

Muscle Health Research Centre Annual Report

May 1, 2015 - April 30, 2016

1. Contact Information

Director:	David A. Hood
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2. Charter dates

July 1, 2008

3. Mandate

The MHRC is an organized research unit (ORU) within the Faculty of Health dedicated to Biomedical Sciences. Its mandate is to provide a centralized and focused research emphasis on the importance of “muscle health” for the overall health and well-being of Canadians. The MHRC consists of a strong cohort of very well-funded and highly productive scholars (including a Canada Research Chair) and graduate students from the Faculty of Health and the Faculty of Science. The vision statement of the MHRC is “*to be Canada’s leading research centre for the study of muscle health and disease*”. We will achieve this through 1) innovative research, 2) the education of qualified trainees, and 3) the translation of our findings for the benefit of all Canadians.

4. Membership and Governance

Active members (York faculty): 19; a complete list of active and adjunct members of the MHRC and their departmental affiliations is provided below.

Other members: Adjunct faculty members: 5; Graduate and UG student members (York): 90; Graduate and UG student members (non-York, other Universities): 50

Executive Committee members: Drs. David Hood (Director), Rolando Ceddia, Mike Connor, Mike Riddell, Robert Tsushima, and Ms. Erin Mandel (Graduate Student Member)

Executive Committee Subcommittee (name and members)(if any): N/A

Faculty Member	Rank	Research Area	Office Number/ E-Mail	Office Location
School of Kinesiology and Health Science				
Hood, David	Professor, Canada Research Chair, Director of the Muscle Health Research Center	Molecular basis of Mitochondrial Biogenesis in health and disease	dhood@yorku.ca (416)736-2100 x 66640	Farquharson Building, 302
Adegoke, Olasunkanmi	Associate Professor	Protein and amino acid nutrition and metabolism	oadegoke@yorku.ca (416)736-2100 x 20887	Norman Bethune College, 362
Belcastro, Angelo	Professor, Chair, School of Kinesiology and Health Science	Muscle injury and damage in health and disease	anbelcas@yorku.ca (416)736-2100 x 21088	Norman Bethune College, 333B
Biro, Olivier	Associate Professor	Vascular plasticity in striated muscle (angiogenesis vs. capillary regression)	birot@yorku.ca (416)736-2100 x 44043	Norman Bethune College, 353
Ceddia, Rolando	Associate Professor	Glucose and fat metabolism in muscle and adipose tissue	roceddia@yorku.ca (416)736-2100 x 77204	Lumbers Building, 225A
Connor, Michael	Associate Professor	Muscle Development and Cancer	mconnor@yorku.ca (416)736-2100 x 77206	Life Sciences Building, 423B
Drake, Janessa	Associate Professor	Biomechanics of the spine	jdrake@yorku.ca 416-736-2100 Ext. 33568	Sherman Health Science Research Centre, 2030
Edgell, Heather	Assistant Professor	Cardiovascular disease in women	edgell@yorku.ca (416) 736-2100 x 22927	Norman Bethune College, 355
Gage, William	Associate Professor, Associate Dean of Research, Faculty of Health	Biomechanics of postural control and of joint stability	whgage@yorku.ca (416)736-2100 x 21479	HNES, 428D
Haas, Tara	Associate Professor	Angiogenesis in Muscle	thaas@yorku.ca (416)736-2100 x 77313	Farquharson Building, 341
Hamadeh, Mazen	Associate Professor	Human Nutrition and Exercise Physiology, Diabetes and ALS	hamadeh@yorku.ca (416)736-2100 x 33552	Norman Bethune College, 365
Hynes, Loriann	Assistant Professor & Athletic Therapy Coordinator	Sports-related injuries and rehabilitation	lyhnes@yorku.ca (416)736-2100 x 22734	Stong College, 326

