

Validation of *Dermanyssus gallinae* target genes for use in developing RNA interference (RNAi) mediated gene silencing.

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Dermanyssus gallinae (Poultry Red Mite; PRM), a blood feeding ectoparasite, is the most significant parasite to the egg laying industry. PRM feed on poultry blood, causing itchiness, irritability and increased mortality. These detrimental effects lead to decreases in output and quality of poultry eggs, ultimately leading to losses estimated at €230 million per annum for the European egg laying industry. A need for novel control methods is fuelled by changes to legislation for facilities and increasing resistance to chemicals currently relied on for control. Preliminary studies have been performed towards exploring RNA interference (RNAi) mediated gene silencing as a method to validate novel targets in PRM. We have demonstrated that it is possible to selectively silence target genes by feeding dsRNA to adult female mites as part of their blood meal. To further develop RNAi-mediated gene silencing we selected sixteen target genes that perform essential cellular functions in mites and have been previously validated as effective targets in other arthropods. Orthologues of these sequences were identified in *D. gallinae*, and their sequences were confirmed by RT-PCR and Sanger sequencing. dsRNAs for each of the target gene are currently being synthesised and will be assessed for their ability to: i) silence the target gene and ii) impact mite survival and/or fecundity. These initial experiments will provide a base for the future objectives of this project, such as performing a large-scale RNAi screen and developing novel, state of the art delivery methods.

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