Background

- *M. hyopneumoniae* diagnosis in live pigs is very challenging, especially during early stages of infection.
- There is a growing need for surveillance tools to demonstrate that populations remain negative to *M. hyopneumoniae* overtime or to accurately detect early infection.
- Several sampling and diagnostic tools can be used in live pigs, for example, oral fluids, laryngeal swabs, and tracheo-bronchial lavages. However, some of these techniques have not been properly evaluated and they have not been compared side by side.

**Objective**

To perform a side-by-side comparison of various sampling and testing tools currently available for detection of *M. hyopneumoniae* during the early stages of infection.

**Results**

*Table 1.* Real time PCR results of oral fluids collected from rooms of experimentally infected pigs

<table>
<thead>
<tr>
<th>dpi (+/Tested)</th>
<th>0</th>
<th>2</th>
<th>5</th>
<th>9 (2/3)*</th>
<th>14</th>
<th>21</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>dpi: Days post inoculation</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>* 2 Suspects (Ct value &gt;37)</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>^ 1 Positive, 1 suspect</td>
<td></td>
<td></td>
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<tr>
<td>(Number rooms positive/number rooms tested)</td>
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</table>
| Seven experimentally infected pigs housed/room.
**Results**

![Graph showing real time PCR results of experimentally infected pigs for various sample types.](image)

Figure 1. Real time PCR results of experimentally infected pigs for various sample types.

- Laryngeal swab > Nasal swab: significant at 5, 9, 14 and 21 dpi.
- Laryngeal swab > TB lavage: significant at 5, 9 and 28 dpi.
- TB lavage > Nasal swab: significant at 9, 14 and 21 dpi.
- Nasal swab > TB lavage: significant at 28 dpi.

Significance level: \( p \)-value <0.05.

**Conclusions**

- Laryngeal swabs showed the highest sensitivity for early detection of *M. hyopneumoniae* compared to other sample types.
- Tracheo-bronchial lavages were more sensitive than nasal swabs during the first 21 dpi.
- Nasal swabs showed lower sensitivity during the first 3 weeks post-inoculation, compared to laryngeal swabs and tracheo-bronchial lavages.
- Oral fluids showed low sensitivity for *M. hyopneumoniae* detection during the early stages of infection.

**Implications**

- Detection of *M. hyopneumoniae* using laryngeal swabs appeared to be the best tool for in vivo diagnostics during the early stages of infection.
- Laryngeal swabs are faster to collect than tracheo-bronchial lavages, but require snaring the pig, the use of a mouth gag and a light source (e.g. laryngoscope).
- Oral fluids may not be the best sample type for monitoring *M. hyopneumoniae* negative populations.