Kuk, Jennifer L.	Associate Professor	Obesity, CVD, Type 2 diabetes and exercise interventions	jennkuk@yorku.ca (416)736-2100 x 20080	Sherman Health Science Research Centre, 2002
Perry, Christopher G.R.	Assistant Professor	Redox Metabolism, Skeletal Muscle, Diet and Exercise	cperry@yorku.ca (416)736-2100 x 33232	Norman Bethune College, 324
Riddell, Michael	Associate Professor, KAHS Graduate Program Director	Exercise Physiology, Stress and Diabetes Metabolism	mriddell@yorku.ca (416)736-2100 x 40493	Norman Bethune College, 347
Scimè, Anthony	Assistant Professor	Stem Cell Biology; Muscle Regeneration; Adipose Differentiation	ascime@yorku.ca (416) 736-2100 x33559	Norman Bethune College, 327C
Department of Biology				
Backx, Peter	Professor	Cardiac Muscle Physiology and Disease		
McDermott, John	Professor	Muscle Development	jmcderm@yorku.ca (416)736-2100 x 30344	Life Sciences Building, 427B
Tsushima, Robert	Associate Professor, Associate Dean Research and Partnerships	Cardiac Muscle Physiology and Disease	tsushima@yorku.ca (416)736-2100 x 20996	Farquharson Building, 344
Adjunct Members				
Coe, Imogen	Professor, Dean, Faculty of Science	Cardiac Muscle Biochemistry	imogen.coe@ryerson.ca	Ryerson University
Hawke, Thomas	Associate Professor	Muscle Development and Regeneration	hawke@mcmaster.ca	McMaster University
Jacobs, Ira	Dean, Faculty of Physical Education	Muscle Metabolism, Applied Physiology and Pharmacology	ira.jacobs@utoronto.ca	University of Toronto
Laham, Robert	Physician	Muscle physiology	robertlaham@aim.com	York Lanes Appletree Medical Centre
Wharton, Sean	Physician	Obesity and exercise	wharton.sean@gmail.com	Wharton Medical Clinic
MHRC Coordinator				
Tryon, Liam	Research Assistant, MSc		liam.tryon@gmail.com Farquharson Bldg, 342 X 22999	Farquharson Bldg, 342 X 22999 Fax: 416-650-8483

5. Annual Activities in Fulfilling Mandate (750 words max)

The MHRC expanded its faculty membership by 3 members this year, adding Drs. Peter Backx (Biology) and Drs. Janessa Drake and Loriann Hynes (KHS). The MHRC continues to expand its activities every year, consistent with the goal of uniting muscle health researchers and graduate students and providing a platform which will serve to increase the visibility of York University, and the MHRC, in Canada and around the world. Our accomplishments are listed in Appendix 2, including the funding obtained, awards received and most significant

publications in peer-reviewed journals. This appendix contains a truncated version of the vast list of accomplishments of our faculty members (a complete list is provided on the MHRC website). It is clear from this Appendix that the MHRC is fulfilling its mandate in promoting muscle research for the health and well-being of Canadians. We continue to be successful at obtaining NSERC, CIHR, Heart and Stroke Foundation and Canadian Diabetes Association research funding, and at publishing our findings.

