

The Alberta Applied Agricultural Genomics Program (A³GP)

Program Guidelines

April 6th, 2018

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1.0 Overview: Applying Genomics to the future

Genome sciences¹ hold great potential to address many of the critical challenges facing Albertans today, from the health of our environment and citizens to the growth of our economy. Genome Alberta and Alberta Agriculture and Forestry (AAF) are investing in genomics programs that are of strategic importance to Alberta to expand our existing capabilities in translating discovery science to everyday life.

Genome Alberta has previously partnered with the Government of Alberta (through the former Alberta Livestock and Meat Agency), to support genomics research projects of strategic importance to Alberta's livestock sector. Now, Genome Alberta is partnering with AAF on The Alberta Applied Agricultural Genomics Program (A³GP). The program will support projects that deliver genomics solutions that help build an internationally respected, competitive, and profitable agriculture and agri-food industry in Alberta. The A³GP will provide funding for genomics-based research projects up to \$250,000 over a period of 2 years. Genome Alberta will support 100% of eligible project costs, and research projects are encouraged to leverage this investment with other sources of funding. Research proposals where investigators are participating in larger national or international efforts are strongly encouraged.

1.1 Genome Alberta

Genome Alberta is a publicly funded not-for profit corporation that invests primarily in large-scale genome sciences research projects and technology platforms focused on areas of strategic importance to the province (e.g. human health, forestry, plant and animal agriculture, energy, and environment). By working collaboratively with government, universities, and industry, Genome Alberta is a catalyst for a vibrant, life sciences cluster with far reaching social and economic benefits for Alberta and Canada. To date, the organization has managed a research portfolio with approved budgets of over \$228 million. Please visit [Genome Alberta's website](#) for more information.

1.2 Alberta Agriculture and Forestry

The ministry is responsible for the policies, legislation, regulations and services necessary for Alberta's agriculture, food and forest sectors to grow, prosper and diversify; inspires public confidence in wildfire and forest management and the quality and safety of food; supports environmentally sustainable resource management practices; and leads collaboration that enables safe and resilient rural communities. AAF is committed to research and innovation through its research capacity and research funding, delivered primarily through the Strategic Research and Development Program, and the Canadian Agricultural Partnership. Research and innovation funding will be complementary to [Alberta Agriculture and Forestry's Business Plan](#) and priorities.

Hereafter, Genome Alberta and AAF will be referred to together as the 'Funders' of A³GP.

¹ The term genomics is defined here as the comprehensive study, using high throughput technologies, of the genetic information of a cell or organism and its functions. The definition also includes related disciplines such as bioinformatics, epigenomics, metabolomics, metagenomics, nutrigenomics, pharmacogenomics, proteomics and transcriptomics, as long as the link to genetic information is clear.

2.0 Eligibility and Program Parameters

The A³GP competition is open to researchers based at provincial, national or international research institutions and private industry. Proposed research projects must be: genomics-based, led by an investigator based in Alberta, collaborative and demonstrate benefits to Alberta with support from end users. End user support must be clearly integrated into the research project and can take the form of one or more of the following: (i) research project co-leader or co-applicant; (ii) funder; (iii) collaborator.

2.1 Eligible Research Areas

Projects funded through this competition must focus on using genomic approaches to address challenges and opportunities of importance to Alberta's agriculture/agri-food sectors. Research topics that could be addressed include, but are not limited to, the following:

