

Melanie Kalischuk

North Florida Research & Education Center
University of Florida
155 Research Road, Quincy, FL, 32351



Education

- May 2015 **Ph.D. Biomolecular Plant Pathology**, University of Lethbridge, Alberta, Canada
Interactions between pararetroviruses and their plant hosts.
University Dissertation Advisor: Dan Johnson
Agriculture and Agri-Food Research Advisor: Lawrence Kawchuk
- Dec 2004 **MSc. Forest Biology and Management**, University of Alberta, Canada
Influence of site and age on spruce growth.
Advisors: Peter Blenis and Steve Titus
- May 1995 **BSc. Biological Science**, University of Lethbridge, Alberta, Canada

Experience

- Apr 2017-present **Research Scholar & Post Doctoral Fellow**, University of Florida
Mar 2016-present **Scientist and Director**, Aerobio Solutions Ltd., Alberta
Sept 2013-Feb 2016 **Instructor (60%) and Research Scientist (40%)**, Lethbridge College
May 2010-Sept 2013 **Graduate Research Associate and Instructor**, University of Lethbridge
Feb 2009-July 2009 **Honorary Research Associate**, University of Sydney, Australia
Sept 2005-Dec 2008 **Research Affiliate**, Agriculture and Agri-Food Canada, Alberta
Sept 2004-Aug 2005 **Agronomy Research Assistant**, Organic Agriculture Centre of Canada, Alberta
May 2000-Aug 2004 **Forestry Graduate Research Assistant**, University of Alberta, Edmonton, Alberta
May 1995-Aug 2004 **Business Owner**, Forsite Forestry Services Ltd., British Columbia
Dec 1997- Mar 2000 **Bean Breeding Research Assistant**, Agriculture and Agri-Food Canada, Alberta
May-Aug 1993 **Entomology Research Assistant**, Agriculture and Agri-Food Canada, Alberta

Extension and Outreach

Kalischuk M, Paret M, Freeman J, Eubanks S, Wiggins DJ, Lollar M, Hoak S, Gibson M, Rajendranath D, Marios J, Mellinger C, Das J. Improvements to field scouting for accurate disease ratings using multispectral imagery in watermelon and cucumber. Suwannee Valley Watermelon Institute, Gainesville, Florida, November 30, 2017. (Grower presentation)

Kalischuk M. Plant disease training and basics of plant disease diagnostics – viral plant pathogens. West Florida Research and Education Center, Milton, Florida. October 2, 2017. (training of Extension Agents)

Kalischuk M. Plant disease training and basics of plant disease diagnostics – viral plant pathogens. North Florida Research and Education Center, Quincy, Florida. September 25, 2017. (training of Extension Agents)

Paret M, **Kalischuk M**. Development of an improved crop scouting technique incorporating UAV-multispectral imaging into conventional scouting practices on Florida cucurbits – Progress reporting of FDACS grant. 2017. (reports)

Kalischuk ML, Harding MW, Howard RJ, Kawchuk L. Real time and data sharing for trapping and forecasting pathogen pressure affecting potato. May - October 2016. (phone app.)

Kalischuk ML. Trapping and prevention of Late blight caused by *Phytophthora infestans* biweekly monitoring map updates. May - October 2016. (reports)

Kalischuk M. “Workshop for Agronomists – Volumetric spore trapping techniques” Lethbridge Research Centre, May 10, 2016. (Workshop instructor)

Kalischuk M. Trapping and prevention of Late blight caused by *Phytophthora infestans* biweekly monitoring map updates. May - September 2015. (reports)

Kalischuk ML, Harding MW, Howard RJ, Kawchuk L. Trapping and prevention of Late blight caused by *Phytophthora infestans* biweekly monitoring map updates. May through August 2014. (reports)