- a) Funding proposals: Several collaborations exist among MHRC faculty members, and among faculty at other institutions. These include a CREATE grant (Title: Fundamental Mechanisms of Muscle Dysfunction) as well as a large scale CFI Infrastructure grant for a MHRC “Core facility” (Title: Muscles for Health) involving many MHRC members and collaborators. Both have received internal approval to go forward as a full proposals for the Fall 2016 deadlines.
- b) Events organized: We normally hold 3 types of events throughout the year:
 - 1) Colloquia, featuring internal speakers discussing their work in an informal interactive research presentation. Normally this involves 3 graduate students who presented their research, or it highlights the work of new faculty members. This year we were unable to schedule this event, but we have one planned for early Fall, 2016.
 - 2) Seminars, in which external speakers from other Universities were invited to present their work and to interact with faculty members and graduate students. This year, speakers were invited from the Universities of Rochester, UC Davis, Pittsburgh as well as Columbia University and Tufts University. The speaker from UC Davis was an MHRC student-organized Seminar;
 - 3) The 6th Annual Muscle Health Awareness Day (MHAD), which attracted attracted 9 external speakers, 27 other faculty members and 104 students. A total of 44 posters were presented (total registration: 131 people).
- c) Knowledge Mobilization / Outreach: All MHRC faculty members are involved in promoting knowledge mobilization of their research via the MHRC website. Newly published papers-of-the-month are summarized in easy to read language for public dissemination. In addition, many members have had their work featured in Y-file, and some members spend considerable time promoting muscle health, metabolism and diabetes education to the public. Several MHRC members have had media interviews in the past year to promote muscle health in their field;
- d) Mentorship: MHRC faculty members are extremely active in the training and development of graduate students. One of the reasons that MHRC members are so successful individually with NSERC is that we are very active in the training of Highly Qualified Personnel (HQP), a major criterion for success with NSERC. MHRC faculty members directly trained and mentored 50-60 MSc and PhD students, 22 undergraduate students, and 9 post-doctoral fellows over the past year;
- e) Continuing Education: In collaboration with faculty of Health staff involved in the Health Leadership and Learning network (HLLN), we continue to offer our Advanced Certificate in Exercise and Muscle Health for recent graduates or Allied Health professionals. We are now endeavouring to move some of these courses online.
- f) Other leadership activities: The MHRC sponsored two \$1000 MHRC Student Fellowships directed against the Graduate Student’s fees;

- g) Industry partners: The MHRC has developed relationships with industry on several fronts, including Panacea Global, a cancer screening company with research interests that complement several of our members, Musclesound, a company seeking to develop a “Muscle Quality Index”, Reveragen which provides reagents for muscle growth, and OmniActive Health Technologies Canada, a Natural Health Product company with an interest in muscle health and obesity.

Student-based activities: The MHRC continues to significantly involve our graduate student and post-doctoral trainees in our activities. The MHRC Student Committee provides input into our programming and direction, particularly with regard to student interests in the MHRC Seminars and the Muscle Health Awareness Day program. Every year we have a student-invited Seminar speaker. We held one Career Workshop (May 2, 2014) and we intend to do this every 2 years for those interested in careers outside of academia. Invited guests from Industry, Colleges, Hospitals and Research Institutes are invited to present short talks on their career paths, and provide advice for future graduates. We also regularly have MHRC Student Colloquium, in which graduate students presented their work orally and responded to questions.

6. Financial Position

The attached Excel spreadsheet provides the three year rolling budget and line-by-line explanation. At the moment, there are no research grants or contracts that are administered by the MHRC. Almost \$5,500 in overhead revenue was generated this year. The Faculty of Health also provided over \$23,000 in funding to the Centre in the 15-16 fiscal year, and funded the Director's course release. Discussions between MHRC and Health are currently underway regarding potential financial support over the next few years. The Faculty supports the MHRC's efforts to achieve self-sufficiency, and attract donors and alternative sources of revenue (such as industry contracts or Continuing Education programs, see above).

7. Space Utilization

Each faculty member has his/her own laboratory and student space. The MHRC has been allocated space for the CFI infrastructure grant being applied for. The MHRC office is located in 342 Farquharson and it has sufficient supplies to support the operation of the Centre. The MHRC does not require additional space at the moment.

8. Objectives for Upcoming Year (e.g. events, membership, grants, space needs 750 words max.)

- Continue to try to develop Continuing Education initiatives with Teachers, Nurses, Massage Therapists in an effort to bring in revenue to support the MHRC;
- Interact with our Development office within the University to promote outreach and the visibility of the MHRC among members of the public, in an effort to seek interested financial contributions from potential benefactors.
- Develop a “Muscle Health Education Day” to increase the exposure of the MHRC to the public for educational purposes, as well as to encourage the involvement of

potential donors. We have begun to investigate venues in downtown Toronto (eg. the Central YMCA) for this initiative;

- Continue developing more relationships with industry to initiate contractual agreements which will bring in revenue for the MHRC. Discussion are ongoing with colleagues in Innovation York to help us with this;
- Consider having a grant crafting workshop, one or twice a year;
- Develop more collaborations between laboratories within the MHRC as well as more educational initiatives for trainees. This will be achieved with the success of the submitted CREATE and CFI/ORF grant applications.

