refereed?: Yes

11. Ricciardelli AR, McClugage SG, Iacobas I, Fish JE, Wythe JD. (2023). Uncovering the molecular, genetic, and clinical features of brain arteriovenous malformations in human and animal models to inform therapeutic advances. Submitted to *Brain* (Impact Factor = 15.3). \_: \_.  
Co-Author  
Submitted  
Refereed?: Yes
12. Vizely K, Wagner KT, Mandla S, Gustafson D, Fish JE, Radisic M. (2023). Angiopoietin-1 derived peptide hydrogel promotes molecular hallmarks of regeneration and wound healing in dermal fibroblasts. *iScience* (Impact Factor = 5.1). 26(2): 105984. Cites=3.  
Co-Author  
Published  
Refereed?: Yes
13. Wang L, Alizada A, Rathnakumar K, Khyzha N, Taylor T, Campitelli LF, Patel ZM, Antounians L, Hughes T, Roy S, Mitchell JA, Fish JE, Wilson MD. (2022). Multi-species analysis of inflammatory response elements reveals ancient and lineage-specific contributions of transposable elements to NF- $\kappa$ B binding. *bioRxiv* and under review at *Genome Research* (Impact Factor = 9.0). <https://doi.org/10.1101/2022.10.25.513724>.  
EPub: \_  
Co-Author  
Published  
Refereed?: Yes
14. Krohn JB, Aikawa E, Aikawa M, Hutcheson JD, Sahoo S, Fish JE. (2022). Editorial: Extracellular vesicles in cardiovascular inflammation and calcification. *Frontiers in Cardiovascular Medicine* (Impact Factor = 6.1). 8(9): 1077124. Cites=2.  
Last Author  
Published  
Refereed?: Yes
15. Howe KL, Cybulsky MI, Fish JE. (2022). The endothelium as a hub for cellular communication in atherogenesis: is there directionality to the message?. *Frontiers in Cardiovascular Medicine* (Impact Factor = 4.8). 9: 888390. Cites=7.  
Last Author  
Published  
Refereed?: Yes
16. Veitch S, Njock MS, Chandy M, Siraj MA, Chi L, Chen Z, Alibhai FJ, Gustafson D, Raju S, Wu R, Rathnakumar K, Khat DZ, Caballero A, Meagher P, Lau E, Pepic L, Cheng HS, Galant NJ, Howe KL, Li RK, Connelly KA, Delgado-Olguin P, Husain M, Fish JE. (2022). MiR-30 promotes fatty acid beta-oxidation and endothelial cell dysfunction in diabetic cardiomyopathy. *Cardiovascular Diabetology* (Impact Factor = 10.0). 21(1): 31. Cites=34.  
Last Author  
Published  
Refereed?: Yes
17. Khosraviani N, Wu R and Fish JE. (2022). Angiopoietin-2: an emerging tie to pathological vessel enlargement. *Arteriosclerosis, Thrombosis & Vascular Biology* (Impact Factor = 8.3). 41(1): 3-5. Cites=1.  
Last Author  
Published  
Refereed?: Yes
18. Soon K, Li M, Wu R, Turner WD, Wythe JD, Fish JE and Nunes SS. (2022). Development and characterization of a human model of arteriovenous malformation (AVM)-on-a-chip. *bioRxiv*. January 28: \_.  
Co-Author  
Published  
Refereed?: No

