



**OSHAB Centralized PRRSV Database Project**

**Interim Report #1**

**Reporting Period: April 2008 – February 15, 2009**

**Submission Date: March 1, 2009**

## **Executive Summary**

The OPIC Swine Health Advisory Board (OSHAB) has received a \$25,000 grant from the Ontario Pork Producers' Marketing Board to develop a centralized Ontario PRRSV database in collaboration with the Animal Health Laboratory (AHL), Laboratory Services Division, University of Guelph. This tool has been designed to allow comparisons of percent similarity between PRRSV isolates from farms throughout Ontario. The database is being used by Ontario swine veterinarians and producers to help in understanding viral spread, prevalence and severity of clinical signs seen with specific variants, and is facilitating improved communications between veterinarians. It also has the potential to assist veterinarians and producers in identifying possible routes of entry of the virus, offering opportunities to improve on-farm biosecurity.

To date, the project has included development of producer and veterinarian confidentiality forms, a modified submission form facilitating the collection of additional data which may be used for epidemiological studies at a later point, communications with Ontario veterinarians to provide details on the project including instructions on how to participate, development of the database and methodology for sequence comparisons and transfer of the PRRSV sequence data for farms with signed confidentiality forms. The system is now operational with 8 veterinary clinics having returned signed confidentiality forms and 459 sequences transferred into this database.

## **Project Background**

PRRS viruses have high genetic mutation rates resulting in great strain diversity. Producing a wide variety of strains is advantageous to the survival of the PRRSV as new strains are able to overcome their hosts' immune systems. Monitoring of virus spread and mutation, as well as minimizing the introduction of new strains, is therefore critical in the long-term quest to reduce the prevalence of PRRS in the Ontario swine population. The centralized Ontario PRRSV database generates comparisons of percent similarity between PRRSV isolates already in the AHL database and isolates from new PRRS cases. The comparison reports generated by the database system will also allow for improved veterinarian to veterinarian communication which is expected to assist in regional eradication programs and help veterinarians to provide producers with improved management plans in the face of new PRRSV breaks.

## **Detailed Description of the Project**

OSHAB has received a \$25,000 grant from the Ontario Pork Producers' Marketing Board to develop a centralized Ontario PRRSV database in collaboration with the Animal Health Laboratory (AHL), Laboratory Services Division, University of Guelph. Project management to date has been provided by Lori Moser, OSHAB Managing Director with guidance from the OSHAB Board of Directors and the OSHAB Science and Technology Committee. Li Ge has provided sequence analysis with technical guidance from Dr. Susy Carman, both from AHL.

In order to address data confidentiality and ensure that all parties were aware of the intended use of the information generated, appropriate data release forms were developed. An assessment of forms used by AHL in Ontario and by Biovet® in Quebec for permission to release data resulted in the development of data release forms for veterinary clinics and producers. (See appendix 1).

Design of an extended sample submission form was undertaken with assistance from AHL in order to allow capture of extra information on PRRSV outbreaks that may be of value for future epidemiological studies. (See appendix 2)

Criteria for sequence comparisons and format for the homology reports were also developed. Homology reports are generated for all new case submissions and are issued to the veterinarian who submitted the new case. The reports identify all sequences in the OSHAB centralized database with 98% or greater sequence homology to the submitted strain. The location and producer name from which the comparison sequences are taken are kept confidential, with only case number and veterinary contacts listed on the report for those matching sequences which have been submitted from different clinics. An example of the data provided in the comparison reports is provided in Figure 1.

Criteria for homology reports include:

- these homology reports do not replace any current in clinic system developed between AHL and veterinary clinics; the OSHAB homology report will be in addition
- any sequencing/lab expenses will be charged to the veterinary clinic as usual
- there will be no fee to clinics for the OSHAB homology report at this time
- reports will be generated comparing any newly submitted strains to strains in the OSHAB database, however, retrospective comparison of strains of interest can be requested through AHL
- sequencing of vaccine strains, RFLP 252 RespPRRSV-like strains, will not result in the generation of an OSHAB homology report
- only those clinics who have returned their OSHAB clinic confidentiality form at a minimum will be asked if they want new sequences to be included in the OSHAB database, there are 3 possible scenarios on this:
  - o the OSHAB clinic release is in place and the OSHAB client/owner release is also in place, sequences will be entered into the OSHAB database, a homology report will be generated and sent to the submitting clinic
  - o the OSHAB clinic release is in place, but not the release for this client/owner, AHL will email the primary clinic contact the required release form and request completion and return of the signed release form before entering this sequence into the OSHAB Ontario PRRSV database
  - o neither the clinic release nor the client/owner release is in place, AHL will assume this clinic is not interested in participating in this project and will not inquire whether the vet is interested in entering this sequence into the OSHAB Ontario PRRSV database

