

ROCIO MORALES RAYAS

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EDUCATION

Ph.D., Food Science *University of Guelph, Guelph, ON* June 2009

Thesis: *Concentration and separation strategies for detection of foodborne pathogens by real-time PCR*

M.Sc., Biotechnology *Center for Research and Advanced Studies* March 2003
(CINVESTAV-IPN, Mexico)

Thesis: *Genetic transformation of the endomycorrhizal fungus Glomus intraradices*

Biochemical Engineering *Technological Institute of Celaya, Mexico* January 2001

Thesis: *Obtaining a Petit Suisse type cheese and its comparative rheological study with commercial cheeses*. Major: Food Processing

WORK EXPERIENCE

Research Associate *University of Guelph, Guelph, ON* November 2011- present

- Studying the effect of probiotic bioactives on pathogens present in the food chain for improvement of animal and human health
- Developing novel molecular technologies for detection of viruses in food commodities
- Profiling microbial populations in food and environmental samples
- Supervising graduate students (master's and doctorals) and exchange students

Postdoctoral Fellow *Université Laval, Québec* September 2009- October 2011

- Initiated the biophysical characterization of virus-like particles (VLPs)
- Developed molecular detection methods for norovirus and hepatitis A virus in food matrices
- Supervised graduate students' projects

Graduate Research Assistant *University of Guelph, Guelph, ON* October 2008-April 2009

- Transfected HeLa cells for the expression of green fluorescent protein

Graduate Research Assistant *University of Guelph, Guelph, ON* September 2007- April 2008

- Standardized ELISA for use in animal trials
- Applied effective microbiological techniques and real-time PCR assay for determination of bacterial load during animal trials
- Trained researchers on the use of real-time PCR for quantitative applications

Exchange Research Assistant *U. Hospital of Maastricht* September - November 2006
The Netherlands

- Used molecular biology techniques for new artificial templates for multiplex detection of norovirus and hepatitis A virus, templates were under validation by the diagnostic

group in the hospital.

- Participated in meetings and discussions with routine diagnostics laboratory staff for development of new PCR assay

Research Assistant *CINVESTAV-IPN, Mexico* June - December 2003

- Successfully proved macromolecular communication between transgenic tobacco and *Glomus intraradices* using confocal microscopy and genetic manipulation

Quality Control Technician *Danone, Irapuato, Mexico* February - July 1999

- Maintained and reported test results
- Maintained and indexed library of product samples
- Audited and reported production test results
- Performed other duties as assigned by QA Manager

EXTERNAL RESEARCH FUNDING

- NSERC, Collaborative Research and Development Grant, “Probiotic Bioactive for Improvement of Animal Health from Foodborne Zoonotic Infections”, Role: Collaborating Researcher (Principal Investigator Mansel W. Griffiths), Total Amount: \$460,000
- NSERC, Engage Grant, “Development of a paramagnetic nano-detection for lateral flow identification of norovirus in food”, Role: Collaborating Researcher (Principal Investigator Mansel W. Griffiths), Total Amount: \$25,000
- Neogen Food Safety Division, “Development of an Isothermal Detection Assay for Norovirus in Food”, Role: Collaborating researcher (Principal Investigator Mansel W. Griffiths), Total Amount: \$53,760
- NSERC-Ontario, Interaction Grant, “Potential development of a viral application for MICT technology in food samples”, Role: Collaborating researcher (Principal Investigator Mansel W. Griffiths), Total Amount: \$4,050
- OMAFRA, Food Safety Research Program, “Mitigation of the effects of *Listeria monocytogenes* using probiotics”, Role: Collaborating researcher (Principal Investigator Mansel W. Griffiths), Total Amount: \$140,000

PRESENTATIONS

- Wu, R. Morales-Rayas, R. and Griffiths, M.W. 2013. Cationic nanocapture for foodborne virus detection. Poster presentation at the IAFP 2013, Charlotte, North Carolina.
- Morales-Rayas, R., Tellez, A. and Griffiths, M.W. 2013. Impact of probiotic biocompounds on virulence of foodborne and zoonotic pathogens. Oral presentation at the IAFP European Symposium on Food Safety, Marseille, France.
- Wu, R. Morales-Rayas, R. Corredig, M. and Griffiths, M.W. 2012. Cationic nanocapture for foodborne virus detection. Poster presentation at the GFSSS 2012 Symposium: "Food Safety - Risky Business? Guelph, ON.
- Morales-Rayas, R., Tellez A., Delcenserie, V. Abbasifar, R and Griffiths, M.W. 2012. Effect of *Lactobacillus acidophilus* strain La-5 fraction on *Salmonella* Typhimurium presence in pigs. Oral presentation at the IAFP 2012, Providence, Rhode Island.
- Keeffe, S. Morales-Rayas, R. Delcenserie, V. and Griffiths, M.W. Enlisting probiotics in the fight against *Listeria monocytogenes*. 2012. Poster presented at the OMAFRA

Food Safety Research Forum, Guelph, ON. First place was awarded for the Student Poster Competition.

- Morales-Rayas, R. and Jean, J. 2011. Propidium monoazide for differentiation of inactivated viral particles. Oral presentation at the IAFP 2011, Milwaukee, Wisconsin, USA.
- Morales-Rayas, R. Jean, J., Wolffs, P., Griffiths, M.W. 2010. Multiple concentration and detection of food borne viruses in produce. Oral presentation at the 2010 IAFP European Symposium, University College Dublin, Ireland. First place was awarded for the Technical presentation competition.
- Morales-Rayas, R. Wolffs, P., Griffiths, M.W. 2006. Real-time RT-PCR for direct detection of a Norovirus surrogate in fresh products Poster presented at the 20th International ICFMH Symposium, University of Bologna, Italy.
- Morales-Rayas, R. Wolffs, P., Griffiths, M.W. 2005. Rapid detection of *Campylobacter jejuni* by real-time PCR and immunomagnetic separation. Poster presented at the 2nd International qPCR Symposium, Technical University of Munich, Germany.

