

**2014 LARGE SCALE APPLIED RESEARCH PROJECT COMPETITION:
GENOMICS AND FEEDING THE FUTURE
APPLICATION FORM**

Application Number:

Project Title: Genomics of Abiotic Stress Resistance in Wild and Cultivated Sunflowers


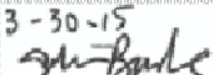
Term of Funding (years): 4

Total Budget Requested: \$8,039,771

Genome Canada Contribution: \$3,215,247

Project Leader

Co-Project Leader

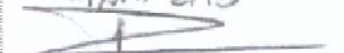
Name ¹	Loren H. Rieseberg	Name	John M. Burke
Affiliation	University of British Columbia	Affiliation	University of Georgia
Address	Botany Department 3529-6270 University Blvd Vancouver, BC V6T 1Z4	Address	Department of Plant Biology Miller Plant Sciences Athens, GA 30602 USA
Telephone	604-827-4540	Telephone	706-583-5511
E-mail	lriesebe@mail.ubc.ca	E-mail	jmburke@uga.edu
Date	3-30-15	Date	3-30-15
Signature ²		Signature ²	

Certification Requirements

Applicants proposing to perform research that requires certification (such as research involving human subjects, human stem cells, animals, biohazards, radioactive materials or possible effects on the environment) must obtain the appropriate certification for the proposed project. Certificates are not required to be provided until after the project has been approved. Please check the box(es) below, if the proposed research involves any of the following:

Human subjects Human stem cells Animals Biohazards Environmental assessment

Lead Organization (CEO, President or authorized representative)

Organization	University of British Columbia
Name	Martin Kirk
Title	Director of Research Services
Date	April 2/15
Signature ²	

Genome Centre CEO(s) or authorized representative(s)

Lead Centre ³	Genome BC	Co-lead Centre (if applicable)	
Name	Alan E. Winter	Name	
Date		Date	
Signature ²		Signature ²	
Additional Centre (if applicable)			
Name			
Date			
Signature ²			

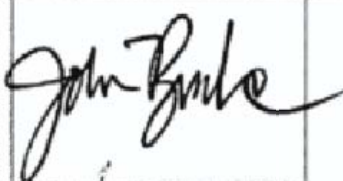


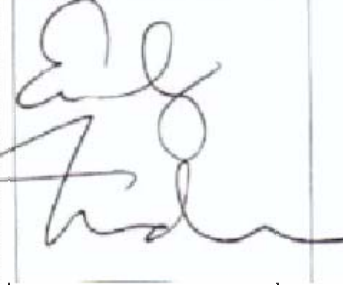
¹ The Project Leader is responsible for the administrative and financial activities of the project.

² Signatures confirm acceptance of the terms as outlined in Meaning of Signatures.

³ The Administrative Centre for projects which have been identified as being co-led by two or more Genome Centres.




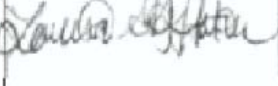
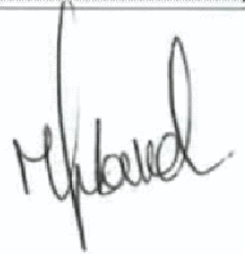
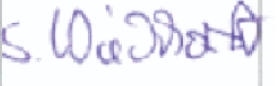

III RESEARCH TEAM

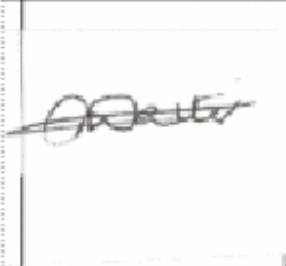
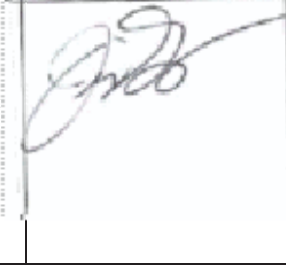
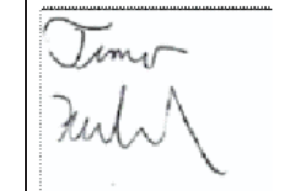
Please provide in the table below, a list of the research team members (excluding collaborators), their affiliation, role in the project, time commitment to the proposed research and their responsibilities in the context of the project:

Name, Title and Affiliation	Role ⁴	Time Commitment (hrs/week)	Description of Responsibilities	Signature ⁵
Dr. Loren Rieseberg, Professor & CRC Tier 1, Department of Botany, U. British Columbia	Project Leader	15	Rieseberg is leading overall project and is lead on Activity 4 (functional analyses). Past experience in managing large genomics projects. Pioneer in plant ecological genomics.	
Dr. John Burke, Professor, Department of Plant Biology, U. of Georgia	Co-Project Leader	15	Burke is the co-project leader and is lead on Activity 1.2 (association mapping). Expert on sunflower genetics & genomics.	
Dr. Lisa Donovan, Head & Distinguished Professor, Department of Plant Biology, U. Georgia	Co-applicant	10	Will lead phenotyping of stress resistance traits (Activities 1.1 and 1.3). Expert on plant ecophysiology.	
Dr. Nicolas Langlade, Senior Researcher, INRA Toulouse, France	Co-applicant	10	Will lead transcriptomics component & Heliaphen phenotyping (Activities 1.4 and 1.5). Expert on sunflower molecular physiology.	
Dr. Emily Marden, Research Associate & Lead of Intellectual Property and Policy Research Group, School of Law, U. British Columbia	Co-applicant	10	Will lead GE ³ LS component on barriers to R&D caused by international treaties (Activity 6). Expert in CBD, Treaty & sharing of genomics data.	
Dr. Brent Hulke, Research	Co-applicant / End User	10	Will lead MAGIC population development	

⁴ Role includes: Project Leader, Co-Project Leader, Co-applicant, and End User. Definitions of participant categories are provided in the [Guidelines for Funding Research Projects](#).

⁵ **Signatures of the co-applicants and End Users are required** and confirm that the application has been reviewed and approved for submission to the Genome Centre and Genome Canada by all investigators. **Signatures of Collaborators are not required.**

Geneticist, USDA ARS Fargo, ND			and phenotyping (Activity 3) & deploy resistance alleles in breeding program. Strong track record in molecular breeding.	 <small>Digitally signed by [Name], DN: cn=[Name], o=[Organization], ou=[Department], email=[Email], c=[Country]</small>
Dr. Sam Yeaman, AIHS/CAIP Chair in computational evolutionary biology (start date: 8/15), U. Calgary	Co-applicant	10	Will lead population genomics component of project (Activity 2). Expert in population genomics & bioinformatics.	
Dr. Navin Ramankutty, Professor & CRC Tier 1, Liu Institute, U. British Columbia	Co-applicant	10	Expert on global land use, especially in relation to agriculture. Will lead GE ³ LS component on crop yield modeling (Activity 5).	
Dr. Louisa Staton, Research Associate, U. British Columbia	Project Manager	40	Will provide project management & coordination. Expert in plant genetics.	
Dr. Jinhua Xiao, Trait Genomics Leader for sunflowers, Dow Agrosciences	Collaborator / End User /	5	Will contribute to MAGIC population development & will deploy resistance alleles in breeding program. Strong track record in molecular breeding.	
Dr. Marie Coque, Sunflower Project Lead, Biogemma	Collaborator / End User / Co-funder	5	Will contribute to MAGIC population development & will deploy resistance alleles in breeding program. Strong track record in molecular breeding.	
Dr. Silke Wieckhorst, Project Lead for molecular breeding in sunflower, KWS Seeds	Collaborator / End User / Co-funder	5	Will contribute to MAGIC population development & will deploy resistance alleles in breeding program. Strong track record in molecular breeding.	
Dr. Andrés Zambelli, Biotechnology Manager, Advanta Semillas SAIC	Collaborator / End User / Co-funder	5	Will contribute to MAGIC population development & will deploy resistance alleles in breeding program. Strong track record in molecular	

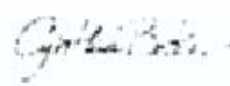
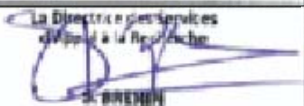



