16th March 2021

Gene Technology Implementation
Department of Health
GPO Box 9848
CANBERRA ACT 2601
Gene.technology.implementation@health.gov.au

Re: Consultation Regulation Impact Statement

Dear Implementation Secretariat,

Acceligen, Inc. (ACC), Eagan, Minnesota, U.S.A. is pleased with the opportunity to provide this submission to the Consultation Regulation Impact Statement (CRIS) concerning the implementation of recommendations from The Third Review of the National Gene Technology Scheme (the Review).

As a small start-up company formed in 2014, Acceligen has focused its initial efforts on developing gene editing technologies and intellectual property for genetic improvement of traits for health, well-being and more sustainable production in food animal agriculture. Due to our broad scope of application development and demonstrated ability to precisely introduce naturally occurring traits using a wide array of gene editing methods, we remain fully supportive of global efforts to continually modernize animal biotechnology regulations. As such, Acceligen values input into Australia's gene technology regulatory system and supports continued development of a system that is science-based and commensurate to risk.

The main response to this CRIS is found in the subsequent pages of this correspondance.

Yours Sincerely,

Tad S. Sonstegard PhD
President & Chief Executive Officer for Acceligen
A Recombinetics Company

Acceligen's Response to the Consultation Regulatory Impact Statement

- **Option B is preferred**

Acceligen and its stakeholders support Option B: Risk-tiering model – dealings with GMOs would be categorized according to their analytical risk.

Acceligen does not support Option C, because it does not align with the foundational principle of the Scheme.

- **Option B offers a partial improvement to the Scheme**

Acceligen believes strongly that the proposed changes only partially meet the objectives of modernizing and future-proofing the National Gene Technology Scheme. However, the proposed option and the example case studies presented in the CRIS and Explanatory Paper did not adequately address how new breeding technologies applied to food animals will be considered.

Currently, Acceligen is developing an array of genetic traits deployable by a variety of processes. Most of our traits require us to make precise and directed changes to an animal genome after the initial targeted break. This process of homology-directed-repair (HDR) or SDN2 or the use of nickases (Base Editors) allows us to achieve conversion of an allele and get the proper expression of phenotype from naturally occurring alleles. However, this type of deployment is considered GMO under Option B and even though there is no fundamental difference from what is found in nature, obtaining social license will be much more difficult due to existing consumer stigmatism based on faith not science. Alternatively, if we had to employ non-homologous end joining (NHEJ) to convert the same targeted alleles, then it would be extremely difficult for any developer to make it identical to the natural target allele without incurring enormous costs in screening and cloning to find the right conversion event among cells in a dish to make an animal of value.

In other countries like Argentina and Brazil, alleles introduced by NHEJ methods can certainly be approved as non-GMO; however, it is our opinion that HDR allele conversions are preferred by regulators (there) and customers due to the certainty of outcomes being precise relative to phenotype. These HDR dealings, if done properly, also can qualify as non-GMO. We believe this preference for exact genetic outcomes will also be preferred by regulators in North America as well. We would argue the difference in risk between NHEJ and HDR methods is not to humans or the environment; but rather, there is a difference in risk for the developer and their animals relative to market pull based on the quality of the germplasm product and time to revenue being shortened by avoiding the long generation times needed to test NHEJ alleles for expected phenotype outcomes. Thus, investments to deploy animals using NBTs in these countries and be determined as non-GMO is much more attractive across the value chain.

If the Scheme continues to be uncertain about the rules of animal genetics (genotype to phenotype paradigm); then Acceligen strongly feels that even with Option B our investments into Australia will be limited and at risk for being out of step with international regulators and industry competitors in those countries. Additionally, the current lack of synchrony between OGTR and FSANZ (no formal framework in place yet) in regulation is fully inhibitory of any investments or R&D on applications to improve sustainability of production relative to improving the carbon footprint of food animals in Australia.

- **Uncertainty surrounding implementation of Option B**

Despite the uncertainty on the use of principles and rules, Acceligen would like to see continued openness, engagement and consultation with the Regulator towards implementation of Option B.

Removing uncertainty and ensuring that animals developed using New Breeding Technologies would be assessed using a science/risk-based regulatory system is paramount to the successful deployment of traits to breed better animals for a better planet.