

Canada

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In late 2008, 59 laboratory groups known to be conducting research with Arabidopsis were polled by Email for contributions to the MASC report. Of these, approximately 10 groups responded with updates to their contributions.

Reports

- François Belzile- l'Université Laval (fbelzile@rsvs.ulaval.ca) The Belzile lab studies Arabidopsis DNA mismatch repair in regards to microsatellite instability and homoeologous recombination.
- Thomas Berleth – University of Toronto (thomas.berleth@utoronto.ca) The Berleth lab developed approximately 4,000 indirect enhancer trap lines, together with ~ 70,000 indirect activation tags for use in the study of very early vascular genes. In addition, they are conducting a study to map QTLs defining Arabidopsis fibre properties.
- Malcolm Campbell – University of Toronto (campbell@botany.utoronto.ca) The Campbell lab investigates (1) the perception of sugars, amino acids and water, and how this affects the allocation of resources to key facets of metabolism and development, (2) comparative genomic analyses with the model woody perennial genus *Populus*.
- Jin-Gui Chen – University of British Columbia (jingui@interchange.ubc.ca) The Chen lab investigates signal transduction networks using forward- and reverse-genetic, molecular and cellular, and biochemical approaches.
- William Crosby – University of Windsor (bcrosby@uwindsor.ca) The Crosby lab investigates the role of E3 ubiquitin ligase (E3) complexes in the regulation of patterning and development in Arabidopsis.
- Raju Datla – NRC Plant Biotechnology Institute (raju.datla@nrc-cnrc.gc.ca) The Datla lab investigates embryonic gene expression, currently focusing on genes in Arabidopsis as well as the closely related *Brassica napus*.
- Michael Deyholos – University of Alberta (deyholos@ualberta.ca) The Deyholos lab applies genetic analysis and functional genomics of Arabidopsis to two areas of research: vascular development, and abiotic stress responses.
- Brian Ellis – University of British Columbia, Vancouver (bee@msl.ubc.ca) The Ellis lab studies regulation of secondary wall deposition and lignification (Collaborators: C. Douglas, L. Samuels, S. Mansfield (UBC)). A second project concerns the functional analysis of the Arabidopsis MAPK phosphatase gene family (Collaborators: G. Wasteneys (UBC), D. Bergmann (Stanford)). The group is undertaking the functional analysis of the Arabidopsis MAPKK gene family via characterization of the MAPK cascades (Collaborators: J. Chen (UBC); I. Kovalchuk (Lethbridge); D. Bergmann (Stanford))
- Sonia Gazzarrini – University of Toronto, Scarborough, (gazzarrini@utsc.utoronto.ca) The Gazzarrini group uses functional genomic, molecular and chemical genetic approaches to study the molecular mechanisms that regulate early developmental phase transitions and plant resistance to abiotic stresses in Arabidopsis.
- Vojislava Grbic – University of Western Ontario (vgrbic@uwo.ca) The Grbic lab investigates the diversification of plant forms by studying a set of late-flowering Arabidopsis accessions with naturally occurring variant morphology.
- George Haughn – University of British Columbia (haughn@interchange.ubc.ca) The Haughn laboratory studies seed coat epidermal differentiation in Arabidopsis as a model system for pectin biosynthesis, modification and secretion. They are completing a microarray analysis of the Arabidopsis seed coat. Dr. Haughn also oversees the Canadian reverse genetic TILLING facility, CAN-TILL (<http://www.botany.ubc.ca/can-till/>).
- Shelley Hepworth – Carleton University (shelley_hepworth@carleton.ca) The Hepworth lab focuses on determining how positional information is translated into morphological asymmetry in plant developmental patterning.
- Ljerka Kunst – University of British Columbia (kunst@interchange.ubc.ca) The Kunst laboratory studies lipid metabolic pathways in higher plants, focusing on two specific areas: biosynthesis of cuticular wax and seed oil.
- Xin Li – University of British Columbia (xinli@interchange.ubc.ca) The Li group is studying R-protein signaling pathways that play central roles in recognizing pathogens and initiating downstream defense cascades.
- Jim Mattsson – Simon Fraser University (jmattso@sfu.ca) The Mattsson lab is interested in the molecular basis of leaf formation, leaf vein initiation and patterning, primarily in the context of auxin transport and signalling. They have identified a large set of genes that are expressed in vascular tissues and are focusing on vascular differentiation.
- Jaideep Mathur – University of Guelph (jmathur@uoguelph.ca) The Mathur lab studies sub-cellular dynamics

and organelle interactions in order to understand the early responses of plants to various abiotic / biotic stimuli.

