16 July 2019

**PhD position in translational nanophotonics, drug delivery and biomaterials**

We have positions available immediately for 1-2 motivated students to undertake an interdisciplinary, clinical translation project in ophthalmology/neurosciences.

Briefly, neurological pain and inflammation are involved in many pathological conditions for which treatment faces clinical challenges. Here, we will be using **nanophotonics-enabled drug delivery** to effectively modulate inflammation and relieve pain in several disease models, including severe viral infection. Our approach uses a combination of biomedical engineering, nanotechnology, molecular and cell biology techniques to enable targeted drug delivery.

This is a collaborative project. Students should expect exposure to several different areas and will be able to develop in-depth expertise in at least two areas. Areas to be covered in the collaborative effort include biomaterials/nanomaterial design and fabrication, cell culture (specifically neurons), gene transfer, viral cultures, advanced microscopy, and animal models. The student will join the laboratories of Prof. Boutopoulos and Prof. Griffith at the Maisonneuve-Rosemont Hospital Research Center (CR-HMR) and the laboratory of Prof. Talbot at UdeM.

**Student profile:**

- She/he is self-motivated and comfortable with interdisciplinary/collaborative work
- She/he is willing to work with *in-vivo* models
- Background: biology, pharmacology, chemistry, biomedical engineering or relevant field
- Previous experience in any of the following fields will be considered an asset: biomedical engineering, biomaterials, cell culture, immunology, nanotechnology, neuroscience.

**Application:** For additional information, please contact Dr. Boutopoulos or Dr. Talbot or Dr. Griffith by email. For applying, send us your CV and university transcripts by email.

**Application deadline:** open until filled.

**Key papers:**


- A. Doppenberg, M. Meunier, C. Boutopoulos, “A needle-like optofluidic probe enables targeted intracellular delivery by confining light-nanoparticle interaction on single cell”, Nanoscale, 10 21871-21878 (2018).
- S Talbot et al., “Silencing nociceptor neurons reduces allergic airway inflammation”. Neuron. 2015.
- Jangamreddy JR, Haagdorens MKC, Islam MM, Lewis P, Samanta A, Fagerholm P, Liszka A, Ljunggren MK, Buznyk O, Alarcon EI, Zakaria N*, Meek KM*, Griffith M* (2018) Short peptide analogs as alternatives to collagen in pro-regenerative corneal implants. Acta Biomater 69: 120-30
- Islam MM, Buznyk O, Reddy JC, Pasyechnikova N, Alarcon EI, Hayes S, Lewis P, Fagerholm P, He C, Iakymenko S, Liu W, Meek KM*, Sangwan VS*, Griffith M* (2018) Biomaterials-enabled cornea regeneration in patients at high risk for rejection of donor tissue transplantation. npj Regen Med. 3 (2): doi:10.1038/s41536-017-0038-8



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