CURRICULUM VITAE: Mariela SEGURA

Nationality: **Canadian**

Language (oral and written): Spanish, French, and English

1. ACTUAL POSITION TITLE

Associate Professor, University of Montreal
Faculty of Veterinary Medicine (since 2012**)**

2. EDUCATION

- **B. Sc. in Microbiology with Honour Mention**
  National University of Rio Cuarto, Argentina. 09/1994

- **M. Sc. in Veterinary Sciences, Option: Microbiology**
  Faculty of Veterinary Medicine, University of Montreal, Canada. Transferred to PhD: 12/1997

- **Ph.D. in Microbiology and Immunology**
  Faculty of Medicine, University of Montreal, Canada. 07/11/2002

- **Post-doctoral training** (2001-2002) at the Infectious Disease Unit, Laval University. Training on cellular biology and infectious diseases.

- **Post-doctoral training** (2002-2003) at the Faculty of Veterinary Medicine, University of Montreal. Training on immunology of infectious diseases.

- **Post-doctoral training** (2003-2007) at the Centre for the Study of Host Resistance, McGill University Research Institute. Specialized training on immunology of parasitic diseases. More specifically, on concurrent nematode and malaria infections affecting developing countries.

- **Career Award: Assistant Professor and Researcher**
  Faculty of Veterinary Medicine, University of Montreal, Canada. 31/08/2007 – 29/02/2012.

3. MOST SIGNIFICANT CONTRIBUTIONS

- During my career I obtained several awards and distinctions, **totalizing 19**. Recently, my most noteworthy awards are:

  - **'Zoetis (Pfizer)' Award of Excellence in Research.** University of Montreal, **2014**.
  - **'Fisher Award' of the Canadian Society of Microbiologists (CSM):** Memorial University, Newfoundland, CANADA, **2011**. This prize recognizes early career researchers for outstanding contributions and exceptional career potential in the microbiological sciences.
  - **Women of Distinction Award in Science and Technology:** Women's Y Foundation & YWCA Montreal, CANADA, **2012**. This prize recognizes woman who by her strength of character and professional path, enriches the community and contributes to the advancement of all women.

- **Swine Immunology Tool Bank (SITB): http://www.medvet.umontreal.ca/SITB/:** Director of the first swine immunological tool bank in Quebec and Canada. The bank regroups 15 Quebec researches with the aim of create an immunology tool bank for swine immunology and pathogenesis of infectious diseases; develop tools that are not commercially available or available but at high cost, and increase collaboration between SITB members and develop new partnerships. The SITB web database includes a list of swine immunology tools and protocols developed by SITB members. SITB, funded by FRQNT "Strategic cluster program", also provides operating funding for new tools development through peer-reviewed competitions.

- **PRESENTATIONS AS GUEST SPEAKER: 35** invitations as guest speaker or key lecturer in Spain, France, Germany, Belgium, Poland, Denmark, UK, China, Vietnam, Morocco, Argentina, Cuba, Mexico, and within Canada

- **Contribution to training of more than 60 highly qualified personnel (HQP):** I have supervised/co-supervised or currently supervise/co-supervise 16 MSc students, 10 PhD students, and 7 PDF. In addition, I have supervised 23 undergraduate or graduate trainees and 13 international visiting students from Argentina, Cuba, China, France, and Belgium (as part of my international collaborations).
  - Students under my supervision have obtained 3 FRQNT PhD Award, 2 NSERC “Alexander-Graham-Bell” Awards, 2 NSERC Undergraduate Research Awards, 3 FRQNT-international training awards to perform internships in Japan, Spain and France, and 44 institutional or other national fellowships/awards. In the last 5 years, my students (including those in co-supervision) have been 1st authors in 60 poster or oral presentations at local, national or international symposiums. They have been awarded 16 prizes for their presentations.

4. RESEARCH INTERESTS

Innate and adaptive immune responses to encapsulated bacteria, with special focus on streptococcal species. Role of the capsular polysaccharide in modulating the functions of immune cells. New methods for improving glycoconjugate vaccine development.