Teaching and Course Development

2015 Fall	BIOL1167 Lecture, Botany, Lethbridge College, 6 credits, 60 students
2015 Fall	BIO1167 Lab, Botany, Lethbridge College, 6 credits, 60 students
2015 Summer	BIO1167 Botany Lecture and Lab Course Development
2015 Winter	BIOL1163 Lecture, Terrestrial Ecology, Lethbridge College, 3 credits, 45 students
2015 Winter	BIOL1163 Lab, Terrestrial Ecology, Lethbridge College, 3 credits, 45 students
2014 Fall	BIOL1163 Lecture, Terrestrial Ecology, Lethbridge College, 6 credits, 60 students
2014 Fall	BIOL1163 Lab, Terrestrial Ecology, Lethbridge College, 6 credits, 60 students
2014 Fall	ENV2255 Lecture, Land Use Practices, Lethbridge College, 6 credits, 35 students
2014 Winter	BIOL1163 Lecture, Terrestrial Ecology, Lethbridge College, 3 credits, 45 students
2014 Winter	COM1158 Communication & Leadership Skills, Lethbridge College, 3 credits, 50 students
2013 Fall	BIOL1163 Lecture, Terrestrial Ecology, Lethbridge College, 6 credits, 90 students
2013 Fall	ENV2255 Lecture, Land Use Practices, Lethbridge College, 6 credits, 80 students
2012 Fall	BIO1010 Lab, The Cellular Basis of Life, University of Lethbridge, 1.5 credits, 15 students
2012 Spring	BIO1010 Lab, The Cellular Basis of Life, University of Lethbridge, 1.5 credits, 15 students
2011 Fall	BIO1010 Lab, The Cellular Basis of Life, University of Lethbridge, 1.5 credits, 15 students

Funding

May 2016- Mar 2017 **Alberta Crop Industry Development Fund Ltd.**
Advanced warning and prevention of Late Blight and other airborne pathogens by precision trapping
Role: Principle Investigator
Total cash: \$80,000

- Apr 2016– Mar 2018 **Saskatchewan Ministry of Agriculture – Agriculture Development Fund**
Monitoring airborne pathogens to prevent late blight and other chronic diseases of potato
 Role: Co-principle Investigator
 Scientific Collaborators: Agriculture and Agri-Food Canada, U. of Saskatchewan
 Industry Support: Saskatchewan Seed Potato Growers
 Cash amount: \$117,000
- April 2015- Dec 2017 **Alberta Crop Industry Development Fund Ltd. and Potato Growers of Alberta**
Advanced warning and prevention of late blight and other airborne pathogens by precision trapping
 Role: Principle Investigator
 Industry collaborators: Potato Growers of Alberta, Lamb Weston, Cavendish Farms, McCain Food, Hostess Frito Lay, Old Dutch,
 Total amount: \$191,000
 Cash amount: \$154,000
- Dec 2013- Nov 2016 **Alberta Crop Industry Development Fund Ltd. and Potato Growers of Alberta**
Early warning, monitoring and prevention of late blight and other airborne pathogens
 Role: Principle Investigator
 Scientific collaborators: Agriculture and Agri-Food Canada, Alberta Agriculture and Forestry, RH Agriculture Solutions Ltd.
 Industry collaborators: Potato Growers of Alberta, Lamb Weston, Cavendish Farms
 Total amount: \$340,200
 Cash amount: \$207,600
- Dec 2013- Dec 2014 **Applied Research and Innovation Internal Funding – Lethbridge College**
Early Warning and prevention of potato diseases
 Role: Principle Investigator
 Total amount: \$4600

Publications

Fusaro AF, Barton DA, Nakasugi K, Jackson C, **Kalischuk ML**, Kawchuk L, Vaslin MFS, Correa RL, Waterhouse PM. 2017. The luteovirus P4 movement protein is a suppressor of systemic RNA silencing. *Viruses* 9(10):297 doi:10.3390/v9100294

Wijekoon CP, Pageni BB, **Kalischuk ML**, Lupwayi NZ, Kawchuk LM. 2017. Amplification of the RG57 loci facilitates in planta T-RFLP identification of late blight genotypes. *Am. J. of Potato Research* doi:10.1007/s12230-016-9560-2.

Kalischuk M, Lynn J, Kawchuk L. 2016. First report of *Potato mop-top virus* on potato in Alberta. *Plant Disease* 100(12): 2544.

Kalischuk M, Hachey J, Kawchuk L. 2015. Complete genome sequence of phytopathogenic *Pectobacterium atrosepticum* Bacteriophage Peat1. *Genome Announcements* 3(4); e00760-15 doi: 10.1128/genomeA.00760-15.

