

Christos Boutopoulos, PhD

Assistant Professor, Department of Ophthalmology, Faculty of Medicine, University of Montreal
5415, boulevard de l'Assomption, Montréal (QC) H1T 2M4, HMR, CSA, office F131

☎ 514 252 3400 ext. 4464

✉ christos.boutopoulos@umontreal.ca <https://boutopoulos-udem.ca>

I. Formation académique

Jul 2007 – Dec 2011 **PhD in Applied Physics**
 Sep 2005 – Mar 2008 **M.Sc. in Micro-systems and Nano-devices**
 Oct 2000 – Nov 2005 **B.Sc. in Applied Physics (5 years degree)**
 Athens Polytechnique, Greece

II. Cheminement scientifique

Throughout my academic career, I have been working at the interface of physics engineering and biomedical science. After completing my PhD in Applied Physics, I joined two laboratories as PDF and gained expertise in plasmonics, cell nanosurgery and biophotonics. The effective use of such tools for the improvement of human health relies heavily on collaborative research, which is needed to bridge gaps between researchers/technology developers and potential end-users. In this context, I considered ophthalmology as the ideal field to start my independent research career and established my laboratory (2016) in an interdisciplinary environment (CRHMR) that strategically supports translational research in biomedical sciences. At my Lab., we use laser-assisted technologies to perform fundamental (drug delivery) and translational (OCT, intraocular surgery innovation) research in vision health.

07/2018 – **Assistant Professor (Professeur sous octroi adjoint)**
 11/2016 – 06/2018 *Research Assistant Professor*
 Department of Ophthalmology,
 Faculty of Medicine, University of Montreal (UdeM)

09/2016 – *Researcher*
 Vision Health Axis, Maisonneuve-Rosemont Hospital Research Centre

04/2014 – 09/2016 *Marie Curie Research Fellow*
 School of Physics & Astronomy, University of St. Andrews, UK
 & Department of Engineering Physics, École Polytechnique de Montréal, Canada

10/2012 – 03/2014 *Postdoctoral Fellow*
 Department of Engineering Physics, École Polytechnique de Montréal, Canada

Affiliations / Accreditations

Sept 2016- Biomedical Engineering Institute, Faculty of Medicine, UdeM
 May 2018- Department of Pharmacology and Physiology, Faculty of Medicine, UdeM

III. Expertises et réalisations

My research output (citations: 603 h-index: 16, i10-index: 21) spans the fields of applied physics, nanotechnology and biophotonics. In brief, 26 journal papers (12 as 1st; 19 as 1st or 2nd; 3 as corresponding author); 12 proceedings papers; 2 patent applications (1 granted); 1 invited article (scientific magazine) ; 18 presentations in international conferences (12 oral talks (1 invited), 6 posters), 6/12 oral talks were delivered in leading international conferences in the field of laser physics and biophotonics, such as Conference on Laser Ablation - COLA (n=2), SPIE Photonics West (n=3), European Materials Research Society - E-MRS (n=1); 5 invited talks (departmental talks / seminars); ~ 55 contributions in international conferences.

Honors and Awards (post PhD)

2018 **Chercheurs-boursiers (Junior I)**, Fonds de recherche du Québec - Santé (FRQS)

- 2014 **Marie Curie International Outgoing Fellowship for Career Development** (European Commission, €283k). Project: "Cellular bioengineering by plasmonic enhanced laser nanosurgery".
- 2012 **Postdoctoral Research Fellowship**, Fonds de recherche du Québec – Nature et technologies (FRQNT), (\$35k, 3rd rank).