9. Other relevant items the Director wishes to include in the annual report (250 words max.)

10. Appendix 1 – Additional Information about Progress in Fulfilling Mandate (that does not appear elsewhere in the Report)

Not applicable

11. Appendix 2 – Individual Member Contributions (up to five most notable items only for each member)

Appendix 2: Top 5 contributions per Faculty Member

May 1, 2015 – April 30, 2016

Adegoke, Olasunkanmi A. J.

Funding Received:

NSERC Discovery Grant

Title: “Mechanisms of regulation of skeletal muscle mass and growth”

5 years

Adegoke OA, Bates HE, Kiraly MA, Vranic M, Riddell MC, Marliss EB. Exercise in ZDF rats does not attenuate weight gain, but prevents hyperglycemia concurrent with modulation of amino acid metabolism and AKT/mTOR activation in skeletal muscle. *Eur J Nutr.* 2015 54:751-9.

Backx, Peter H.

Funding Received:

CIHR Operating grant (P. Backx PI), Next Generation Stem Cell for the heart
780,000 5 years, Start Oct 2015

CIHR Operating grant (P. Backx PI), Regulation of contractility by NCX and Ito
580,000 5 years, Start March 2013

CIHR Operating grant (P. Backx PI), Mechanisms of Atrial Fibrillation induced by exercise
805,000 5 years, Start March 2012

Canada Research Chair in Cardiovascular Biology, York University (Jan 2016)

Aschar-Sobbi R, Izaddoustdar F, Korogyi AS, Farman GP, Dorian D, Simpson JA, Tuomi JM, Nanthakumar N, Cox B, Dorian P, Backx PH. Increased atrial arrhythmia susceptibility induced by intense endurance exercise requires TNF α . *Nature Communications* 6:6018-6028, 2015.

Birot, Olivier

Funding Received:

Heart and Stroke, Grant-in-Aid, Co-applicant with Drs. Haas and Ellis, \$266,211 / 3 years (2015-2018), Awarded.

Aiken J, Roudier E, Ciccone J, Drouin G, Stromberg A, Vojnovic J, Olfert IM, Haas T, Gustafsson T, Grenier G, Birot O. Phosphorylation of murine double minute-2 on Ser166 is downstream of VEGF-A in exercised skeletal muscle and regulates primary endothelial cell migration and FoxO gene expression. *FASEB J* 2006, [In press]

Pelletier J, Roudier E, Abraham P, Fromy B, Saumet JL, Birot, O, Sigauco-Roussel D. VEGF-A promotes both pro-angiogenic and neurotrophic capacities for nerve recovery after compressive neuropathy in rats. *Molecular Neurobiology*, 51: 240-251, 2015.

Ceddia, Rolando B.

Funding Received:

NSERC, Discovery Grant (\$160,000), Regulation of whole-body energy homeostasis
Term of funding: 2016 - 2020

NSERC RTI (Co-applicant)

Biomolecular Imager for analysis of cellular and viral proteins and nucleic acids.

NSERC RTI (Co-applicant)

Automated multi-channel fluorescence imaging system for extended time lapse and image stitching analyses. \$121,539

Sepa-Kishi DM, Ceddia RB. Exercise-Mediated Effects on White and Brown Adipose Tissue Plasticity and Metabolism. *Exerc Sport Sci Rev*. 2016 Jan;44(1):37-44.

Connor, Michael K.

Theriau CF, Shpilberg Y, Riddell MC, Connor MK. Voluntary Physical Activity Abolishes the Proliferative Tumor Growth Microenvironment Created by Adipose Tissue in Animals Fed a High Fat Diet. *J Appl Physiol (1985)*. 2016 May 5:jap.00862.2015. doi: 10.1152/jap.00862.2015. [Epub ahead of print]

Drake, Janessa D. M.

