



<b>Name:</b>	Kate Howell		
<b>Project title:</b>	New approaches to diagnosis of <i>Haemophilus parasuis</i> related disease in pigs		
<b>Institute:</b>	Cambridge University		
<b>Start date:</b>	October 2011	<b>Finish date:</b>	September 2014
<b>Lay summary of project</b> ( <i>in your own words</i> )			
<p>My project aims to find markers for the development of new diagnostic tests against <i>Haemophilus parasuis</i> that will help to predict outbreaks of Glässer's disease. <i>H. parasuis</i> is a bacterium that colonises the nasal cavity of the pig where it does not cause disease. However, if it migrates away from this area it can cause pneumonia and Glässer's disease. We have collected examples of <i>H. parasuis</i> from many different cases of pneumonia and Glässer's disease as well as examples that are found in the nasal cavity that have not caused disease. We have sequenced the DNA of all of these strains and are examining these sequences for disease-related genes or markers. Bacteria can lose, gain and exchange DNA and so the bacterial genome can vary greatly within the same species. We are looking for the genes that are found in every strain of <i>H. parasuis</i> to find the essential genes, and also looking at the variation in genes between the strains. We are also interested in genetic markers for the serotyping scheme, which is currently used to determine if the commercially available vaccines will work against a strain. We have detailed clinical data for the majority of these strains and so are using statistical methods to compare the genetic sequences with clinical data to identify a list of potential markers that are found in disease-causing strains. Once we have a list of potential markers we can design a diagnostic based on these markers. The ideal diagnostic test will include multiple markers that will be able to predict how likely a strain is to cause disease, e.g. does it have any of these markers, a few or all; as well as determining if the current vaccines will work against the strain. The final diagnostic test will ideally take only a few hours and be simple enough to be performed at many different diagnostic labs, which would allow the information to be relayed back to the vet and the farmer quickly.</p>			
<b>A bit about yourself</b> ( <i>one paragraph</i> )			
<p>For my undergraduate degree, I studied Biology at Imperial College London, where I focused on parasitology, epidemiology and bioinformatics. On completion of my degree I worked as Data Manager for the Respiratory Virus Unit at the Health Protection Agency (now Public Health England), working on the Influenza surveillance scheme for two years. I am now two years into my PhD at the Department of Veterinary Medicine, University of Cambridge.</p>			



**What you hope to get out of your PhD**

My PhD allows me to work both in the laboratory and on the computer analysing genome sequences. It means that I have learnt a wide variety of skills and have a diverse work schedule. I think that having a wide skill set will help me continue in research after completing my PhD.

**A photograph of your work**

Declaration: I hereby give permission for my photo and the information provided to be used by BPEX in any publication, printed or electronic, for the purpose of informing stakeholders about my work.

Signature: *Ly Howell*

Date: *13/9/13*