PUBLICATIONS

- **Morales-Rayas, R.** and Jean, J. 2013. Propidium monoazide for differentiation of potentially infectious norovirus and hepatitis A virions using nucleic acid amplification. *Journal of Food Protection*. In preparation.
- Girard M., **Morales-Rayas, R.** and Jean J. 2013. Comparison of RNA extraction methods for the detection of a norovirus surrogate in ready-to-eat foods. *Foodborne Pathogens and Diseases*. 10:47-54.
- **Morales-Rayas, R.** and Jean, J. 2011. Overview of viral persistence on food surfaces. *Current Topics in Virology*. 9:1-17.
- Tellez, A., Corredig, M., Turner, P.V., **Morales-Rayas, R.**, Griffiths, M.W. 2011. A peptidic fraction from milk fermented with *L. helveticus* protects mice against *Salmonella* infection. *International Dairy Journal*. 21:607-614.
- **Morales-Rayas, R.** Ruiz-Medrano R. and Xoconostle-Cázares B. 2011. Macromolecular trafficking between a vesicular arbuscular endomycorrhizal fungus and roots of transgenic tobacco. *Plant Signalling and Behaviour*. 6:1-7
- Jean, J., **Morales-Rayas, R.**, Anoman, M., Lamhoujeb, S. 2011. Inactivation of hepatitis A virus and norovirus surrogate in suspension and in food contact surfaces using pulsed UV light. *Food Microbiology*. 28:568-572.
- Sow, H., Desbiens, M, **Morales-Rayas, R.**, Ngazoa, S.E., Jean, J. 2011. Heat inactivation of hepatitis A virus and a norovirus surrogate in soft-shell clams (*Mya arenaria*) *Foodborne Pathogens and Disease*. 8: 387-393.
- **Morales-Rayas, R.**, Wolffs, P., Griffiths, M.W. 2010. Simultaneous separation and detection of hepatitis A virus and norovirus in produce. *International Journal of Food Microbiology*. 139:48-55.
- **Morales-Rayas, R.**, Wolffs, P., Griffiths, M.W. 2009. Anion exchange filtration and real-time RT-PCR for the detection of a norovirus surrogate in food. *Journal of Food Protection*. 72:2178-2183.
- **Morales-Rayas, R.**, Wolffs, P., Griffiths, M.W. 2008. Immunocapture and real-time PCR to detect *Campylobacter* spp. *Journal of Food Protection*. 71:2543-2547.

- **Morales-Rayas, R.**, Namvar, A. 2007. What's the future of foodborne pathogen detection? *Food Protection Trends*, 27:795.
- **Morales-Rayas, R.**, Han, F. 2007. Laboratory Methods. *Food Protection Trends*, 27:805.

BOOK CHAPTERS

- Morales-Rayas, R. and Griffiths, M.W. 2013. DNA extraction, plasmid preparation. *In* Jordan K (ed) *Methods in Molecular Biology – Listeria monocytogenes*. Springer Science+Business Media, Ilc. In preparation.
- Morales-Rayas, R., Schultz, A.C. and Griffiths, M.W. 2013. New developments in safety testing: soft fruits. *In* Hoorfar J (ed) *Global safety of fresh produce*. Wood Head Publishing. Submitted for publication.
- Flores-Gómez, E., Ruiz-Medrano, R., Morales-Rayas, R., Herrera-Martínez, A., Reyes-Márquez, B. And Xoconostle-Cázares, B. 2005. Interkingdom macromolecular trafficking in endomycorrhiza evidenced by GFP translocation. *In* F. Sanchez, C. Quinto, Lopez-Lara, I and O. Geiger (ed) *Biology of Plant Microbe Interactions*, vol. 5. APS Press.

DISTINCTIONS AND AWARDS

- National Researchers System, Mexico, SNI I, October 2013
- Bourses d'excellence postdoctorales du Vice-décanat à la recherche de la FSAA, Université Laval 2009-2011
- Technical Presentation award, IAFP European Symposium, University College Dublin, Ireland 2010
- AgroBIO México Award 2003
 - Awarded to the graduate student whose thesis has the highest impact and contribution to the development of the biotechnology in México.

PROFESSIONAL ACADEMIC ACTIVITIES AND SERVICE

- Invited speaker to the 63rd Annual Conference of the Canadian Society of Microbiologists (CSM) held on June 17-20, 2013 at Carleton University, Ottawa, ON, Canada.
- Project managing for food companies such as shelf life studies
- Invited lecturer to the Food Microbiology graduate course at the Department of Chemistry, Autonomous University of Queretaro, Mexico as expert on Foodborne Viruses, September 2012&2013
- Presenter at the Dairy Farmers of Ontario Seminar Sessions, June 2012&February 2013
- Participated in presentations for the International Food Risk Analysis course (2012) and the Maple Leaf Foods training course (2011-2012) during laboratory sessions
- Developed Product Specification and Shelf Life module for the Loblaw Academy 2012
- Invited speaker to the Advanced Food Microbiology graduate course as expert on foodborne viruses at the Department of Food Science, February 2012.
- Journal Referee,
 - Foodborne Pathogens and Diseases 2010- present
 - Applied and Environmental Microbiology 2011- present
- Member, Health and Safety Committee, Canadian Research Institute for Food Safety 2005-2008

PROFESSIONAL MEMBERSHIPS

- American Society of Microbiology
- International Association for Food Protection
- Québec Food Protection Association

LANGUAGES

- English - Second language
- Spanish - Native language
- French - Basic