5. PUBLICATIONS

PUBLICATIONS: **H-index = 23**	**Total in career**
Refereed articles:	**70**
Refereed book chapters:	**4**
Refereed review articles:	**18**
Professional journals:	**5**
Total:	**97**

Selected list of refereed papers (partial list):

- Lecours, M.P., C. Letendre, D. Clarke, P. Lemire, T. Galbas, M.O. Benoit-Biancamano, J. Thibodeau, M. Gottschalk, and **M. Segura**. Immune-responsiveness of CD4+ T cells during *Streptococcus suis* serotype 2 infection. **Scientific Reports**, *pending minor revisions*, **2016**.

- **Segura, M**, C. Calzas, D. Grenier, and M. Gottschalk. Initial steps of the pathogenesis of the infection caused by *Streptococcus suis*: fighting against non-specific defenses. **FEBS Letters** (doi: 10.1002/1873-3468.12364) **2016**. Invited review.

- Van Calsteren, M.R., G. Goyette-Desjardins, F. Gagnon, M. Okura, D. Takamatsu, R. Roy, M. Gottschalk, and **M. Segura**. Explaining the serological characteristics of *Streptococcus suis* serotypes 1 and 1/2 from their capsular polysaccharide structure and biosynthesis. **Journal of Biological Chemistry**. 291: 8387-8398, **2016**.

- Vinogradov, E., G. Goyette-Desjardins, M. Okura, D. Takamatsu, M. Gottschalk, and **M. Segura**. Structure determination of *Streptococcus suis* serotype 9 capsular polysaccharide and assignment of functions of the *cps* locus genes involved in its biosynthesis. **Carbohydrate Research,** 433: 25-30, **2016**.

- Goyette-Desjardins, G., C. Calzas, T. Shiao, A. Neubauer, J. Kempker, R. Roy, M. Gottschalk, and **M. Segura**. Protection against *Streptococcus suis* serotype 2 infection using a capsular polysaccharide glycoconjugate vaccine. **Infection and Immunity.** 84: 2059-2075, **2016.**

- Auray, G., C. Lachance, Y. Wang, C. Gagnon, **M. Segura** and M. Gottschalk. Transcriptional analysis of PRRSV-infected porcine dendritic cell response to *Streptococcus suis* infection reveals up-regulation of inflammatory-related genes expression. **PLOS One**. 11: e0156019, **2016**.

- Price, N., G. Goyette-Desjardins, H. Nothaft, E. Valguarnera, C. Szymanski, **M. Segura**, and M. Feldman. Glycoengineered outer membrane vesicles: A novel platform for bacterial vaccines. **Scientific Reports**. 6: e24931, **2016**.

- Teatero, S., P. Lemire, K. Dewar, J. Wasserscheid, C. Calzas, G. Mallo, A. Li, T. Athey, **M. Segura**, and N. Fittipaldi. Genomic recombination leading to decreased virulence of Group B *Streptococcus* in a mouse model of adult invasive disease. **Pathogens**, 5 : e54, **2016**.

- Clarke, D., C. Letendre, M.P. Lecours, P. Lemire, T. Galbas, J. Thibodeau, and **M. Segura**. Group B *Streptococcus* induces a robust IFN-γ response by CD4+ T cells in an in vitro and in vivo model. **Journal of Immunology Research**. 2016: e5290604, **2016**.

- **Segura, M.** *Streptococcus suis* vaccines: candidate antigens and progress. **Expert Review of Vaccines.** 14: 1587-608, **2015.** Invited review.

- Goyette-Desjardins, G., R. Roy, and **M. Segura**. Murine whole-blood opsonophagocytosis assay to evaluate protection by antibodies raised against encapsulated extracellular bacteria. *In*: Carbohydrate-Based Vaccines - Methods and Protocols Edition of "Methods in Molecular Biology" lab protocol series. B. Lepenies (Ed.) Springer, **2015**.

- Calzas, C., P. Lemire, G. Auray, V. Gerdts, M. Gottschalk, and **M. Segura**. Antibody response specific to the capsular polysaccharide is impaired in *Streptococcus suis* serotype 2-infected animals. **Infection and Immunity**. 83: 441-453, **2015**.

- **Segura, M.** *et al*. Latest developments on *Streptococcus suis*: an emerging zoonotic pathogen: part 2. **Future Microbiology**. 9: 587-91, **2014**.