Funding Received:

NSERC Discovery Grant, May 2012- Apr 2017, Thoracic and Lumbar Spine Biomechanics
\$29,000/year

Funding Applied For:

CFI JELF (Sole Investigator), Decision Announced June 2016

Understanding the spine through the use of dynamic interactive virtual reality based testing environments, Total Project Cost: \$472,493 (\$150,000 requested from CFI)

Schinkel-Ivy, A., Drake, J.D.M. Breast size impacts postural muscle activation and spine motion. *Journal of Back and Musculoskeletal Rehabilitation*, 2016 Feb 19. [Epub ahead of print] PMID: 26966826

Nairn, B.C., Sutherland, C.A., Drake, J.D.M. Location of instability during a bench press alters movement patterns and electromyographical activity. *Journal of Strength and Conditioning*, 2015 Nov; 29(11): 3162-3170. PMID: 25932979

Schinkel-Ivy, A., Drake, J.D.M. Sequencing of superficial trunk muscle activation during range-of-motion tasks. *Human Movement Science*, 2015 Oct; 43: 67-77, 2015. PMID: 26209971

Ang, C., Nairn, B.C., Schinkel-Ivy, A., Drake, J.D.M. Seated maximum flexion: An alternative to standing maximum flexion for determining presence of flexion-relaxation? *Journal of Back and Musculoskeletal Rehabilitation*, 2015 Sep 6. [Epub ahead of print]. PMID: 26406200

Edgell, Heather

Funding Received:

CFI John R. Evans Leaders Fund - \$100,000 – Women’s cardiovascular health: sexually dimorphic cardiovascular and autonomic responses to stressors

CFI-Infrastructure Operating Fund - \$4,000

Ontario Research Fund- \$100,000 – Women’s cardiovascular health: sexually dimorphic cardiovascular and autonomic responses to stressors

Junior Faculty Award - \$2,000 – Chemoreflex function in the supine and upright postures in men and women throughout the menstrual cycle

Conference Travel Award - \$1,000 – APS Conference: Cardiovascular, Renal and Metabolic Disease in Annapolis, MD.

NSERC Discovery Grant - \$120,000 over 5 years – Cerebrovascular and ventilatory responses to autonomic reflex stimulation in supine and upright postures in women throughout the menstrual cycle and men

Funding Applied For:

James H. Cummings Foundation - \$49,777 USD

J. P. Bickell Foundation - \$64,884

Edgell H, Stickland MK, and MacLean JE (2016) A simplified measurement of pulse wave velocity is not inferior to standard measurement in young adults and children. *Blood Press Monit* 2016 Feb 22 [Epub ahead of print]

Edgell H, McMurtry MS, Haykowsky MJ, Paterson I, Ezekowitz JA, Dyck JR, and Stickland MK (2015) Peripheral chemoreceptor control of cardiovascular function at rest and during exercise in heart failure patients. *JAP* 118(7): 839-48

Edgell H, Moore LM, Chung C, Byers BW, and Stickland MK. Short-term cardiovascular and autonomic effects of inhaled salbutamol. RESPNB3456R1 [in review]

Haas, Tara L.

Funding Received:

2013-2017, CIHR Operating Grant \$390,800 total funding (4 years) (PI; 1 Co-applicant: E. Roudier) “Microvascular remodeling of the adipose and muscle tissues in diet-induced obesity: regulation by FoxO proteins”

2013-2018, NSERC Discovery Grant (renewal); \$165,000 total funding (5 years) “Regulation of capillary sprouting and stabilization in skeletal muscle”

2015-2018, Heart and Stroke Research Foundation of Canada \$266,211 total funding (3 years); “Regulators of angiogenesis in peripheral limb ischemia” PI – Tara Haas; Co-applicants: C. Ellis (UWO) and O. Birot

J. Aiken, E. Roudier, J. Ciccone, G. Drouin, A. Stromberg, J. Vojnovic, I. M. Olfert, T.L. Haas, T. Gustafsson, G. Grenier, O. Birot. Phosphorylation of Murine Double Minute-2 on Ser166 is downstream of VEGF-A in exercised skeletal muscle and regulates primary endothelial cells migration and FoxO gene expression. Accepted *FASEB J.*, Nov. 2015; fj.15-276964

Haas, T.L. and E. Nwadozi. Regulation of Capillary Growth in Skeletal Muscle in Exercise and Disease. (*Invited review*) *Applied Physiology, Nutrition and Metabolism*. 2015 Dec;40(12):1221-32. doi: 10.1139/apnm-2015-0336; *Based on CSEP President’s award lecture 2013*.

