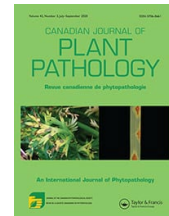




THE CANADIAN PHYTOPATHOLOGICAL SOCIETY  
LA SOCIÉTÉ CANADIENNE DE PHYTOPATHOLOGIE



## **WORKSHOP: Rust in peace: breeding and cultural practices to mitigate rust diseases in crops and forest trees**

**Date:** Thursday, June 9, 2022 | 9:00 AM – 12:30 PM PST (Pacific Time)

**Introduction:** Among the 8,000 rust species described, many are known for their devastating impact on field crops and forest trees, challenging global food security and ecosystems health. Due to their biotrophic nature and the complexity of their lifecycle, rust fungi are challenging organisms to work with. However, with advancements in genetics and then genomics, significant progress in the identification of resistance and avirulence genes has been made in rust pathosystems since Harold H. Flor first demonstrated the molecular basis of the gene-for-gene hypothesis in 1947. This workshop follows up from the Special Issue on rust disease management and biology in the Canadian Journal of Plant Pathology published in December 2021. We will highlight and discuss some of the recent advances in resistance breeding and management practices for the mitigation of rust disease of field crops and forest trees.

### **AGENDA**

#### **All times are in Pacific Standard Time (PST)**

- 9:00 AM Welcome & Introduction: Dr. Gurcharn Brar, The University of British Columbia, Canada
- 9:10 AM “Poplar rust never sleeps: emergence of a new genetic group of *Melampsora larici-populina* following a poplar major resistance gene breakdown”  
Dr. Pascal Frey, INRAE (French National Research Institute for Agriculture, Food and Environment), France
- 9:40 AM “Using sanitation pruning to prevent mortality from white pine blister rust”  
Stefan Zeglen, BC Ministry of Forests, Canada
- 10:10 AM “Immunity to stripe rust in wheat: A case study of a hypersensitive-response (HR)-independent resistance to *Puccinia striiformis* f. sp. *tritici* in Avocet-Yr15”  
Dr. Soren Seifi, Aurora Cannabis, Canada
- 10:40 AM BREAK
- 11:00 AM “Molecular mapping and identification of rust resistance genes in common and durum wheat lines utilized in Canadian breeding”  
Dr. Firdissa Bokore, Agriculture and Agri-Food Canada, Swift Current, Canada
- 11:30 AM “Evolution and host adaptation of the wheat stripe rust fungus *Puccinia striiformis* f. sp. *tritici*”  
Dr. Benjamin Schwessinger, Australian National University, Australia

12:00 PM “Discovery and deployment of rust resistance in wheat”

Dr. Harbans Bariana, The University of Sydney, Australia

12:05 PM Adjourn

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## SPEAKER BIOGRAPHIES

**Dr. Pascal Frey**, INRAE (French National Research Institute for Agriculture, Food and Environment), France



Dr. Pascal Frey is a senior scientist at INRAE (French National Research Institute for Agriculture, Food and Environment) near Nancy in northeastern France. He is Deputy Director of the Joint Research Unit "Tree-Microbes Interactions" which associates INRAE and the University of Lorraine, and Head of the "Ecology of Forest Pathogenic Fungi" team. He studied plant biology at the Ecole Normale Supérieure in Paris and holds a PhD in Phytopathology from the University of Paris-Orsay. Since 1995, he is studying forest pathology at INRAE. His main research interests are epidemiology and population biology of forest pathogenic fungi and oomycetes, in order to better understand the emergence of new diseases and the evolution of forest pathogens. His main model species is the poplar rust fungus *Melampsora larici-populina*. He also served as President of the French Society of Phytopathology from 2008 to 2014, and as Coordinator of the IUFRO 7.02.05 Working Group "Rusts of Forest Trees" from 2014 to 2019.

**Stefan Zeglen**, BC Ministry of Forests, Canada

Stefan is the provincial forest health officer with the British Columbia (BC) Ministry of Forests where he oversees the provincial forest health program. Prior to this, he was the regional forest pathologist for the Coast Area where he worked on white pine blister rust, Septoria canker, Swiss needle cast and other pathogens of trees. He obtained a BSc. in Forestry from UBC and a M.S. in Forestry from Utah State University.