- increasing production efficiency, yield, and agronomic performance;
- improve the health of crops or livestock through genomics-assisted breeding to identify adaptive traits that provide increased resilience to abiotic and biotic stresses such as disease, drought, flooding and temperature extremes brought on by accelerated climate change;
- genomic tools for bioindustrial applications such as effective production of biochemicals, biofuels, biopharmaceuticals and other bioproducts;
- reducing the environmental footprint of crop and livestock production systems through decreased water, fertilizer and pesticide use and reduced GHG emission resulting in improved sustainability and environmental stewardship;
- advancing genomics research on microbial communities and ecosystems related to agricultural production systems (e.g. soil, plant-microbe, rumen, monogastric gut, fermented foods);
- preserving biodiversity in crops and livestock, including the genetic resources for agriculture and agri-food, as well as the components of biodiversity that support agroecosystems;
- managing and reducing antimicrobial resistance in livestock;
- growth and sustainability of pollinators (e.g. bees), especially where adversely affected by climate change, habitat loss, disease, pests and insecticides;
- achieving the safety and quality attributes demanded by the market including those related to human health through the production of food with enhanced safety, nutrition and functional attributes or,
- food safety, e.g., developing improved genomic tools to detect pathogens, toxins and undesirable metabolites; or
- food supply chains that are more efficient and less susceptible to spoilage and waste

GE³LS activities² integrated with and informing the project's scientific deliverables are eligible research expenses but are not a requirement. GE³LS activities include exploring translational challenges including social, political, regulatory, policy or economic barriers that deter the responsible uptake of genomics-based applications in the agriculture sector, and investigating strategies that can foster receptivity and increase public trust.

Proposals for projects that meet one or more of the above criteria will be accepted and reviewed through a combined (inter)national peer review/due diligence process outlined in these

² The acronym GE³LS stands for "Genomics and its Ethical, Environmental, Economic, Legal and Social aspects". However, it should be understood broadly as genomics-related research endeavors and related activities undertaken from the perspective of the social sciences and humanities.

guidelines. The review process may be adjusted or revised by the Funders.

2.2 Parameters

- Up to CDN \$1.83 Million is available for this program
- The Funders will fund up to 100% of approved eligible costs for provincial, national or international research institutions and up to 50% of the approved eligible cost for private industry.
- The maximum duration for a research project is 24 months and the Funders will contribute up to a maximum of CDN \$250,000 per research project.
- While co-funding is not required for provincial, national or international research institutions, it is strongly encouraged as a demonstration of buy-in by other funders, including end-users.

2.3 Overarching plan for research and innovation in agriculture

Proposals where the applicants propose to participate in larger national or international efforts in the future are encouraged. Such projects should articulate an overarching plan on how their proposed A³GP research project will fit into a larger vision for advancing agricultural genomics related to their topic of interest.

One objective of this initiative is to enhance Alberta's competitiveness in upcoming agricultural genomics funding opportunities including, but not limited to, Genome Canada's 2018 Large-Scale Applied Research Project (LSARP) competition. For more information on this and other programs please contact Genome Alberta.

Activities that may contribute to advancing overarching research plans could include the following:

- generation of preliminary biomarker data;
- pilot-scale rollout of projects;
- engaging team members, partners, stakeholders, end-users and decision makers to add value to their proposed agricultural genomics approach;
- developing economic models and/or business case data required to convey the value of their long-term deliverables

2.4 Institutions eligible to receive funding from the Funders

Canadian and international academic institutions and their affiliated research institutes, provincial and federal laboratories, and private industry are all eligible to receive funding from the Funders. Projects must be led by an Alberta-based investigator located at provincial or federal research labs, academic institutions, or their affiliated research institutes. While out-of-province expenses are eligible, a minimum of 50% of total funding requested from the Funders must be spent in Alberta.

Projects may be co-led or include participation from private industry in the form of co-applicants. For private industry to receive funding from the Funders, they must demonstrate that they are investing an equal or greater amount in co-funding into the Project. Funding to private industry in a single project must not exceed 50% of total funding requested, or \$125,000, whichever is less. Private industry activities supported by the Funders must be completed in Alberta and must demonstrate linkages to end-users (i.e. producers and farmers).

The Funders expect projects that involve private industry to demonstrate socio-economic

benefits for Alberta/Canadian producers and the value-added agriculture sector. In this context, co-funding from end-users that are in an ideal position to translate/commercialize the research results is strongly encouraged.