Hamadeh, Mazen J.

Parikh S, Hamadeh MJ, Kuk JL. Estimating Serving Sizes for Healthier and Unhealthier Versions of Food According to Canada's Food Guide. *Can J Diet Pract Res*. 2015 Dec;76(4):204-7.

Moghimi E, Solomon JA, Gianforcaro A, Hamadeh MJ. Dietary Vitamin D3 Restriction Exacerbates Disease Pathophysiology in the Spinal Cord of the G93A Mouse Model of Amyotrophic Lateral Sclerosis. *PLoS One*. 2015 May 28;10(5):e0126355.

Hood, David A.

Funding Received:

Canadian Institutes for Health Research (CIHR) Research Grant entitled "Mitochondria in Aging Skeletal Muscle" (117,937 per year).

Canadian Institutes for Health Research (CIHR) Research Grant entitled "Autophagy in skeletal muscle" (103,661 per year).

Natural Science and Engineering Research Council of Canada Discovery Grant entitled: "Mitochondrial Biogenesis in Skeletal Muscle" (\$110,000 per year).

Canadian Society for Exercise Physiology (CSEP) John R. Sutton Lecturer, October 2015

Vainshtein, A., L.D. Tryon, M. Pauly, and D.A. Hood. The role of PGC-1 α during acute exercise-induced autophagy and mitophagy in skeletal muscle. Am. J. Physiol. Cell Physiol. 308:C710-C719, 2015. This paper was named "Paper of the Year" in this journal for 2015 by the American Physiological Society.

Hynes, Loriann

Funding Received:

2016 York University Faculty of Health Minor Research Grant

2016 York University Faculty of Health Junior Faculty Funds

Funding Applied For:

2016 NOCSAE Pilot Study Grant (Letter of Intent Submitted)

EQUIPMENT

GE LOGIQ e Duplex Doppler Ultrasound Unit for vascular and musculoskeletal evaluation

Kuk, Jennifer L.

Funding Received:

Developing and Validating the Readiness and Motivation Interview for Families (RMI-Family) Managing Pediatric Obesity (CIHR – Co-Investigator, PI: Geoff Ball, U of Alberta; 2014-18: \$627,877)

Causes and Implications of Metabolically Healthy Obese. Canadian Institutes of Health Research – New Investigator Bridge Funding (2013-2015 - #131594): \$100,000 (Co-PI)

Resistance and Cardiorespiratory Time-matched Exercise in Youth: A Randomized Clinical Trial (RCT:RCT). National, Heart, Lung, and Blood Institute, 2013-2017 - 1R01HL114857-01A1: \$5,587,453 (Co-Investigator).

TOPS New Investigator Award – Canadian Obesity Network (2015)

Fung MDT, Canning KL, Mirdamadi P, Ardern CI and Kuk JL: Lifestyle and Weight Predictors of a Healthy Overweight Profile over a 20 Year Follow-Up (Obesity – 2015 Jun;23(6):1320-5. doi: 10.1002/oby.21087).

McDermott, John C.

Funding Received:

2013-2018 CIHR operating grant, \$578,000 Regulation of MEF2 in cardiac and skeletal muscle cells

2013-2018 CIHR operating grant, \$542,000 Role of Smad7 in Cardiac and Skeletal muscle

2012-2017 NSERC Discovery grant, \$150,000 Role of AP-1 in skeletal myogenesis

A p38 MAPK regulated MEF2:β-catenin interaction enhances canonical Wnt signalling. Ehyai S, Dionyssiou MG, Gordon JW, Williams D, Siu KW, McDermott JC. *Mol Cell Biol.* 2015 Nov 9.