- Doug Muench – University of Calgary (dmuench@ucalgary.ca) The Muench laboratory studies the role of the plant cytoskeleton, specifically microtubules, in mRNA localization, protein sorting, and low temperature stress signaling.
- Roger Lew – York University, Toronto (planters@yorku.ca) The Lew lab is interested in the electrical properties of Arabidopsis root hairs. Current studies involve ion transport in cellular expansion and plant cell stress response.
- Nicholas Provart – University of Toronto (nicholas.provart@utoronto.ca) The Provart lab oversees the Botany Array Resource. In addition, the wider Arabidopsis research group at the University of Toronto has generated 10,000 DEX inducible random insertion lines which will be deposited to the stock center in the future.
- Przemyslaw Prusinkiewicz – University of Calgary (pwp@cpsc.ucalgary.ca) The Prusinkiewicz group focuses on simulation modeling of Arabidopsis, including the multiple roles of auxin in plant morphogenesis, general methods of modeling plants across multiple scales of organization, and further development of simulation software.
- Dan Riggs – University of Toronto at Scarborough (riggs@utsc.utoronto.ca) The Riggs group focuses on two distinct but interrelated processes: factors which affect plant architecture and that regulate chromatin condensation.
- Owen Roland – Carleton University (owen_roland@carleton.ca) The Roland lab studies the synthesis of cuticular waxes and their deposition onto plant surfaces via map-based cloning and reverse genetic and biochemical approaches.
- Kevin Rozwadowski – Agriculture and Agri-Food Canada, Saskatoon (rozwadowskik@agr.gc.ca) The Rozwadowski group is interested in DNA double-strand break repair in vegetative and meiotic cells. The lab uses Arabidopsis as a model to characterize the details of the repair process and evaluate plant responses to genotoxic stress.
- Lacey Samuels – University of British Columbia (lsamuels@interchange.ubc.ca) The Samuels lab is conducting a multi-disciplinary research project to study the plant cuticle involving characterizing biosynthetic mutants (Kunst Lab), studying wax export and cell structure (Samuels Lab) and analyzing the chemical composition and biosynthetic pathways of cuticular lipids (Jetter Lab).
- Dana Schroeder – University of Manitoba (shroed3@cc.umanitoba.ca) The Schroeder group is examining the role of DDB1 complexes in Arabidopsis visible and UV light response.
- Geoffrey Wasteneys – University of British Columbia (geoffwa@interchange.ubc.ca) The Wasteneys team integrates high-end microscopy with molecular genetic strategies to investigate (1) the molecular mechanisms and signaling cascades that control polymer dynamics and the spatial organization of microtubule arrays and (2) the role microtubules play in cellulose synthesis, cell shape, organ growth and chirality.
- Randall Weselake – University of Alberta (randall.weselake@afhe.ualberta.ca) The Weselake group is (1) assessing the functionality (in this case the ability to impart tolerance to abiotic stress) of a number of oilseed rape genes using Arabidopsis, and (2) researching novel methods for modifying the fatty acid composition of seed oils.
- Tamara Western – McGill University (tamara.western@mcgill.ca) The Western lab uses a combination of forward and reverse genetics to the regulation of cell wall synthesis, secretion and modification using the pectic mucilage secretory cells of the Arabidopsis seed coat as a model system.
- Stephen Wright – York University (stephenw@yorku.ca) The Wright lab is interested in understanding the forces driving Arabidopsis gene and genome evolution; testing for the accumulation and increased activity of transposable elements in the allopolyploid genome of *A. suecica*, and (3) sequencing the genomes of *A. lyrata* and *Capsella rubella*.
- Hugo Zheng – McGill University (hugo.zheng@mcgill.ca) The Zheng lab is studying how intracellular membrane trafficking is regulated as cell morphology changes during plant development and in response to environmental stresses. The approach exploits the regulatory role of Rab-A and Rab-E GTPases and strives to identify novel genes that are involved in plant-specific membrane trafficking.
- Jitao Zou – NRC Plant Biotechnology Institute (jitao.zou@nrc-cnrc.gc.ca) The Zou lab is primarily interested in lipid and carbon metabolism. They study enzymatic components of the lipid metabolic network and are also interested in exploring natural variation in wild type accessions to dissect regulatory components of seed oil deposition.

Arabidopsis genomics tools and resources:

- Canadian reverse genetic TILLING facility, CAN-TILL (<http://www.botany.ubc.ca/can-till/>).
- Botany Array Resource (<http://bbc.botany.utoronto.ca>)