3.0 Timeframe

Date	Process
April 3, 2018	Competition Launch
May 8, 2018	Registrations due
June 4, 2018	Letters of Intent due
June 18, 2018	Invitation of selected Letters of Intent for Proposal development
July 31, 2018	Proposals due
September 14, 2018	Notification of Award (NOA) to the Applicants
November 30, 2018	Deadline for Projects to have met all the conditions of the NOA
January 2, 2019	Start date of the Projects.

4.0 Submission and Review Process

There is a three-stage application process for the A³GP competition:

1. Submission of a Registration Form (Executive Summary of the LOI);
2. Submission Letter of Intent (LOI); and
3. Submission of a Proposal.

All competition forms are available on [Genome Alberta's Website](#)

4.1 Registration

Investigators interested in applying for the A³GP competition must first submit a Registration Form to Genome Alberta. The Registration Form will request the Executive Summary of the project (imbedded in the LOI form), anticipated participants, estimated budget and suggestion of suitable reviewers for the subsequent stages of the competition. The Registration Form will be used by Genome Alberta to screen for high-level eligibility of the topic area proposed and assist in the selection of the peer review committee. Applicants will be notified shortly after submission if the proposed research topic is determined ineligible by the funders.

Applicants must submit a signed electronic copy on or before **May 8, 2018** to: NKerrigan@genomealberta.ca with the email subject line:

“A3GP - REG - [Lead Investigator LAST NAME]”

4.2 Letter of Intent (LOI)

Applicants are required to complete and submit the remainder of the LOI form to the Funders. In consultation with and external committee of subject experts, the Funders will review the LOI to confirm its eligibility and competitiveness for the program. The LOI is a shorter application, focused overview of the proposed project and should include information on the project's goals, objectives, methodology and activities, expected benefits and translation plan. The LOI will be

used to (i) measure optimal alignment with the objectives of A³GP program; (ii) select the most competitive projects for to develop Proposals; and (iii) identify overlaps or synergies, such that applicants of separate projects may be encouraged to explore applying as a single collaborative project. Applicants will be notified within two weeks following the submission date as to whether their application is considered eligible and if they are invited to submit a Proposal.

The Funders anticipate a success rate of 30-50% for submitted Proposals. Therefore, only the LOIs that align most closely to the parameters of this competition will be invited to proceed to Proposal development. This means that not all eligible projects will be invited for Proposal development.

Applicants must submit a signed electronic copy on or before **June 4, 2018** to: NKerrigan@genomealberta.ca with the email subject line:

“A3GP – LOI – [Lead Investigator LAST NAME]”

4.2.1. Letter of Intent Evaluation Criteria

Reviewers will use the following list of questions to assess the eligibility of LOIs:

General Eligibility Used at All Stages

- All proposals are required to articulate the process and timeframe associated with securing end-user uptake and/or commercialization. Research outcomes that require a lengthy and or costly review or regulatory approval process to be commercialized or taken up by the end-user community will not be eligible.
- Are the researchers based at an academic, provincial, national or international research institution or private industry?
- Is the project genomics-based?
- Is the project led by an Albertan Investigator?
- Is the project’s preliminary budget within the maximum allowable time and budget limits?
- Does the project target one or more of the eligible A³GP research areas?
- Does the project have end user engagement and integration?

Research Project

- Is there a clear and concise summary of the proposed research activities?
- Does the research project describe an effective translation plan, which may include articulating an overarching strategy on how the project will integrate into a larger-scale research program?
- How well does the LOI demonstrate a near term return on investment in research through benefits to Alberta including the commercialization of research results for the benefit of the Albertan and Canadian agriculture and agri-food industry?
- Does the project include experts and other groups working in the proposed research area?
- Is the project of strategic importance to Alberta and does it align with the [Government of Alberta’s priorities](#)?