Alkher H, Islam MR, Wijekoon C, **Kalischuk M**, Kawchuk LM, Peters RD, Al-Mughrabi KI, Conn KI, Dobinson KF, Waterer D, Daayf F. 2015. Characterization of *Phytophthora infestans* populations in Canada during 2012. *Can. J. Plant Path.* 37(3): 305-314. doi:10.1080/07060661.2015.1053987.

Kalischuk ML, Johnson D, Kawchuk LM. 2015. Priming with a double-stranded DNA virus alters *Brassica rapa* seed architecture and facilitates a defense response. *Gene* 557(2): 130-137.

Hwang YT, Wijekoon C, **Kalischuk M**, Johnson D, Howard R, Prüfer D, Kawchuk L. 2014. Invited Review: Evolution and management of the Irish Potato Famine Pathogen *Phytophthora infestans* in Canada and the United States. *Am. J. Potato Research* 9(6); 579-593.

Peters RD, Al-Maghrabi KI, **Kalischuk ML**, Dobinson KF, Conn KL, Alkher H, Islam MR, Daayf F, Lynn J, Bizimungu B, De Koeyer D, Lésvesque CA. 2014. Characterization of *Phytophthora infestans* population diversity in Canada reveals increased migration and genotype recombination. *Can. J. Plant Path.* 36(1): 73-82.

Kalischuk ML, Fusaro AF, Waterhouse PM, Pappu HR, Kawchuk LM. 2013. Complete genomic sequence of *Rubus yellow net virus* and detection of genome-wide pararetrovirus-derived small RNAs. *Virus Research* 178(2): 306-313.

Hwang YT, **Kalischuk M**, Fusaro A, Waterhouse PM, Kawchuk L. 2013. Small RNA sequencing of Potato leafroll virus infected plants reveals an additional subgenomic RNA encoding a sequence-specific RNA binding protein. *Virology* 438: 61-69.

Groscurth S, Muller B, Schwan S, Menzel M, Diekstall F, Senft M, Kendall A, Kommor BA, Neumann U, **Kalischuk M**, Kawchuk LM, Krzyzanek V, Heilmann A, Stubbs G, Twyman RM, Pruefer D, Noll GA. 2012. Artificial forisomes are ideal models of forisome assembly and activity that allow the development of technical devices. *Biomacromolecules* DOI: 10.1021/bm3008499.

Kalischuk M, Al-Mughrabi KI, Peters RD, Howard RJ, Platt HW, Kawchuk LM. 2012. Genetic composition of *Phytophthora infestans* in Canada reveals migration and increased diversity. *Plant Disease* 96(12): 1729-1735.

Hill BD, **Kalischuk M**, Waterer DR, Bizimungu B, Howard R, Kawchuk LM. 2011. An environmental model predicting bacterial ring rot symptom expression. *Am. J. Potato Research* 88: 294-301.

Kathiria P, Sidler C, Golubov A, **Kalischuk M**, Kawchuk LM, Kovalchuk I. 2010. Tobacco mosaic virus infection results in an increase in recombination frequency and resistance to viral, bacterial and fungal pathogens in the progeny of infected tobacco plants. *Plant Physiology* 153: 1859-1870.

Kawchuk LM, Howard RJ, **Kalischuk ML**, Northover PR, Dejardins M, Spencer R. 2009. First report of *Apioplagiostoma populi* causing bronze leaf disease on poplar in Alberta, Canada. *Plant Disease* 94(3): 377.

Kalischuk ML, Kawchuk LM, Leggett F. 2008. First report of *Rubus yellow net virus* in Alberta, Canada, *Plant Disease* 92(6):974.

Kalischuk M, Blenis PV, Kawchuk LM. 2006. A light-adjusted growth intercept model for predicting white spruce site index. *Western journal of applied forestry* 21(2): 68-71.

