Editorial



# Veterinary & animal research: feeding the world in the 21st century

## Editorial

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Andre P Boulet
Devonian Technologies Inc., 38, des Tournois, Blainville, Quebec, North America

**Correspondence:** Andre P Boulet, Devonian Technologies Inc, 38, des Tournois, Blainville, Quebec, North America, J7C 4Y3, Tel 514 434 0081, Email apboulet@videotron.ca

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By 2050, the population of the world will surpass 9.6billion people.[1] Such increase in the global population will be accompanied by increase in income and changes in diet. Global need for crop is expected to increase by 100 to 110% and the demand for food by 60%.[2,3] One of the challenges with a growing population is environmental pressures especially habitat change, climate change, water use and toxic emission. Rising demand for food increases greenhouse gases from agricultural use of fossil fuels, fertilizer and intensive animal production.[4] It is well known that the agriculture business is cost sensitive and any new discovery which could have a positive impact on costs should be shared in a timely fashion.

A better future and improved economic prosperity for the agriculture and agri-food sector has to be supported by veterinary/agricultural research and innovation. This sector must be supported by information, research and technology generating wealth for producers and help achieve security of the food system, health of the environment, and innovation for growth.

For decades, agricultural productivity growth and efficiency has been a topic of continuing interest to policy makers and researchers who aim to improve on economic sustainability, efficiency, living standards, and international competitiveness.[5–8] Agricultural productivity growth is very important as it is an important indicator to the analysis of the overall economic growth.

The future of agriculture therefore depends on solutions that are safe for the animal, consumer and environment. New technologies and their adoption throughout the food chain are the secret to achieving a sustainable world. It resides into the research in different fields like nutri genomics, alternative feeds as well as alternative to antibiotics. Better knowledge of animal physiology will certainly help improve feed efficiency as well as animal health.

Improving the feed efficiency can mean big savings for producers. One way to achieve this goal is to select breeding that are naturally feed-efficient. The traditional breeding methods, although successful, have limited efficiency when traits are difficult to measure, have a low heritability, or cannot be correctly measured.[9] Genomic selection offers a way to predict the feed efficiency of individual and provide superior economics and much higher throughput. The nutrigenomic approach is promising and further research should bring new optimized food constituents. Such study correlating gene expression or SNPs with a nutrient's absorption, metabolism, elimination and biological effects will eventually bring to farmers optimized feeding nutrients which will increase, in a cost-effective manner, productivity whether from a dairy, meat, or other aspects of the livestock production system. Furthermore, as it should highlight elimination pathways and effects, this may have positive impact on the environment.

Methane gas is a potent greenhouse gas produced in the rumen of cattle during the normal process of feed digestion and represents a significant loss of feed energy that increases feed costs. So far, several feeding strategies show promise. Such strategies include increasing the level of dietary fat by feeding a diet of crushed oilseeds (sunflower seed, canola seed or flaxseed) or dried corn distillers grain or feed additives, including plant extracts (condensed tannins, saponins, essential oils) and rumen modifiers (yeast, bacterial direct fed microbials, and enzymes).[10–13] Other research teams are also exploring innovative ways of eliminating the microbes in the rumen that produce the methane, such as vaccines. This research is expected to lead to practical solutions that can be used to reduce methane from beef and dairy cattle in the future.

Another field of research, with high economic impacts, is the replacement of antibiotics. In the early 1940s, the first antibiotic—penicillin—was used successfully to treat bacterial infections and to save thousands of lives. Today, antibiotics, which target microorganisms like bacteria, fungi, and parasites, are essential for human and animal health. They continue to save lives as well as increase animal production and efficiency. However, exploration of alternative strategies to mitigate the use of antibiotics is needed in view of growing concerns about antibiotic resistance to certain strains of bacteria and increasing restrictions on their prudent use in animals (as well as in human).[14,15] Some of the latest scientific breakthroughs and technologies, which provide new options and alternative strategies for enhancing production and improving animal health and well-being, are currently in development. Alternatives to Antibiotics still remain a challenge and further research is mandatory.

Veterinary and Animal research is not only key for the agri-food sector but also to improve the health of companion animals (pets). Supporting studies into diseases affecting dogs, cats, horses, and even small alternative pets is part of global veterinary scientific knowledge which must be shared among all scientists. Alternative to antibiotics, nutrigenomics and all other discoveries within the field of veterinary and animal research will certainly benefit to companion animals and to their owners.

**Journal of Dairy, Veterinary & Animal Research** is a new scientific publication covering what's new in science and innovation in the Veterinary field. This publication should keep research visible and accessible. By doing so it will enhance dialogue within the veterinary/agri-food sector and present opportunities for collaborative research.

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## Conflict of interest

Author declares that there is no conflict of interest.

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