19. Soon K, Li M, Wu R, Zhou A, Khosraviani N, Turner WD, Wythe JD, Fish JE, Nunes SS. (2022). A human model of arteriovenous malformation (AVM)-on-a-chip reproduces key disease hallmarks and enables drug testing in perfused human vessel networks. *Biomaterials* (Impact Factor = 15.3). 288: 121729. Cites=10.  
Co-Author  
Published  
Refereed?: Yes
20. Gustafson D, Ngai M, Wu R, Hou H, Schoffel A, Erice C, Mandla S, Billia F, Wilson MD, Radisic M, Fan E, Trahtemberg U, Baker A, McIntosh C, Fan CPS, dos Santos CC, Kain KC, Hanneman K, Thavendiranathan P, \*Fish JE, \*Howe KL (\*Co-corresponding authors, equal contribution). (2022). Cardiovascular signatures of COVID-19 predict mortality and identify barrier stabilizing therapies. *medRxiv*. February 9: \_.  
Last Author  
Published  
Refereed?: No
21. Hanneman K, Houbois C, Schoffel A, Gustafson D, Iwanochko RM, Wintersperger BJ, Chan R, Fish JE, Howe K, Thavendiranathan P. (2022). Combined cardiac FDG-PET/MRI assessment of myocardial injury in recently recovered COVID-19 patients. *JAMA Cardiology* (Impact Factor = 14.7). 7(3): 298-308. cites=46.  
Co-Author  
Published  
Refereed?: Yes
22. Gustafson D, Ngai M, Wu R, Hou H, Schoffel A, Erice C, Mandla S, Billia F, Wilson MD, Radisic M, Fan E, Trahtemberg U, Baker A, McIntosh C, Fan CPS, dos Santos CC, Kain KC, Hanneman K, Thavendiranathan P, \*Fish JE, \*Howe KL (\*Co-corresponding authors, equal contribution). (2022). Cardiovascular signatures of COVID-19 predict mortality and identify barrier stabilizing therapies. *EBioMedicine* (Impact Factor = 8.1). 78: 103982. Cites=21.  
Last Author  
Published  
Refereed?: Yes
23. Lu RX, Lai BF, Rafatian N, Gustafson D, Campbell SB, Mubareka S, Howe KL, Fish JE, Radisic M. (2022). Vasculature on a chip platform with innate immunity enables identification of Angiopoietin-1 derived peptide as a therapeutic for SARS-CoV-2 induced inflammation. *Lab-on-a-chip* (Impact Factor = 6.8). 22(6): 1171-1186. Cites=32.  
Co-Author  
Published  
Refereed?: Yes
24. Walchli T, Farnhammer F, Fish JE. (2022). MicroRNA-based regulation of embryonic endothelial heterogeneity at single cell resolution. *Arteriosclerosis, Thrombosis & Vascular Biology* (Impact Factor = 8.3). 42(3): 343-347. Cites=2.  
Last Author  
Published  
Refereed?: Yes
25. Botts SR, Fish JE, Howe KL. (2021). Dysfunctional vascular endothelium as a driver of atherosclerosis: emerging insights into pathogenesis and treatment. *Frontiers in Pharmacology* (Impact Factor = 4.4). 12: 787541. Cites=71.  
Co-Author  
Published  
Refereed?: Yes

26. Mealiea D, Boudreau E, De Silva N, Li L, Ho T, Fish JE, McCart A. (2021). Modelling oncolytic virus dynamics in the tumor microenvironment using zebrafish. *Cancer Gene Therapy (Impact Factor = 6.0)*.28(7-8): 769-784. Citations=2.  
Co-Author  
Published  
Refereed?: Yes
27. Walchli T, Ghobrial M, Schwab M, Takada S, Zhong H, Suntharalingham S, Vetiska S, Gonzalez DR, Rehrauer H, Wu R, Yu K, Bisschop J, Farnhammer F, Regli L, Schaller K, Frei K, Ketela T, Bernstein M, Kongkham P, Carmeliet P, Valiante T, Dirks PB, Suva ML, Zadeh G, Tabar V, Schlapbach R, De Bock K, Fish JE, Monnier PP, Bader GD, Radovanovic I. (2021). Molecular atlas of the human brain vasculature at the single-cell level. *bioRxiv (and under review at Nature - Impact Factor = 50.0)*. <https://doi.org/10.1101/2021.10.18.464715>. October 19: Citations=10.  
Co-Author  
Published  
Refereed?: Yes
28. Alizada A, Khyzha N, Wang L, Antounians L, Chen X, Khor M, Liang M, Rathnakumar K, Weirauch MT, Medina-Rivera A, \*Fish JE and \* Wilson MD (\*Co-corresponding authors, equal contribution). (2021). Conserved regulatory logic at accessible and inaccessible chromatin during the acute inflammatory response in mammals. *Nature Communications (Impact Factor = 14.9)*.12(1): 567. Citations=19.  
Last Author  
Published  
Refereed?: Yes
29. Aghel N, Gustafson D, Di Meo A, Music M, Prassas I, Seidman MA, Hansen AR, Thavendiranathan P, Diamandis EP, Delgado D, Fish JE. (2021). Recurrent myocarditis induced by immune-checkpoint inhibitor treatment is accompanied by persistent inflammatory markers despite immunosuppressive treatment. *JCO Precision Oncology (Impact Factor = 4.9)*. 5: 485-491. Citations=6.  
Last Author  
Published  
Refereed?: Yes
30. Karunakaran D, Nguyen MA, Geoffrion M, Vreeken D, Lister Z, Cheng HS, Otte N, Essebier P, Wyatt H, Kandiah JW, Jung R, Alenghat FJ, Mompeon A, Lee R, Pan C, Gordon E, Rasheed A, Lusic AJ, Liu P, Matic P, Hedin U, Fish JE, Guo L, Kolodgie F, Virmani R, van Fils JM, Rayner KJ. (2021). RIPK1 expression associates with inflammation in early atherosclerosis in humans and can be therapeutically silenced to reduce NF- $\kappa$ B activation and atherogenesis in mice. *Circulation (Impact Factor: 29..7)*. 143(2): 163-177. Cites=104.  
Co-Author  
Published  
Refereed?: Yes
31. Ching C, Gustafson D, Thavendiranathan P, Fish JE. (2021). Cancer therapy-related cardiac dysfunction: is endothelial dysfunction at the heart of the matter?. *Clinical Science (Impact Factor = 5.2)*. 135(12): 1487-1503. Cites=15.  
Last Author  
Published  
Refereed?: Yes
32. Mastikhina O, Moon BU, Williams K, Hatkar R, Gustafson D, Murad O, Sun X, Koo M, Lam AYL, Sun Y, Fish JE, Young EWK and Nunes SS. (2020). Human cardiac fibrosis-on-a-chip recapitulates disease hallmarks and can serve as a platform for drug screening. *Biomaterials (Impact Factor = 12.5)*. 233: 119741. Cites=121.  
Co-Author  
Published  
Refereed?: Yes

