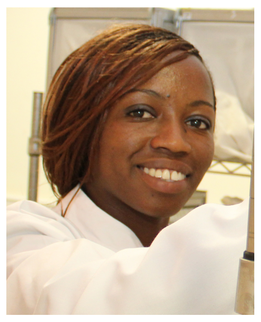
Characterisation of *Spiroplasma* from wild-caught *Anopheles arabiensis* mosquitoes in Kenya



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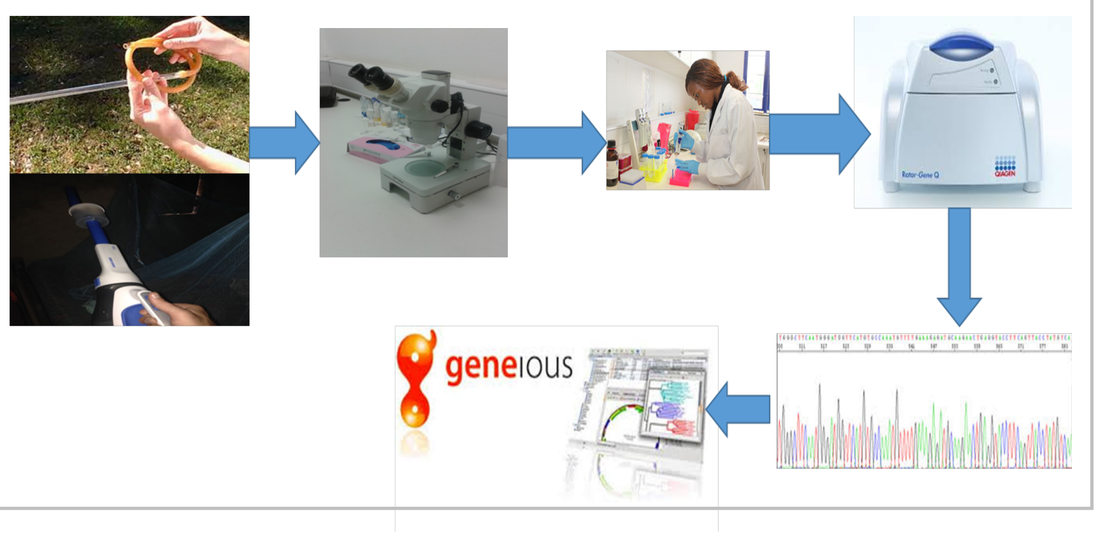
INTRODUCTION

- Insects harbour bacterial endosymbionts that live inside the body or cells of the host, and are vertically transmitted from mother to offspring.
- Up to 60% of all insects harbour one or more species of endosymbiont (Hilgenboecker et al., 2008).
- Vertical transmission has led to a variety of sophisticated mechanisms to colonise the germline of their hosts.
- These bacteria have a range of effects on their insect hosts: They can protect (i.e. confer their hosts with resistance to parasites and pathogens), and manipulate host reproduction to gain a relative fitness advantage (e.g. cytoplasmic incompatibility, male killing).
- Vector-borne diseases are a devastating global health problem. Mosquitoes make up a significant proportion of the insects that transmit these diseases. Malaria, one of the vector-borne diseases, is the leading cause of death in many developing countries.
- Endosymbionts are being used to develop novel control strategies for vector borne disease (Hoffmann et al., 2011). *Spiroplasma,* maternally-transmitted endosymbiotic bacteria, are known to have protective properties in a variety of host insects.
- This study aims to characterise *Spiroplasma* of *Anopheles arabiensis,* as a basis for developing new methods of vector transmission-blocking in Africa.

OBJECTIVES

- To develop a pipeline strategy for screening and identifying *Spiroplasma.*
- To apply the developed pipeline to characterise and establish ecological prevalence of *Spiroplasma* in mosquitoes in Kenya.
- To study and compare mosquito *mt*DNA haplotypes in infected and non-infected mosquito samples.