A conserved MADS-box phosphorylation motif regulates differentiation and mitochondrial function in skeletal, cardiac, and smooth muscle cells. Mughal W, Nguyen L, Pustynnik S, da Silva Rosa SC, Piotrowski S, Chapman D, Du M, Alli NS, Grigull J, Halayko AJ, Aliani M, Topham MK, Epand RM, Hatch GM, Pereira TJ, Kereliuk S, McDermott JC, Rampitsch C, Dolinsky VW, Gordon JW. *Cell Death Dis.* 2015 Oct 29;6:e1944.

Perry, Christopher G. R.

Funding Received:

NSERC Research Tools and Instruments Grant (P.I.).

Title: A core in vivo microCT imaging system for analyzing body composition, circulation and cardiorespiratory function in rodents. April 1, 2015. Co P.I.s: Rolando Ceddia, Michael Riddell, Anthony Scime, David Hood, Tara Haas, \$150,000

Perry CGR, Wright DC. Challenging dogma: Is hepatic lipid accumulation in Type 2 Diabetes due to mitochondrial dysfunction? *In Press, J Physiol.* (Invited editorial)

Ydfors M, Hughes MC, Laham R, Schlattner U, Norrbom J, Perry CGR. Modeling in vivo creatine/phosphocreatine in vitro reveal divergent adaptations in human muscle mitochondrial respiratory control by ADP post-exercise. *IN PRESS, J Physiol.* Articles in Press Dec 3, 2015.

Hughes MC, Ramos SV, Turnbull PC, Nejatbakhsh A, Baechler BL, Tahmasebi H, Laham R, Gurd BJ, Quadrilatero J, Kane DA, Perry CGR. Mitochondrial bioenergetics and fibre type assessments in microbiopsy vs Bergstrom percutaneous sampling of human skeletal muscle. *Frontiers in Physiology.* Dec 18;6:360, 2015.

Castellani L, Perry CGR, MacPherson R, Root-McCaig J, Huber J, Arkell A, Simpson J, Wright DC. Exercise mediated IL-6 signaling occurs independent of inflammation and is amplified by training in mouse adipose tissue. *JAPPL.* Dec 1;119(11):1347-54, 2015.

Riddell, Michael C.

Funding Received:

JDRF Operating Grant. \$286,920.04 (10/01/2014 - 09/30/2016). Project title: Preclinical drug development of somatostatin receptor 2 antagonists for the prevention of recurrent hypoglycemia in type 1 diabetes. Grant JDRF 2-SRA-2014-268-M-R.

NSERC Discovery Grant (individual- 3rd renewal). \$165,000 (2013-2017), Project Title: Examining the mechanisms for the lipolytic and antilipolytic effects of glucocorticoids in adipose tissue. Grant #261306

NIH Operating Grant #1DP3DK101075-01: Control systems for Artificial Pancreas use during and after exercise. \$2,478,076 (2013-2017)- Subcontract to York= \$364,000.

Zaharieva DP, Miadovnik LA, Rowan CP, Gumieniak RJ, Jamnik VK, Riddell MC. Effects of acute caffeine supplementation on reducing exercise-associated hypoglycaemia in individuals with Type 1 diabetes mellitus. *Diabet Med.* 2016 Apr;33(4):488-96.

Beaudry JL, Dunford EC, Leclair E, Mandel ER, Peckett AJ, Haas TL, Riddell MC. Voluntary exercise improves metabolic profile in high-fat fed glucocorticoid-treated rats. *J Appl Physiol.* 2015 Jun 1;118(11):1331-43

Roudier, Emilie

Funding Received:

Grant for science and technology, Consulate general of France in Toronto. To support the organization of a symposium “New technologies and cardiovascular health: a global perspective from EHealth, bioinformatics to rehabilitation”, November 5th-6th 2015. 4,000 Euros.