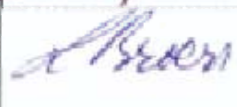
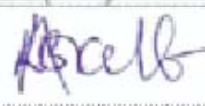
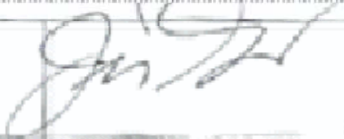
			breeding.	
Dr. Bill May, Crop Management Agronomist, Agriculture and Agri-Food Canada	Collaborator / End User	5	Will contribute to field-based salt tolerance phenotyping, economic modeling & will deploy resistance alleles in breeding program. Strong track record in agronomy.	
Dr. Walter Anyanga, Research Officer, National Semi-arid Resources Research Institute, Uganda	Collaborator / End User	10	Will contribute to field-based low nutrient stress phenotyping & deploy resistance alleles in breeding program. Strong track record in sunflower breeding.	
Dr. Jim Gerdes, Global R&D Director for Sunflower Breeding, NuSeed Americas	Collaborator / End User / Co-funder	5	Will contribute to MAGIC population development & evaluation & will deploy resistance alleles in breeding program. Strong track record in molecular breeding.	
Dr. Laura Marek, Oil Seeds Crops Curator, USDA-ARS	Collaborator	5	Will contribute to collection and distribution of sunflower germplasm	
Dr. Pedro Andrade-Sanchez, Assistant Professor, Agricultural and Biosystems Engineering, U. Arizona	Collaborator	5	Will adapt field-based HTP approaches to sunflower. Expert in agricultural engineering.	
Dr. Khaled Bali, Irrigation Advisor & Interim Director, DREC	Collaborator	5	Will contribute to drought stress phenotyping at DREC. Expert in water use management.	
Dr. Wayne Parrott, Professor, Crop and Soil Sciences, U. Georgia	Collaborator	5	Will conduct genome editing in soybean. Expert in crop biotechnology.	
Dr. Timo Kubach, Vice President, Portfolio & New Business Product & Innovation, SAP AG, Germany	Collaborator / Co-funder	5	Will coordinate SAP effort to develop data analytic tools for plant genomics, using sunflower as model.	

IV PARTICIPATING ORGANIZATIONS' SIGNATURES

To be completed by the organizations in which the research will be undertaken.

The following organizations have reviewed and approved this application and agree to respect the general principles guiding the use of Genome Canada funds, specific guidelines on eligible costs and co-funding, and the specific conditions associated with the Release of Genome Canada funds, as outlined in the [Request for Applications: 2014 Large-Scale Applied Research Project Competition Genomics: Feeding the Future](#), and [Guidelines for Funding Research Projects](#) including adherence to commonly accepted guidelines with respect to ethical, environmental and safety requirements.

In addition, the following organizations agree to respect applicable policy and program guidelines of other funding agencies, which are identified as sources of co-funding in this application.

Organization	Name & Title of Authorized Representative	Signature	Date dd/mm/yy
University of British Columbia	Martin Kirk, Director of Research Services		02/04/05
University of Georgia	Cynthia Baker, Grants Officer Office for Sponsored Programs		03/24/2015
INRA Toulouse, France	 La Direction des Services Appuyés à la Recherche S. BRETON		27/03/2015
USDA-ARS, Fargo, ND	Laurence D. Chandler Area Director		2015.03.11 07:51:36 -06'00'
University of Calgary	Liz Scarlett Director, Institutional Programs, Research Services		02/04/15
Biogemma	Oliver DUCAS, CEO		Rece 30 th 2015
KWS Seeds	Dr. Léon Broers, Member of the Executive Board of KWS SAAT AG		24.03.2015
Advanta Semillas SAIC	Dr. Andrés Zambelli, Biotechnology Manager		3/16/2015
National Semi-arid Resources Research Institute, Uganda	Dr. Beatrice Akello, Director of Research		23/03/2015
NuSeed Americas	Jim Gerdes, R&D Director, Nuseed Americas		3/30/15



SAP SE, Germany Bernd Leukert	Member of the Executive Board SAP SE	Products & Innovation	
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