

## Symposium on Genetics of Animal Health

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**DEVELOPMENT OF PIGS WITH HIGHER DISEASE RESISTANCE USING AN IN VITRO TEST.** P.K. Mathur<sup>1\*</sup>, J. Phipps<sup>2</sup>, D. Hurnik<sup>3</sup>, L. Maignel<sup>1</sup>, C. Klopfenstein<sup>4</sup>, B.P. Sullivan<sup>1</sup>, <sup>1</sup>*Canadian Centre for Swine Improvement, Central Experimental Farm, Ottawa, ON, K1A0C6.* <sup>2</sup>*PharmaGap Inc., 100 Sussex Dr., Ottawa, ON, K1A0R6,* <sup>3</sup>*Atlantic Swine Research Partnership Inc., Suite 212, 420 University Avenue, Charlottetown, PEI, C1A7Z5,* <sup>4</sup>*Québec Swine Improvement Centre, 2795, boul. Laurier, bureau 340 Sainte-Foy QC, G1V 4M7, Canada.*

A new *in vitro* swine disease resistance test has been developed to assess the general immune capacity of animals using a small sample of their blood. The lymphocytes are exposed to specific mitogens that have been mapped on specific pig chromosomes using QTL analysis. The mitogen-induced proliferation of the various blood cell subsets is then measured through a multihit assay. This test is an alternative to inoculation of live animals and subsequent measurement of immune response. The *in vitro* test avoids the possible risks associated with inoculation such as strong reaction and secondary infection that may adversely affect growth and productivity. The test has been applied in a number of livestock species including chicken, turkeys, dairy cattle and pigs. In pigs the test was effective at measuring the differences between animals, as well as the dose-response to an immuno-modulator. The relationship of the test with other haematological and performance parameters and its mode of inheritance are investigated through specific sire families.