Conference Oral Presentations

Kalischuk M, Paret M, Rajendranath D, Freeman JH, Wright S, Eubanks S, Wiggins DJ, Lollar M. Improvements in assessments of disease severity in conventional scouting using UAV-assisted multispectral imaging in watermelon. International Congress of Plant Pathology, Boston, Massachusetts, July 29- August 3, 2018

Kalischuk M, Kawchuk L. Evolution of *Phytophthora infestans* and disease prevention strategies. Science Protecting Plant Health, Brisbane, Australia, September 26-28, 2017.

Kalischuk M. Interactions between the environment and potato production for expanding markets. Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, Alberta, December 21, 2016.

Kalischuk M, Harding, Howard R, Kawchuk L. Detection of *Phytophthora infestans* sporangia using volumetric trapping. American Phytopathological Society Pacific Division Meeting, La Conner, Washington, June 30, 2016.

Kalischuk M. Prevention and detection of plant pathogens in small fruit and horticultural crops. Agassiz Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, Alberta, June 20, 2016.

Kalischuk M. Innovations in horticulture crop production improve yield, quality, and competitiveness. University of Saskatchewan, School of Agriculture and Bioresources, Saskatoon, Saskatchewan, April 24, 2016.

Kalischuk ML, Harding MW, Howard RJ, Kawchuk LM. Late blight pathogen monitoring. Alberta Potato Conference and Trade Show. Potato Growers of Alberta, Red Deer Alberta, November 17-19, 2015.

Kalischuk ML. *Invited Speaker*: Early warning of Late Blight and other air-borne pathogens. Alberta Potato Growers of Alberta Trade Show. Red Deer, Alberta, November 17-20, 2014. (Invited oral)

Kalischuk ML. Disease Forecasting: Monitoring late blight risks in S. Alberta. Western Committee on Plant Disease. Canmore, Alberta, October 30, 2014.

Poster Presentations

Kalischuk M, Kawchuk L. Polerovirus suppression by a 5' sequence-specific RNA-binding protein encoded by a late infection 3' subgenomic RNA. RNA, Kyoto, Japan, June 29, 2016.

Kalischuk ML, Kawchuk LM. Virus suppression with the Polerovirus 5' sequence-specific RNA-binding protein encoded by the 3' subgenomic RNA. International Plant Protection Congress, Berlin, Germany, August 23-26, 2015.

Kalischuk ML, Johnson D, Kawchuk LM. Characterization of the transcriptome and pathogen small RNA associated with stress memory in a commercial crop. American Phytopathological Society Annual Meeting, Pasadena, California, August 1-5, 2015.

Kalischuk ML, Peters RD, Al-Mughrabi KI, Daayf F, Harding MW, Howard, RJ, Sabaratnam S, Kawchuk LM. Chronic late blight produced by *Phytophthora infestans* US-23 limits conventional disease management strategies. Canadian Phytopathological Society Annual Meeting, Edmonton, AB, July 27-30, 2015.

Kalischuk ML, Harding MW, Howard RJ, Kawchuk L. Trapping and prevention of late blight caused by *Phytophthora infestans*. Potato Growers of Alberta Trade Show, Red Deer, Alberta, November 17-20, 2014. (poster)

Appointments

Co-Chair, Social Committee, NFREC, 2018-present

Scientific Manuscript Reviewer, Plant Disease, 2016 -present

Scientific Manuscript Reviewer, American Journal of Potato Research, 2014-present

Editor, Canadian Phytopathological Society Website, 2014-2016

Chair, Canadian Phytopathological Society Website Committee, 2014-2016

Scientific Manuscript Reviewer, CAB Reviews, 2015-2016

Language Editor, Open Life Sciences (Central European Journal of Biology), 2006-2015

Supervision

240 hours, MSc. Environmental Science student, S. Watson, 2015 Sept.- Dec.

320 hours, 2nd year Agriculture Science university & diploma student, L. Stewart, 2015 May- Dec.

65 hours, 3rd year Environmental Science diploma student, B. Pavelich, 2015 Jan.- Apr.

270 hours, 1st year Environmental Science diploma student, M. Claxton, 2014, Jan.- May

Professional Affiliation

Canadian Phytopathological Society

American Phytopathological Society

Plant Pathology Society of Alberta

Community Activity

Indoor Soccer Coach U8 & U10, 2012-2016

Mountain biking, skiing, and painting