**University of Leicester**

**MIBTP studentship project 2026**

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| **Additional Supervisor** |  |

**Section 2 – *Project Information***

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| **Project Title** | Illuminating Mosquito Vision: From Evolution to Disease Control |
| **Project Summary** | |
| Mosquitoes are among the deadliest animals on Earth because they transmit  viruses such as Zika and parasites like malaria. With climate change and human  activity expanding their habitats into new regions, including UK, the threat they  pose is expected to increase. Light plays a central role in mosquito behaviour: it  influences their activity cycles, biting responses, and even their ability to detect  humans. Yet, the organisation of the mosquito visual system and the genetic  basis of light perception remain poorly understood.  This PhD project will investigate how mosquitoes see and how their visual  systems have evolved. You will combine cutting-edge methods from genomics,  single-cell biology, and advanced imaging to explore three areas:  1)Gene evolution – tracing how light-sensitive opsins and phototransduction  genes have diversified in different mosquito species.  2) Cell types – building a single-cell atlas of the mosquito eye and comparing  males and females across key disease-vector species.  3) Visual circuits – mapping how these cell types are organised using high-resolution  imaging techniques.  The project aims to uncover sex- and species-specific differences in mosquito  vision that may ultimately help reduce their ability to locate humans.  You will gain expertise in both computational and experimental biology, from  genome analysis to microscopy, while developing transferable skills in data  handling and scientific communication. You will be part of the neurogenetics  research group, with strong international links and excellent opportunities for  training, collaboration, and publication in high-impact journals.  Techniques that will be undertaken during the project  -Mosquito rearing  -Single-cell RNA sequencing  -ATAC-sequencing  -Bioinformatics analyses  -Immunohistochemistry  -Confocal.  These diverse sets of skills will provide the student with robust training highly  valued in academia and industry. | |
| **References** | |
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