33. Gustafson D, Raju S, Wu R, Ching C, Veitch S, Rathnakumar K, Boudreau E, Howe KL, Fish JE. (2020). Overcoming barriers: the endothelium as a linchpin of Coronavirus Disease 2019 pathogenesis?. *Arteriosclerosis, Thrombosis and Vascular Biology* (Impact Factor = 8.3). 40(8): 1818-29. Cites=82.  
Last Author  
Published  
Refereed?: Yes
34. Alibhai FJ, Lim F, Yeganeh A, DiStefano PV, Binesh-Marvasti T, Belfiore A, Wlodarek L, Gustafson D, Millar S, Li SH, Weisel RD, Fish JE, Li RK. (2020). Cellular senescence contributes to age dependent changes in plasma extracellular vesicle cargo and function. *Aging Cell* (Impact Factor = 9.3). 19(3): e13103. Cites=81.  
Co-Author  
Published  
Refereed?: Yes
35. Gustafson D, Fish JE, Lipton JH and Aghel N. (2020). Mechanisms of cardiovascular toxicity of BCR-ABL1 tyrosine kinase inhibitors in chronic myelogenous leukaemia. *Current Hematologic Malignancy Reports* (Impact Factor = 3.5). 15(1): 20-30. Cites=14.  
Co-Author  
Published  
Refereed?: Yes
36. Ravindranath RR, Franier BDL, Yougbare I, Fish JE, Thompson M. (2020). Antibody-based capture and behaviour of endothelial cell lines on pre-surface modified medical grade steel. *Recent Progress in Materials*. 2(1): 15.  
Co-Author  
Published  
Refereed?: Yes
37. Raju S, \*Fish JE and \*Howe KL (\*Co-corresponding authors). (2020). MicroRNAs as sentinels and protagonists of carotid artery thromboembolism. *Clinical Science* (Impact Factor = 5.2). 134(2): 169-192. Cites=14.  
Last Author  
Published  
Refereed?: Yes
38. \*Fish JE, Suarez CP, Boudreau E, Herman AM, Gutierrez MC, Gustafson D, DiStefano PV, Cui M, Chen Z, De Ruiz KB, Schexnayder TS, Ward CS, Radovanovic I, \*Wythe JD (\*Co-corresponding author). (2020). Somatic gain of KRAS function in the endothelium is sufficient to cause vascular malformations that require MEK but not PI3K signaling. *Circulation Research* (Impact Factor = 17.4). 127(6): 727-743. Cites=78.  
First Listed Author  
Published  
Refereed?: Yes
39. Howe KL and Fish JE. (2019). Transforming endothelial cells in atherosclerosis. *Nature Metabolism* (Impact Factor = 7.7). 1(9): 856-857. Cites=21.  
Last Author  
Published  
Refereed?: Yes
40. Khyzha N, Khor M, DiStefano P, Wang L, Matic L, Hedin U, Wilson MD, Maegdefessel L and Fish JE. (2019). Regulation of CCL2 expression in human vascular endothelial cells by a neighboring divergently transcribed long noncoding RNA. *Proceedings of the National Academy of Sciences* (Impact Factor=11.2). 116(33): 16410-19. Cites=72.  
Last Author  
Published  
Refereed?: Yes