Project Deliverables

- Does the proposed research project summarize the project deliverables by year as they relate to the achievement of the overall project?

Preliminary Budget Information

- Does the preliminary budget reflect the relevant categories as proposed within the LOI template?
- Does the budget provided match the scope of activities proposed for the project?

4.3 Proposal Submission

An invitation is required at this stage for applicants to submit a Proposal. The Proposals will be reviewed for scientific and technical excellence, as well as relevance and applicability to the [Government of Alberta's Research and Innovation Framework Strategic Priorities](#); as well as [AAF's Strategic Research and Development Program priorities](#)

The review team will be primarily international and multidisciplinary, consisting of scientific and industrial experts. Applicants will be given the opportunity to identify those experts who are not appropriate reviewers for their research projects. Reviewers will sign non-disclosure agreements and will have to declare all potential conflicts of interest. They will evaluate each Proposal taking into consideration the major evaluation criteria presented below.

A Proposal must be submitted electronically by the deadline date of **July 31, 2018** to NKerrigan@genomealberta.ca with the email subject line:

“A3GP PROPOSAL – [Lead Investigator LAST NAME]”

Upon receipt, Proposals will be reviewed for completeness by the Funders. We will notify applicants if their Proposal is incomplete and give applicants 24 hours to provide the missing information. Incomplete Proposals and those not conforming to the template will not be reviewed further.

4.3.1 Proposal Evaluation Criteria

To ensure that the Funders' goals for A³GP are met and that the proposed research has a significant impact on the sector, reviewers will be asked to address, and score the Proposals on the following questions:

Research Proposal

- Is the project genomics based?
- Is there a clear description of the proposed project including experimental design?
- Are the scientific goals and outcomes described?
- Does the project fit within the eligible research areas?
- Is the project organized into clear and concise activities?
- Does the GANTT chart summarize the objectives, milestones and deliverables of the project (including project ramp up), and are they feasible?
- Does the project exhibit scientific and technical excellence?
- Does the project exhibit end user engagement?
- Does the project have a national or international component?
- Are the conceptual frameworks, design, methods, statistical, and bioinformatics analyses adequately developed, well integrated, reasoned, and appropriate to the aims of the project?
- Is there consideration for the anticipated difficulties and alternative methods, including cost-effectiveness?
- Does the research build on existing strengths and expertise in genomic sciences?

Handling of Data & Resources

- Does this proposed research project have strategy for sharing data and resources to the community?
- Has the project included an IP management strategy?
- Does this project generate genomic resources that will be made public?

Quality of the Research Team

- Does the Research Team have relevant experience in the proposed area of research to deliver the stated goals?
- Does the Project Leader(s) specifically have relevant experience in the proposed area of research?
- How well is the research team integrated?
- Does the project list relevant literature references of recent peer reviewed publications or patent applications?

Benefits to Alberta

- Does the project describe the socioeconomic impact of the anticipated results, including job creation and economic growth?
- Does the team describe the commercialization, translation, and/or communication of research results to benefit Alberta producers and the value-added agriculture sector?
- If the proposed research will integrate with and support the execution of a larger-scale, national or international scope genomics project, is it adequately describe in the translation plan?
- Does the project demonstrate end user engagement in the achievement of benefits to Alberta?

Administration and Budget

- Has the team appropriately filled out the title page with signatures?
- Has the team filled out and signed the Participating Organizations' Signatures page?
- Has the team provided a lay summary?
- Has the team provided a completed budget that is within the appropriate time frame, amount and eligible cost categories?
- Has the team allocated costs for OTHER FUNDERS and Genome Alberta/AAF appropriately?
- Has the team described OTHER FUNDERS?
- Has the team provided Statements of Work?
- Has the team described other funding requests?
- Does the team require certificates?

4.3 Successful Proposals

The project titles and contact information for successful Proposals may be posted on the Funders' websites. By submitting a Proposal, applicants authorize Genome Alberta and AAF to make such postings.

