



Position for a Ph.D. student

Work location : CRCHUM – Technopole Angus
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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

Disciplines : Biochemistry, molecular biology, physiology or related field

Contact: Interested candidates should send their complete CV, university transcripts as well as 2-3 references, to the attention of : julie.lavoie.3@umontreal.ca