- **Segura, M.** *et al*. Latest developments on *Streptococcus suis*: an emerging zoonotic pathogen: part 1. **Future Microbiology.** 9: 441–444, **2014**.

- Goyette-Desjardins, G., J.-P. Auger, J. Xu, **M. Segura**, and M. Gottschalk. *Streptococcus suis*, an important pig pathogen and emerging zoonotic agent - An update on the worldwide distribution based on serotyping and sequence typing. **Emerging Microbes & Infections**. 3, e45, doi: 10.1038/emi.2014.45, **2014**. Invited review.

- Lemire, P., and **M. Segura**. The NOD2 receptor modulates cytokine response but does not alter the clinical outcome of Group B *Streptococcus*-infected mice. **Receptors & Clinical Investigation** 2: 29-32, **2014**. Invited Research Highlight.

- Lemire, P., D. Roy, N. Fittipaldi, M. Okura, D. Takamatsu, E. Bergman, and **M. Segura**. Implication of TLR- but not of NOD2-signaling pathways in dendritic cell activation by Group B *Streptococcus* serotypes III and V. **PLOS One**. 9: e113940, **2014**.

- Valanparambil, R**.***, **M. Segura***, M. Tam, A. Jardim, T. G. Geary, and M. M. Stevenson. Production and analysis of immunomodulatory excretory-secretory products from the mouse gastrointestinal nematode *Heligmosomoides polygyrus* bakeri. **Nature Protocols**, 9: 2740-2754, **2014**.

- Lemire, P., C. Calzas, and **M. Segura**. The NOD2 receptor does not play a major role in the pathogenesis of Group B *Streptococcus* in mice. **Microbial Pathogenesis**. 65: 41-47, **2013**.

- Lachance, C., M. Gottschalk, P. Pereyra-Gerber, P. Lemire, J. Xu, and **M. Segura**. Exacerbated type II interferon response drives hypervirulence and toxic shock by an emergent epidemic strain of *Streptococcus suis*. **Infection and Immunity**. 81: 1928-1939, **2013**.

- Calzas, C., G. Goyette-Desjardins, P. Lemire, F. Gagnon, C. Lachance, M.R. Van Calsteren, and **M. Segura**. Group B *Streptococcus* and *Streptococcus suis* capsular polysaccharides induce chemokine production by dendritic cells via TLR2- and MyD88-dependent and -independent pathways. **Infection and Immunity.** 81: 3106-3118, **2013**.

- Van Calsteren, M.R., F. Gagnon, C. Calzas, G. Goyette-Desjardins, M. Okura, D. Takamatsu, M. Gottschalk, and **M. Segura**. Structure determination of *Streptococcus suis* serotype 14 capsular polysaccharide. **Biochemistry and Cell Biology**. 91: 49-58, **2013**.

- Lemire, P., M. Houde, M.P. Lecours, N. Fittipaldi, and **M. Segura**. Role of capsular polysaccharide in Group B *Streptococcccus* interactions with dendritic cells. **Microbes and Infection**. 14: 1064-1076, **2012**.

- Lemire, P., M. Houde, and **M. Segura**. Encapsulated Group B *Streptococcus* modulates dendritic cell functions via lipid rafts and clathrin-mediated endocytosis. **Cellular Microbiology**. 14: 1707-1719, **2012**.

- Houde, M., M. Gottschalk, F. Gagnon, M.R. Van Calsteren, and **M. Segura**. *Streptococcus suis* capsular polysaccharide inhibits phagocytosis through destabilization of lipid microdomains and prevents lactosylceramide-dependent recognition. **Infection and Immunity**. 80: 506-517, **2012**.

- Lecours, M.P., M. Gottschalk, M. Houde, P. Lemire, N. Fittipaldi, and **M. Segura**. Critical role for *Streptococcus suis* cell wall modifications and suilysin in resistance to complement-dependent killing by dendritic cells. **Journal of Infectious Diseases**. 204: 919-929, **2011**.

- **Segura, M.** *Streptococcus suis*: an emerging human threat. **Journal of Infectious Diseases** 199: 4-6, **2009**. Invited Editorial Perspective.