5.0 Eligible Costs

Eligible costs are defined as reasonable and incremental costs for items that directly support the objectives of the A³GP approved project and include the following categories:

1. Salaries and benefits for HQP, researchers, trainees, technicians, research management (e.g., part-time project manager). *Note that salaries of researchers or senior management who are currently funded by their respective organizations are not considered eligible costs.*
 - a. Includes graduate student bursaries, according to the Applicant's institutional or departmental graduate student stipend policies, to a maximum of \$24,000 per year for Master's, and \$25,000 per year for Doctoral students
2. Consumables such as day-to-day expenses incurred in conducting the research, including laboratory supplies, field work, warranties, equipment contracts, and leases for research equipment.
3. Equipment costs incurred using Genome Alberta/AAF funds **cannot exceed ten percent (10%)** of the total Genome Alberta/AAF contributions. Equipment, further defined as items on non-expendable tangible property, having a useful life of more than 1 year and a cost of \$2000 or more and should be for the direct conduct of research activities. Items under \$2000 are consumable expenses and may be grouped together on one line if appropriate, with details provided in the justification. The opportunity cost of using existing infrastructure may not be included as an eligible cost.
4. Reasonable and low administrative costs including travel for project team members, publication costs, office expenses, public outreach activities, and costs associated with the preparation of reports. Administrative costs incurred by Genome Alberta/AAF funds must **not exceed five percent (5%)** of the total Genome Alberta/AAF contributions. *Note that institutional overhead costs are not eligible.*
5. Services from Others (S&T) includes the cost of services from a fee-for-service provider. Statements of Work will be required from service providers which must include prices for services, the schedule of services to be provided, and justification for services purchased from non-Canadian providers, if applicable. These will need to be included as an appendix to the Proposal.
6. Inflation rate costs:
 - a. Inflation for salaries, not to exceed two percent (2%) of total salary and benefits, for salary expenditures in year 2 of the project
 - b. Note that inflation rate cannot be applied to consumables, equipment, general & administrative or services from S&T platforms.

5.1 Ineligible Costs

Ineligible costs that are not eligible for funding under the A³GP and which must not be included in a project application include:

1. Goods and Services Tax (GST), Provincial Sales Tax (PST), Harmonized Sales Tax (HST), or other similar taxes;
2. costs incurred prior to or after the Project funding period, as determined by the Funders;
3. hard goods or promotional materials;
4. website hosting/domain registration or ongoing maintenance;
5. ongoing social media activity;
6. travel for ongoing marketing in existing markets;
7. costs for the lease of office furniture, space and equipment;
8. costs of equipment attached to the building such as sinks, walls, doors;
9. costs associated with equipment attached to the building such as plumbing, framing, flooring installation;

10. land costs;
11. normal operation, salary and maintenance costs
12. patent costs;
13. any other indirect overhead costs; and
14. any other expense deemed by the Minister not to be an Eligible Expense.

5.2 Co-funding

Projects are encouraged to leverage existing funding sources but co-funding (except by private industry) is not a requirement for success in the program. Projects that include funding requests for expenses incurred by private industry must be able to demonstrate at minimum an equivalent amount in co-funding being contributed to the overall project by industry. Co-funding may take the form of cash or auditable in-kind contributions to a project that are directly supporting activities that are proposed within the scope of the current project.

6.0 Financial Accountability and Reporting

All approved projects are required to maintain the information necessary to enable the Funders to assess the ongoing performance of the projects and their activities. The Funders will put in place mechanisms to assess the ongoing performance of all funded projects to periodically determine whether funding should be continued, reduced, suspended, or cancelled. Dates listed below represent timeframes associated with Reporting and Review activities for an approved A³GP project with a two-year term. The Funders will adjust timelines to account for Mid-term review activities of any approved projects with shorter durations. Assuming a two-year project term is proposed, initial funding for approved A³GP projects will be provided for the first 5 quarters of the project for the period of January 1, 2019 – March 31, 2020.