Funding (PI career)

1. "L'identification, le marquage et la capture des cellules uniques afin de comprendre la division asymétrique", Fonds de recherche du Québec - Nature et technologies (**FRQNT**), Projets de recherche en équipe, Competition 2017. (Amount: \$162k, Role: co-PI, Nominated PI: Santiago Costantino, co-PI: Heather Melichar, duration: 2018-2021)
2. "Technologies innovantes assistées par laser pour la micro-injection de médicaments intraoculaires et pour le guidage de la chirurgie vitréo-rétinienne", Fonds de recherche du Québec - Santé (**FRQS**), Établissement de jeunes chercheurs, Competition 2017. (Amount: \$80k, Role: PI, 2018-2022)
3. "Technologies innovantes assistées par laser pour la micro-injection de médicaments intraoculaires et pour le guidage de la chirurgie vitréo-rétinienne", Fonds de recherche du Québec - Santé (**FRQS**), Chercheurs-boursiers Junior I, Competition 2017. (Amount: \$246k, Role: PI, 2018-2022)
4. "Multiscale Modeling and Applications of Three-Dimensional (3D) Laser Bioprinting", **Natural Sciences and Engineering Research Council**, DISCOVERY, Competition 2017. (Amount: \$165k, Role: PI, 2018-2023)
5. "Intra-Operative Guidance of Vitreoretinal Surgery with Intra-Ocular OCT Probes", Fonds de recherche en ophtalmologie de l'Université de Montréal (**FROUM**), Concours 2017-2018, (Amount: \$10k, Role: PI, Co-applicants: R. Duval)
6. "Development of a laser-assisted needle-free technique for intravitreal drug delivery", Fonds de recherche en ophtalmologie de l'Université de Montréal (**FROUM**), Concours 2016-2017, (Amount: \$10k, Role: PI, Co-applicants: R. Duval)
7. **Centre de Recherche, Hôpital Maisonneuve-Rosemont**, Start-up grant, September 2016. (Amount: \$250k, Role: PI)

Selected publications in refereed journals out of 26 (*: trainees; #: corresponding author)

26. 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).
25. A Dagallier, E. Boulais, **C. Boutopoulos**, R. Lachaine, M. Meunier, "Multiscale Modeling of Plasmonic Enhanced Energy Transfer and Cavitation around Laser-Excited Nanoparticles", **Nanoscale**, 9, 3023-3032, (2017).
24. R. Lachaine, É. Boulais, D. Rioux, **C. Boutopoulos**, and Michel Meunier, "Computational design of durable spherical nanoparticles with optimal material, shape and size for ultrafast plasmon-enhanced nanocavitation", **ACS Photonics**, 3 (11), 2158-2169 (2016).
23. **C. Boutopoulos**, A. Dagallier, M. Sansone, É. Lecavalier-Hurtubise, A.-P. Blanchard-Dionne, E. Boulais, M. Meunier, "Photon-induced generation and spatial control of extreme pressure at the nanoscale with a gold bowtie nano-antenna platform", **Nanoscale**, 8 17196-17203 (2016).
22. R. Lachaine, **C. Boutopoulos**, P.-Y. Lajoie, E. Boulais, M. Meunier, "Rational design of plasmonic nanoparticles for enhanced cavitation and cell perforation", **Nano Letters**, 16 3187-3194 (2016).
21. **C. Boutopoulos**, E. Bergeron, M. Meunier "Plasmonic bubble mediated single near infrared femtosecond laser pulse cell perforation", **Journal of Biophotonics**, 9 26-31 (2016).
20. E. Bergeron, **C. Boutopoulos**, R. Martel, A. Torres, C. Rodriguez, J. Niskanen, J.-J. Lebrun, F. M. Winnik, P. Sapiha, M. Meunier, "Cell-specific optoporation with near-infrared ultrafast laser and functionalized gold nanoparticles", **Nanoscale**, 7 17836-17847 (2015).
19. **C. Boutopoulos**, A. Hatef, M. Fortin-Deschênes, M. Meunier, "Dynamic imaging of single gold nanoparticle in liquid irradiated by off-resonance femtosecond laser", **Nanoscale**, 7 11758-11765 (2015).

Training: Within the first phase of my independent research activity at CR-HMR / UdeM, I recruited 2 PhD students and 2 BSc, 1 MSc (co-supervised) and 1 research assistant (co-supervised).