**Figure 1. Example of Sequence Homology Reports Generated by AHL**

OSHAB Ontario PRRSV ORF5 Sequence Database Comparison Report				
Submission case # with predicted RFLP type, owner's name, date received, referring vet, clinic name ex. Case#, predicted RFLP, owner A, date received, referring vet, clinic name				
Previous cases with % sequence homology equal to or greater than 98.0%				
	%			
Cases	homology	Date received	Referring Vet	Clinic Name
case#, predicted RFLP owner B*				
case#, predicted RFLP owner C*				
case#, predicted RFLP **				
case#, predicted RFLP owner B*				
case#, predicted RFLP **				
case#, predicted RFLP owner D*				
case#, predicted RFLP owner D*				
* owners name given if the case is from the same veterinary clinic that submitted the sample ** owner's name is not given if the case is from a different veterinary clinic that submitted the sample, however the reference vet and clinic's name will be given to allow vet to vet communications				

Clinic participation to date is summarized in Figure 2. As of February 10, 2009 25 homology reports have been generated and issued. Two veterinarians from the OSHAB Science and Technology Committee agreed to submit comparison requests and review the system for accuracy. The only issue noted was that farms are sometimes entered under different names (once under the farm business name and then under the producer’s name for example) and this can result in confusion. Some resolution of these types of issues may need to be done on an on-going basis.

**Figure 2. OSHAB PRRSV Database Clinic Participation Summary**

	Date				
	08-Sep-08	21-Nov-08	12-Dec-08	21-Jan-09	10-Feb-09
# of clinics	3	7	7	8	8
# of sequences	17	367	381	450	459
(excludes 252 vaccine-like strains)					

**Reach and Communications**

Information on this project has been communicated through the OASV listserv, in personal emails sent to individual swine clinics, in presentations at OASV meetings and the public (Big Bug Day 2008). It has been featured in the OSHAB newsletter and at the 2009 Centralia Conference. This project will also be featured in “Pigs, Pork and Progress” and in an article in the March edition of Ontario Hog Farmer written by Lilian Schaer.

**Final Comments and Conclusions**

Stage one of the project, including consultation with veterinarians, development of required forms, design and development of the database and sequence transfer are now complete (tasks 1 to 4b in the project milestone outline included in appendix 3). To date, \$6,500 has been spent. (See appendix 4 for a budgetary breakdown).

The OSHAB Science and Technology committee is in agreement that the database does facilitate veterinarian to veterinarian communications including collaborative discussions on severity of clinical signs of related strains and discussions on intervention strategies used with those strains.

Stage two will include continued assessment of the database and generation of sequence homology reports as budget allows and assessment of the reporting process. Further efforts are required to educate veterinarians who wish to use the database on its value and limitations. OSHAB plans to develop a set of recommendations to guide interpretation and use of the data. OSHAB has also identified that there would be value in the creation of case studies to illustrate how the database can be used both to the veterinarian community and the industry in general. Case studies will be generated by veterinarians from OSHAB committees through analysis of homology reports and case analysis.

## Appendix 1 – Ontario PRRSV Database Data Release Forms

### OSHAB PRRSV Sequence Database Release Form for Veterinary Practices

We, \_\_\_\_\_(Veterinary Practice) wish to participate in the OSHAB PRRSV Sequence Database. We grant permission to include the sequencing information of PRRSV isolate(s) from farms under our care in the OSHAB PRRSV Sequence Database and associated comparative sequencing analyses against isolates identified from other farms in other veterinary practices. The information obtained will be used to further the understanding of the epidemiology of PRRSV infections.

We also agree to release the University of Guelph, its governors, senators, officers, employees and agents (the "University") from any and all claims we may have as a result of, or relating to, such analysis or the information obtained, and to indemnify and save harmless the University regarding and from any damages, expenses or loss suffered by any of them as a result of any claims made against any of them as a result of, or relating to, such analysis or the information obtained PROVIDED that such release and indemnity shall not apply with respect to any negligent or intentionally wrongful act or omission on the part of the University.

Veterinary Clinic \_\_\_\_\_

Name – Please Print \_\_\_\_\_DVM

Signature \_\_\_\_\_

Date \_\_\_\_\_

## Cover Letter for the OSHAB PRRSV Sequence Database Release Form for Producers

Dear (client name):

I (We), (insert veterinarian (s)) DVM, request your permission to include the Porcine Reproductive and Respiratory Syndrome Virus (“PRRSV”) isolate(s) that have been or will be sequenced from your farm(s) in a comparative sequencing study against isolates identified from other farms in other veterinary practices. To proceed, your authorization to compare the sequencing information of your PRRSV isolate(s) against that of the other farms in other veterinary practices is required. The information obtained is for internal use within the comparative practice and will be used to further the understanding of the epidemiology of PRRSV infections. Please affix your signature to the statement form attached to indicate your willingness to participate. The form can be returned to our office by fax.