**Dr. Soren Seifi**, Aurora Cannabis, Victoria, Canada



I received my PhD in Plant Pathology from Ghent University in Belgium, where I worked on effective defense mechanisms against the necrotrophic fungal pathogen *Botrytis cinerea*. After my PhD I moved to Canada to do my first postdoc with Prof. Barry Shelp at the University of Guelph. My project was mainly focused on the development of novel eco-friendly plant defense activators, which led to a patented formulation. I did my second postdoc at the lab of Prof. Alireza Navabi (RIP) at UGuelph, where I worked on genetic resistance responses to stripe rust and fusarium head blight in wheat. Currently I lead pathology research on cannabis resistance breeding for powdery mildew at Occo, which is Aurora's Breeding and Genetics research facility located in beautiful Comox Valley in BC.

**Dr. Firdissa Bokore**, Agriculture and Agri-Food Canada, Swift Current, Canada

Dr. Firdissa Bokore is a Research Biologist in the Wheat Breeding and Biotechnology Program at Agriculture and Agri-Food Canada's Swift Current Research and Development Centre, Saskatchewan. He got Ph.D. degree in Plant Breeding from Austria, M.Sc. in Genetics and B.Sc. in Plant Science from Ethiopia. His research expertise is in wheat breeding, genetics, and disease resistance. Dr. Bokore's current research focuses mainly on molecular and phenotypic characterization of Canadian wheat germplasm for disease resistance, but also development and validation of molecular markers, marker assisted gene stacking, identifying parents for crossing, and optimization of lab techniques for doubled haploid production in wheat. Dr. Bokore has authored more than 25 research articles in peer reviewed journals. He is always keen to take on new challenges in wheat research and development that aim to assist wheat producers and the industry in Canada.

**Dr. Benjamin Schwessinger**, Australian National University, Australia



[Benjamin Schwessinger](#) studied biochemistry in Leipzig Germany before becoming fascinated by plants. Benjamin switched to plant science half way through his degree and graduated from the beautiful University of Glasgow with a first-class honours Bachelor of Science. He obtained his PhD from the University of East Anglia working at the Sainsbury Laboratory with Dr. Cyril Zipfel investigating receptor kinase mediate immune signaling in Arabidopsis. He moved to sunny California to work with Prof. Pamela Ronald at the University of California, Davis. During this time, he mostly worked on immune signalling in rice while being supported by EMBO and HFSP postdoctoral fellowships. Looking for new frontiers, Benjamin moved to work on the genome biology and evolution of plant pathogenic rust fungi at the Australian National University, Canberra. His initial move was support by an Australian Research Council DECRA fellowship to work in the laboratory of Prof. John Rathjen as independent research fellow. In 2018, Benjamin became fully independent supported by an Australian Research Council Future Fellowship and he is currently a Senior Lecturer at the Australian National University. His team focuses on genome evolution and host adaptation of rust fungi in addition to other aspects of plant and fungal biology.

**Dr. Harbans Bariana**, Plant Breeding Institute, The University of Sydney, Australia



Professor Harbans Singh Bariana comes from a wheat and maize growing family of Punjab, India. Following completion of his master's research on leaf rust of wheat, he was awarded a scholarship funded jointly by the Prime Wheat Association and Wheat Research Council (forebears of the Grain Research and Development Corporation Australia) to pursue his doctoral research at the University of Sydney Plant Breeding Institute, Castle Hill (now Cobbitty). His postdoctoral training at the CSIRO Plant Industry (now Agriculture Flagship), Agriculture Victoria (now Department of Economic Development, Jobs, Transport and Resources) and the Fruit Fly Research Centre of the University of Sydney covered broad acre plant pathological practices, molecular biology and wheat quality. He was appointed as Research Fellow to lead Germplasm Screening and Enhancement aspects of the National Cereal Rust Control Program (now Australian Cereal Rust Control program) in 1996. He fondly enjoyed his role and became an integral part of the Australian wheat industry.