



Position for a Ph.D. student

Work location : CRCHUM – Technopole Angus
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Faculté de médecine, Université de Montréal

web page: <http://www.chumtl.gc.ca/crchum/chercheurs/chercheurs-liste/lavoie-j.en.html>

Title or theme of proposed research projects :

1st project : Impact of physical activity on the development of preeclampsia.

2nd project: Role of the adipose tissue renin-angiotensin system on the development of obesity.

General project description:

The first project studies preeclampsia, a pregnancy-associated disease in which women develop hypertension and Proteinuria, and the effect of exercise training on the pathology in animal models. Furthermore, to investigate the mechanisms by which exercise training can prevent the disease.

The second project studies hypertension-related to obesity. We wish to investigate the implication of the local renin-angiotensin system (RAS) in adipose tissue. For instance, we will evaluate the involvement of the renin receptor in the development of obesity and its related symptoms. Also, we plan to determine which RAS inhibitor, when comparing renin and angiotensin converting-enzyme inhibitors as well as angiotensin receptor blockers, may be more effective for the treatment of hypertension-related to obesity as these individuals are presently difficult to treat.

References:

Falcao S, Stoyanova E, Cloutier G, Maurice RL, Gutkowska J, **Lavoie JL**. Mice overexpressing both human angiotensinogen and human renin as a model of superimposed preeclampsia on chronic hypertension.

Hypertension. 2009 Dec;54(6):1401-7. Epub 2009 Oct 12. PMID: 19822800

Koltsova SV, Luneva OG, **Lavoie JL**, Tremblay J, Maksimov GV, Hamet P, Orlov SN. HCO₃-dependent impact of Na⁺,K⁺,2Cl⁻ cotransport in vascular smooth muscle excitation-contraction coupling. *Cell Physiol Biochem*. 2009;23(4-6):407-14. Epub 2009 May 6.PMID: 19471108

Koltsova SV, Maximov GV, Kotelevtsev SV, **Lavoie JL**, Tremblay J, Grygorczyk R, Hamet P, Orlov SN. Myogenic tone in mouse mesenteric arteries: evidence for P2Y receptor-mediated, Na(+), K (+), 2Cl (-) cotransport-dependent signaling. *Purinergic Signal*. 2009 Sep;5(3):343-9. Epub 2009 Apr 22. PMID: 19387869

Falcao S, Bisotto S, Gutkowska J, **Lavoie JL**. Hyperhomocysteinemia is not sufficient to cause preeclampsia in an animal model: the importance of folate intake. *Am J Obstet Gynecol*. 2009 Feb;200(2):198.e1-5. Epub 2008 Dec 25. PMID: 19110222

Falcao S, Solomon C, Monat C, Bérubé J, Gutkowska J, **Lavoie JL**. Impact of diet and stress on the development of preeclampsia-like symptoms in p57kip2 mice. *Am J Physiol Heart Circ Physiol*. 2009 Jan;296(1):H119-26. Epub 2008 Oct 31.PMID: 18978188

Falcao, S., *Bisotto, S., *Michel, C., Lacasse, A.-A., Vaillancourt, C., Gutkowska, J. and Lavoie, J.L. Exercise training can reduce PE-like symptoms in an animal model. *J. of Hypertension* 2010 (in press).

Disciplines : Biochemistry, molecular biology, physiology or related field

Contact: Applicants should submit a resume, university records, a short statement of research interests, TOEFL results and if possible, two letters of recommendation to Dr Julie Lavoie by email (julie.lavoie.3@umontreal.ca) (preferentially, in one .pdf document).