41. Shikatani E, Besla R, Ensan S, Li A, Degousee N, Moreau J, Thayaparan D, Cheng H, Pacheco S, Smyth D, Noyan H, Zavitz C, Bauer C, Hilgendorf I, Libby P, Swirski F, Gommerman J, Fish J, Stampfli M, Cybulsky M, Rubin B, Paige C and Robbins CS. (2019). c-Myb critically regulates B lymphocyte responses in atherosclerosis. *Cell Reports (Impact Factor=9.4)*. 27(8): 2304-2312. Cites=4.  
Co-Author  
Published  
Refereed?: Yes

## Conference Publications

1. Bhatt N, Nedadur R, Warren B, Mafeld S, Raju S, Fish JE, Wang B, Howe KL. (2023). Automated and Interpretable Deep Learning For Carotid Plaque Analysis Using Ultrasound. Canadian Society for Vascular Sciences  
Poster  
Co-Author  
Published
2. Ching C, Clift CL, Kinnear C, Gustafson D, Aikawa E, Singh SA, Mital S, Thavendiranathan P, Fish JE. (2023). Endothelial-derived Extracellular Vesicles Communicate With Cardiomyocytes To Elicit Cancer Therapy-related Cardiac Dysfunction. American Heart Association: Basic Cardiovascular Sciences  
Poster  
Last Author  
Published
3. Patel S, Guo MK, Breda L, Prajapati K, Raju S, Botts SR, Yu K, Dudley A, Scipione CA, Fish JE, Howe KL. (2023). A Novel Model For Tracking Endothelial-derived Extracellular Vesicles In Murine Atherosclerotic Disease. Society for Vascular Surgery Annual meeting  
Poster  
Co-Author  
Published
4. Raju S, Prajapati K, Blaser MC, Botts SR, Ho TWW, Ching C, Galant NJ, Fiddes L, Wu R, Clift CL, Pham T, Lee WL, Aikawa E, Fish JE, Howe KL. (2023). Endothelial Cells Communicate with Surrounding Vascular Cells Via Bidirectional and Polarized Secretion of Extracellular Vesicular Cargo: Implications for Atherosclerotic Plaque Development. Society for Vascular Surgery Annual meeting  
Poster  
Co-Author  
Published
5. Botts SR, Raju S, Prajapati K, Breda LCD, Fish JF, Howe KL. (2022). Extracellular vesicle-derived microRNAs from human abdominal aortic aneurysm associate with proaneurysmal cell signaling and senescence pathways. Society for Vascular Surgery Annual meeting  
Poster  
Co-Author  
Published
6. Gustafson D, Ngai M, Wu R, Hou H, Erice C, Wilson MD, Kain K, Hanneman K, Thavendiranathan P, Fish JE, Howe KL. (2022). Multiparametric Circulating Cardiovascular Biomarkers Elucidate A Molecular Signature Of Coronavirus Disease 2019 Mortality And Identify Vascular Barrier Stabilizing Therapies. ATVB: Vascular Discovery  
Poster  
Last Author  
Published