Co-applicant on CIHR Operating Grant 2013-2017: Microvascular remodeling of the adipose and muscle tissues in diet-induced obesity: regulation by FoxO proteins. Principal investigator Dr. Tara Haas, Funding: 400K CAD for 4 years.

Endothelial FoxO proteins impair insulin sensitivity and restrain muscle angiogenesis in response to high fat diet. Emmanuel Nwadozi, Emilie Roudier, Eric Rullman, Sujeenthara Tharmalingam, Hsin-yi Liu, Thomas Gustafsson, Tara L. Haas. *FASEB J.* [in press]

Aiken J, Roudier E, Ciccone J, Drouin G, Stromberg A, Vojnovic J, Olfert M, Haas TL, Gustafsson T, Grenier G, Birot O. Phosphorylation of Murine Double Minute-2 on Ser166 is downstream of VEGF-A in exercised skeletal muscle and regulates primary endothelial cells migration and FoxO gene expression. *FASEB J.* 2015 Nov 17. pii: fj.15-276964.

Scime, Anthony

Funding Received:

NSERC Discovery Grant 2012 (\$125,000 for 5 years)

Funding Applied For:

CDA “Targeting stem cells to improve metabolic disorders” 3 years \$300,000

CIHR “Controlling stem cell fates: A role for bioenergetics” 5 years \$900,000

Scimè A. (2015). Targeting stem cells to improve metabolic disorders. *Diabetes Care News*. Vol. 63, Fall 2015

Tsushima, Robert

Funding Received:

2014.09 – 2016.08 Infrastructure Operating Funding
Canadian Foundation for Innovation - \$37,877 (total)

Funding Applied For:

2016.07 – 2019.06 *SNARE Protein Regulation of Cardiac Ion Channels and ANF Secretion*
Principal Investigator: Robert G. Tsushima
Heart and Stroke Foundation of Ontario - \$300,000 (total)

2016.07 – 2019.06 Role of Endogenous Cholesterol in Beta-Cell Stimulus-Secretion
Coupling Principal Investigator: Robert G. Tsushima
Canadian Diabetes Association - \$300,000 (total)

Muscle Health Research Centre: Three Year Budget Plan

Revenue	2015-2016 (actuals)	2016-17	2017-18	2018-19
Muscle Health Awareness Day Sponsorship and Registration Fees	\$7,690	\$7,500	\$7,500	\$7,500
Continuing Professional Development Workshop fees	\$0	\$3,000	\$3,000	\$3,000
Diagnostic Service fees (@ \$5 / sample)	\$0	\$2,500	\$2,500	\$2,500
Anticipated overhead from research contracts	\$5,480	\$2,000	\$2,000	\$2,000
Contribution from Health	\$23,620			
Total Revenue	\$36,790	\$15,000	\$15,000	\$15,000
Expenses				
Operating Expenses				
Director's Stipend and Benefits	\$7,200	\$7,200	\$7,200	\$7,200
Admin Support	\$24,345	\$24,151	\$24,151	\$24,151
Office/Computer Supplies	\$2,200	\$1,200	\$1,200	\$1,200
Telephone	\$1,200	\$1,200	\$1,200	\$1,200
Research, Training and Knowledge Mobilization Expenses				
MHRC Student Scholarships (2 @ \$1000)	\$2,000	\$2,000	\$2,000	\$2,000
Muscle Health Awareness Day	\$7,000	\$6,500	\$6,500	\$6,500
Poster Prizes for Muscle Health Awareness Day (4 @ \$150)	\$600	\$600	\$600	\$600
Seminar Series/Social Events (hospitality and invited speakers)	\$5,305	\$4,500	\$4,500	\$4,500
Total Expenses	\$49,850	\$47,351	\$47,351	\$47,351
Total Revenue Less Expenses	-\$13,060	-\$32,351	-\$32,351	-\$32,351
Carryforward from Previous Year	\$13,060	\$9,376	-\$22,975	-\$55,326
Carryforward to Next Year	\$0	-\$22,975	-\$55,326	-\$87,677