



## **Prairie Diagnostic Services Offers Rapid Typing of Bacteria Associated With Swine Production-Limiting Diseases**

The current diagnostic bacteriology services rely on traditional culture-based methods that can take 3 to 7 or more days to provide veterinarians with laboratory information that includes pathogens identification, typing, virulence-associated factors and antimicrobial susceptibility profile. Traditional methods are becoming outdated in laboratory information delivery, since prescription decisions need to be reported in a much more expedient way, preferably within a few hours. Significant progress in expediting diagnostic bacteriology services is being achieved with the introduction of new technologies such as genomics along with bioinformatics, to provide rapid information of some swine production-limiting diseases to guide appropriate clinical decisions.

We have developed and validated a benchtop workflow for testing a few pathogens that include *Escherichia coli*, *Glaesserella parasuis*, *Salmonella* spp. and *Streptococcus suis*, using Oxford Nanopore whole genome sequencing platform. This workflow allows bacterial identification, typing and genetic relatedness, virulence factor- and antimicrobial resistance (AMR)-encoding genes detection, in a few hours after bacterial isolation, as compared to days using traditional methods. Some of the advantages of this workflow includes typing of bacteria that are auto-agglutinating using conventional agglutination methods, provision of bacterial sequence type for genetic relatedness of isolates of same serotype hence, providing insights for possible autogenous vaccine targets. Additional advantages of the workflow include understanding bacterial pathogenicity potential and AMR profile by detecting genetic factors encoding for virulence factors and AMR. Streamlining laboratory information delivery appears beneficial, as related to decision-making in disease management by attending veterinarians. We have now implemented this approach in our scope of testing, in the molecular diagnostics section of Prairie Diagnostic Services.

**Please note that for antimicrobial susceptibility test, we now offer the serial broth dilution method to provide veterinarians with results expressed as minimum inhibition concentrations (MIC). Please order this option with your request, as per fee guide.**

If you have any questions or need further information, please feel free to reach out to us at [pdsinfo@usask.ca](mailto:pdsinfo@usask.ca).