Best Regards,

(insert veterinarian (s)) DVM

## OSHAB PRRSV Sequence Database Release Form for Producers

I agree that the Animal Health Laboratory (AHL) University of Guelph may prepare a comparative PRRS ORF 5 gene sequence analysis, including my farm, as well as that of other farms that are clients of (insert veterinarian (s)) DVM, as requested by the attending veterinarian.

I also agree that the AHL, University of Guelph may prepare a comparative PRRS ORF 5 gene sequence analysis of my farm to that of other farms that are clients of other veterinarians participating in the OSHAB PRRSV Sequence Database project.

I also agree that the AHL, University of Guelph may share the laboratory report(s) from my herd with the University of Guelph PRRS virus researchers. I agree that my herd veterinarian may share clinical and location information about my herd with the researchers to enable them to understand the history of PRRS on the farm. All of this information will be kept confidential by the researchers and used only for summary purposes.

I also agree to release the University of Guelph, its governors, senators, officers, employees and agents (the "University") from any and all claims I may have as a result of, or relating to, such analysis or the information obtained, and to indemnify and save harmless the University regarding and from any damages, expenses or loss suffered by any of them as a result of any claims made against any of them as a result of, or relating to, such analysis or the information obtained PROVIDED that such release and indemnity shall not apply with respect to any negligent or intentionally wrongful act or omission on the part of the University.

I also agree to release the participating veterinarians and producers from any and all claims I may have as a result of, or relating to, such analysis or the information obtained, and to indemnify and save harmless the participating veterinarians and producers regarding and from any damages, expenses or loss suffered by any of them as a result of any claims made against them as a result of, or relating to, such analysis or the information obtained PROVIDED that such release and indemnity shall not apply with respect to any negligent or intentionally wrongful act or omission on the part of either or both of the participating veterinarians and producers.

I further agree to release any input supplier, (including but not limited to; genetic suppliers, feed companies, truckers, fuel suppliers, deadstock removal companies, courier and delivery companies), from any and all claims I may have as a result of, or relating to, such analysis or the information obtained, and to indemnify and save harmless any input supplier, regarding and from any damages, expenses or loss suffered by either of them as a result of any claims made against them as a result of, or relating to, such analysis or the information obtained PROVIDED that such release and indemnity shall not apply with respect to any negligent or intentionally wrongful act or omission on the part of any input supplier.

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Producer Name (Please print)

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Farm Name(s) (Please print)

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Signature

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Farm Name(s) (Please print)

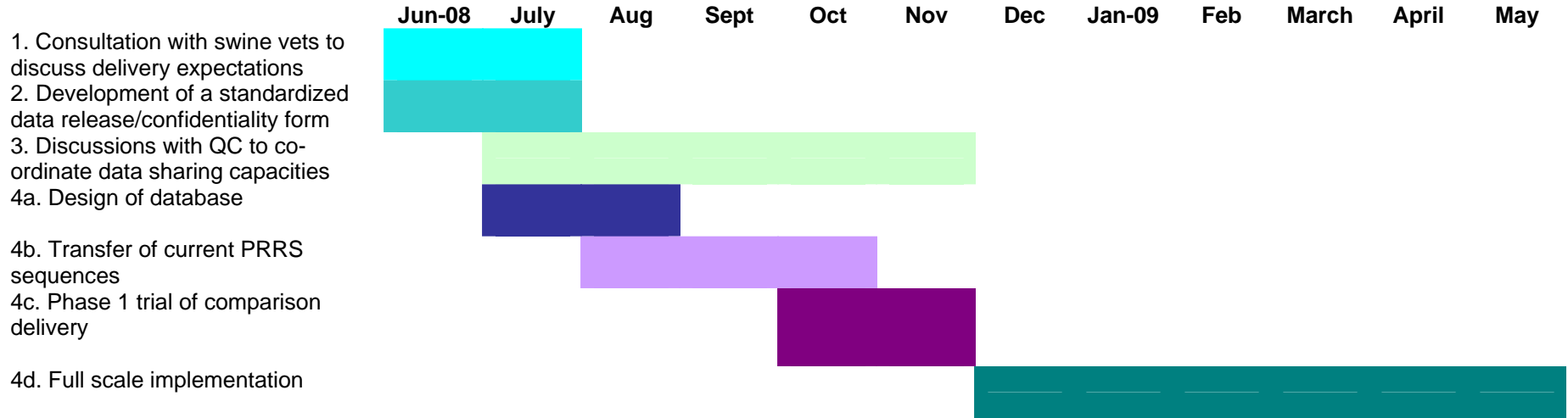
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Date



### Appendix 3. Project Milestones

#### Milestones for PRRS Database



**Appendix 4. Budgetary Breakdown – Spent to Date as of Feb 15, 2009**

<b>Item</b>	<b>Total Spent to Date</b>
Banking fees and cheques	\$150.42
Project management fee	\$2,500.00
University of Guelph – AHL fees	\$3,850.00
<b>Total</b>	<b>\$6,500.42</b>