7. Ching C, Gustafson D, Fish JE, Thavendiranathan P. (2022). Shedding light on the role of endothelial-derived extracellular vesicles in cancer therapy-related cardiac dysfunction pathogenesis. American College of Cardiology  
Poster  
Co-Author  
Published
8. Raju S, Gustafson D, Prajapati K, Galant NJ, Botts SR, Papia G, Fish JE, Howe KL. (2021). Circulating Extracellular Vesicle Cargo as Bioinformants of 'at-risk' Carotid Artery Stenosis. Vascular Annual Meeting, Society for Vascular Surgery  
Poster  
Co-Author  
Published
9. Gustafson D, Ching C, Alibhai F, Galant N, Fish JE, Thavendiranathan P. (2020). Making Survivorship Matter: Predicting Cancer Therapy-Related Cardiac Dysfunction in Women with HER2+ Breast Cancer Through Integrative Diagnostic Approaches. American College of Cardiology's 69th Annual Scientific Session (ACC20)  
Poster  
Co-Author  
Published
10. Gustafson D, Aghel N, Galant N, Fish JE, Delgado D. (2020). The Extracellular Vesicle Proteome as a Novel Biomarker in Patients with Amyloid Transthyretin Cardiac Amyloidosis. 69th Annual Scientific Session of the American College of Cardiology (ACC 20)  
Poster  
Co-Author  
Published
11. Fish JE, Suarez C, Boudreau E, Herman A, Gutierrez M, Gustafson D, DiStefano P, Cui M, Chen Z, Ruiz K, Schexnayder T, Ward C, Radovanovic I, Wythe JD. (2020). Somatic gain of KRAS function in the endothelium is sufficient to cause vascular malformations that require MEK but not PI3K signaling. North American Vascular Biology Organization - Vascular Biology 2020  
Abstract  
First Listed Author  
Published
12. Veitch S, Njock MS, Chandy M, Chen Z, Siraj A, Gustafson D, Zarrin Khat D, Cheng H, Delgado-Olguin P, Connelly K, Husain M, Fish JE. (2020). MicroRNA-30 regulates endothelial fatty acid metabolism and microvascular function in diabetic cardiomyopathy. North American Vascular Biology Organization - Vascular Biology 2020  
Poster  
Last Author  
Published
13. Raju S, Gustafson D, Prajabati K, Fish JE, Howe KL. (2020). EV-miRNA as bioinformants in progression of carotid artery atherosclerosis. Canadian Vascular and Lipid Summit 2020  
Poster  
Co-Author  
Published
14. D Gustafson, Distefano PV, Wang XF, Ghaffari S, Veitch S, Fitzpatrick J, Chen Z, Galant N, Husain M, Parekh R, Lee W, Monnier P, Fish JE. (2020). Extracellular Vesicles Induce Vascular Leak in Diabetes Through MEK/ROCK Signalling. North American Vascular Biology Organization - Vascular Biology 2020  
Poster  
Last Author  
Published

15. Ching C, Gustafson D, Thavendiranathan P, Fish JE. (2020). Endothelial-derived extracellular vesicles: A new paradigm in cancer-therapy related cardiac dysfunction. Canadian Vascular & Lipid Summit 2020  
Poster  
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## Intellectual Property

### Patents

1. MiRNA for the delivery of agents by extracellular vesicles. United States of America. US63/602,585. 2023/11/01.  
Patent Status: Pending
2. Methods and products for predicting cancer therapy-related cardiac dysfunction. United States of America. US63/600,554. 2023/11/01.  
Patent Status: Pending
3. Circulating cardiovascular biomarkers and vascular stabilizing therapy. Canada. 05014971-236CA. 2022/12/01.  
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4. Methods for predicting cancer therapy-related cardiac dysfunction. United States of America. 2020/03/26.  
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5. Regulation of angiogenesis by microRNA, Jason Fish and Deepak Srivastava. European patent application. Germany. 2013/02/15.  
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### Disclosures

1. Vascular stabilizing therapy for COVID-19 pathobiology, University Health Network  
Disclosed  
Filing Date: 2021/12/08
2. QHREDGS peptide as a therapeutic for SARS-CoV-2 infected endothelium, University of Toronto  
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Filing Date: 2021/12/08
3. Prognostication of poor outcomes in COVID-19 patients, University Health Network  
Disclosed  
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4. Treatment of arteriovenous malformations by blocking signaling pathways downstream of active KRAS  
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5. MicroRNA-30 as a functional biomarker of cardiac microvascular dysfunction, University Health Network  
Disclosed  
Filing Date: 2019/02/05
6. Repression of inflammation by endothelial-derived microvesicles and microRNA-10a, University Health Network  
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