It is the responsibility of the participating institutions to ensure that sufficient records and supporting documentation are maintained and are available for review and audit for a period of five (5) years after the completion of the research project.

6.1 Project Progress Reporting

Projects will be required to provide a **Mid-Term** scientific progress and simplified financial report, outlining research project progress compared to approved milestones, issues and delays, and justifications for variances in expenditures as compared to the approved budget within 30 days of that period end (i.e. due January 30th, 2020 if a 2-year project term proposed). A reporting template will be provided to successful applicants at a later date. This report will be independently reviewed and assessed for the approved funding project team's ability to complete the approved milestones. The Funders reserve the right to cancel or reduce funding for the remaining project term if it is unlikely that the research project will meet its approved milestones.

6.1.1 Project Review Criteria

Genome Alberta and AA&F will conduct a review of the Mid-Term report, including an external assessment as required, within 30 days of receiving the report. A formal decision on continuation, reduction, or cancellation of funding of the project will be made by at the end of that period. If the Funders determine funding is to be continued, the remainder of approved funding to complete the project will be advanced. If the Funders determine to cancel further funding, the 5th quarter of funding that has already been provided will be considered winddown funding and project's final report will be due within 30 days of the end of the 5th quarter (April 30th, 2020).

6.2 Final Reports

Within three months of the completion of the work (due March 31st, 2021), each research project will be required to submit to the Funders a **Final Report** that describes the accomplishments of the research project, a final financial report that reconciles actual expenditures with amounts budgeted and received (with justification for variances), the current state of any outcome developed as a result of the Funders funding, and a plan that outlines the activities that could be undertaken to further develop the technology to application within a two year time frame. A reporting template will be provided to successful applicants prior to the close of the project.

6.3 Post-Project Follow up

Impact of Project outcomes is often realized after research activities conclude. As such, Projects will be required to report to the Funders on information related to uptake and impact of project research activities for a period of five (5) years after the Project concludes. Collection of post project impact information will occur, at most, on an annual basis

7.0 Intellectual Property

The Funders do not take an ownership stake in project intellectual property (IP). If any IP is developed or acquired in the project with more than one collaborator, ownership will be determined in accordance with each of the participants' (i.e., Federal or Provincial government departments or Crown Corporations, private sector companies, universities, research hospitals or any other participants) internal intellectual property policies and provincial and or federal legislation.

8.0 Conditions for Release of Funds

The Terms and Conditions of Funding will be issued after project approval by the Funders. The following are the minimum requirements to allow for the disbursement of funding:

1. Signed research agreements between the Funders, the lead organizations (private, government, and academic), the researchers, and the co-funders (if applicable) that establish the resolution of major areas and the roles and responsibilities of each party, such as contributions, IP ownership and management, data protection and release, a commercialization process, project management, funding term, termination policy, accountability and reporting, progress reviews, management of funds, financial policies, etc.;
2. Budget and milestones and their compliance with funding eligibility criteria, in accordance with the recommendations of the reviewers as approved by the Funders;
3. Appropriate certification for research involving animals, biohazards, radioactive materials, or possible effects on the environment and ethics review for research involving human subjects; and
4. A clearly defined IP policy and plan for data protection, sharing of resources created by the project, and publication of results. IP created or acquired as part of a funded A³GP Project will belong to the researchers by whom the work was completed and/or their institutions, as the case may be. There will be an expectation that results from an A³GP funded project will become public through patent filings, research publications and submission of genomics data to genomics databases such as Genbank.

8.1 Project Readiness

All applicants must demonstrate that they have satisfied all conditions for funding outlined in the Notice of Award and listed in section 8.0 above no later than November 30th, 2018. Projects



must be able to receive funding no later than January 2, 2019. The Funders reserve the right to withdraw their funding for any approved project that is not ready to receive funding by January 2, 2019.

Contact Information

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