METHODS



CONCLUSIONS

- The Mwea population of *A. arabiensis* has *Spiroplasma poulsonii*/ *S. citri* type. The Mbita population of *A. arabiensis* has *S. ixodetis* type in addition to *S. poulsonii*/*S.citri* type (Fig 1.)
- *mt*DNA haplotype network shows that *Spiroplasma* is found in several haplotypes with varying frequency (Fig. 2).
- *Spiroplasma* is maternally transmitted, hence *mt*DNA haplotype results give more information on the transmission and prevalence of *Spiroplasma* in mosquitoes.
- This study serves as a basis for understanding the occurrence and prevalence of *Spiroplasma* in mosquitoes collected in Kenya, and provides the foundation for development of malaria-transmission blocking strategies that use endosymbionts.

RESULTS

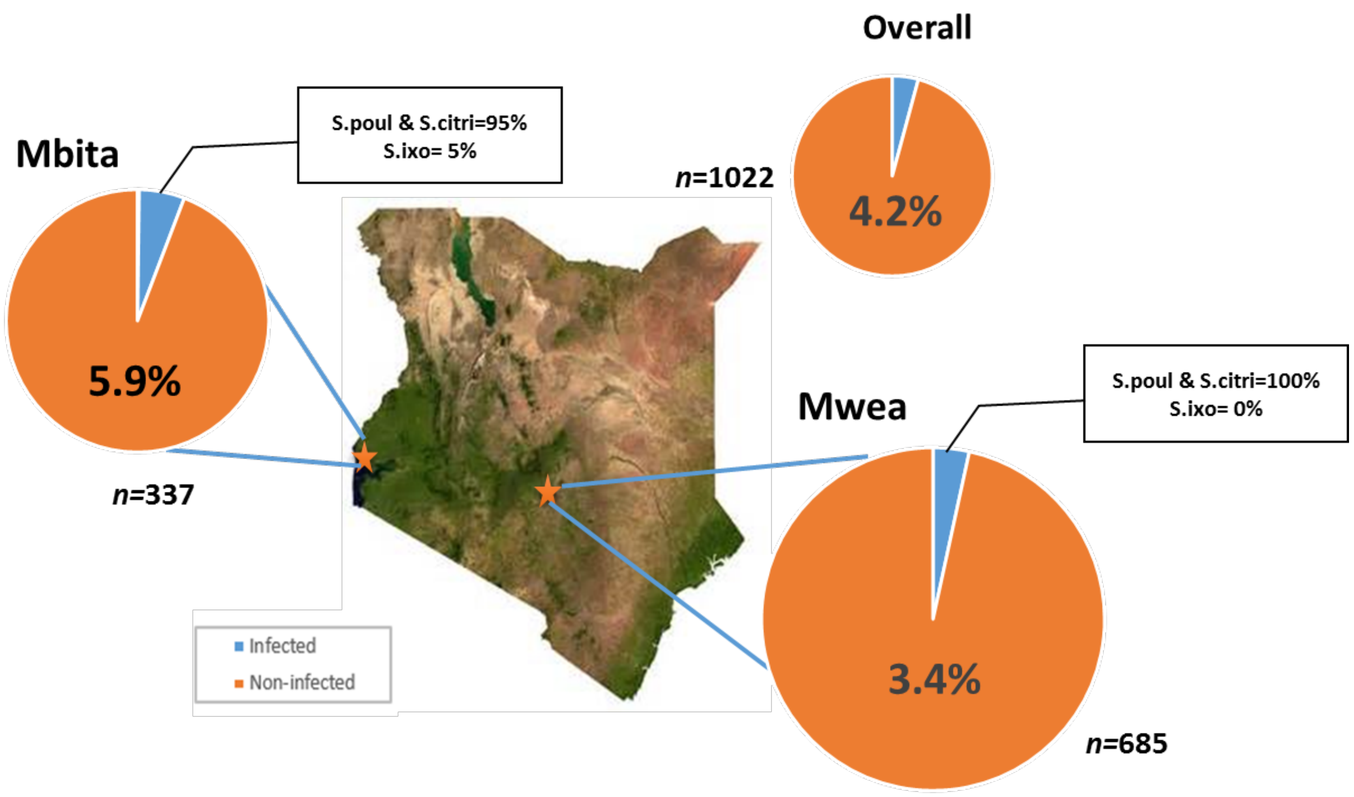


Fig. 1. *Spiroplasma* prevalence in Kenya

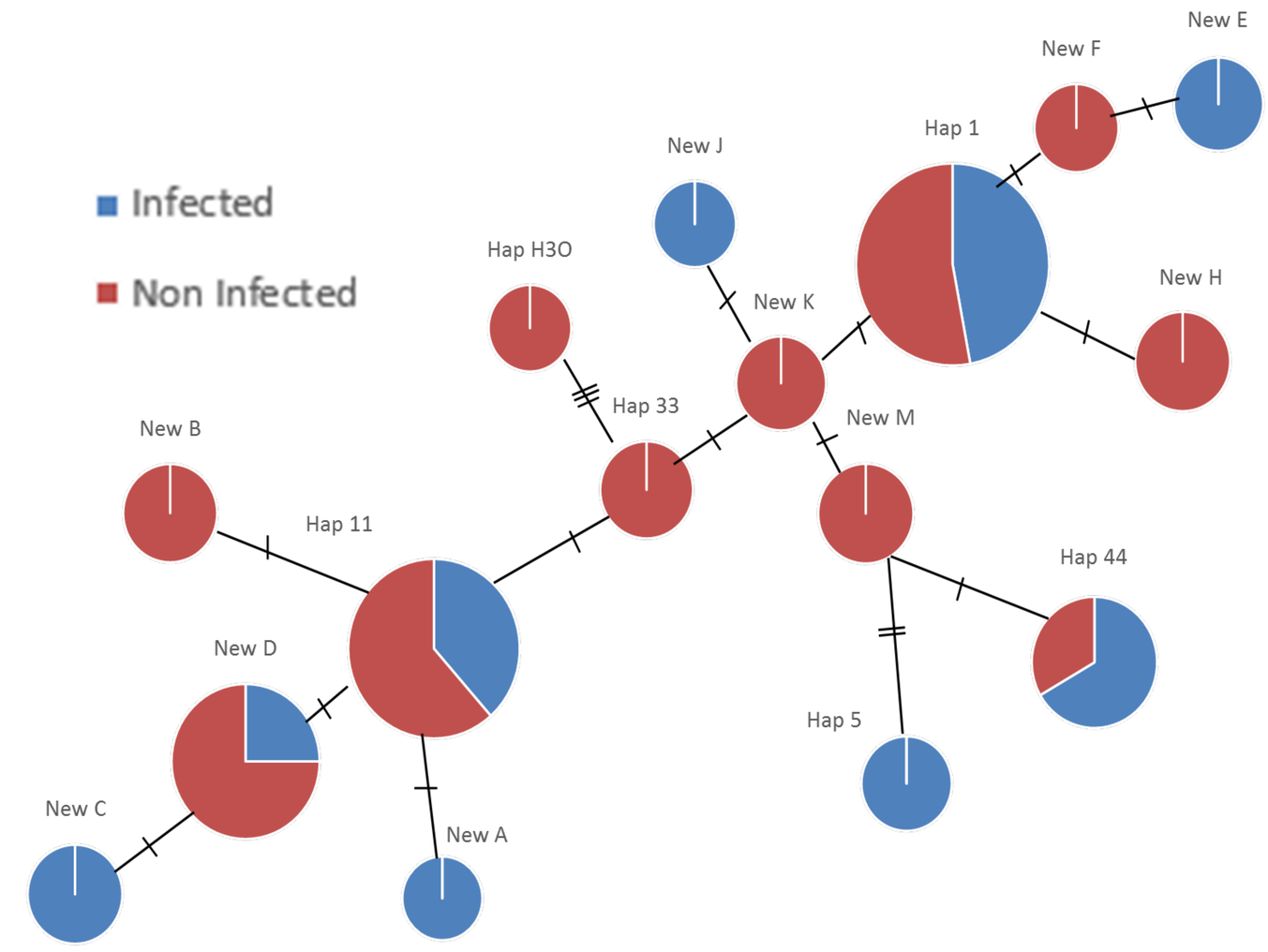


Fig. 2. *mt*DNA haplotype network

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