**University of Leicester**

**MIBTP studentship project 2026**

|  |  |
| --- | --- |
| **First Supervisor** | Professor Ezio Rosato |
| **School/Department** | School of Biological and Biomedical Sciences, Division of Genetics and Genome Biology |
| **Email**  | er6@leicester.ac.uk  |

|  |  |
| --- | --- |
| **Second Supervisor** | Professor Charalambos P Kyriacou |
| **School/Department** | School of Biological and Biomedical Sciences, Division of Genetics and Genome Biology |
| **Email**  | cpk@leicester.ac.uk  |

|  |  |
| --- | --- |
| **Additional Supervisor** |  |

**Section 2 – *Project Information***

|  |  |
| --- | --- |
| **Project Title** | Clock, Ageing and Disease |
| **Project Summary**  |
| In modern society we are all living longer. However, it comes with a challenge:our quality of life in later years. The world is facing a rise in age-relatedillnesses, especially neurodegenerative diseases like Alzheimer’s andParkinson’s. Interestingly, recent research has revealed a crucial connectionbetween these conditions and our body internal timekeeper, the circadian clock.How does the circadian clock influence ageing and neurodegenerative disease?We know that disruptions to the clock are a hallmark of both, and that itsderegulation seems to accelerate the ageing process. This suggests that agerelated changes in clock function are both a cause and an effect.In this project, you will investigate this relationship using the fruit fly,Drosophila melanogaster. This seemingly humble organism is a powerful geneticmodel, with a well-understood circadian clock and an array of sophisticatedtools at our disposal.You will use state-of-the-art techniques to manipulate the clock's moleculargears. For instance, you will apply CRISPR/Cas9 gene editing to precisely alterclock genes. Additionally, you will use post-translational interventions, such asantibodies or small molecules, to regulate clock proteins without geneticmodifications. Using advanced imaging and transcriptomics, you will monitorthe effects of these changes at both the single-cell and whole-organism levels.Our long-term goal is to translate this knowledge into therapies that could helppeople live not just longer, but also healthier, lives.If you're an aspiring doctoral candidate with a passion for genetics,neuroscience, or molecular biology, this project offers an exciting opportunity tocontribute to a field with immense potential. You’ll gain hands-on experiencewith advanced techniques and contribute to research that could one dayimprove the lives of millions.Techniques that will be undertaken during the projectMolecular biology, cloning, PCR, gene expression, protein expression andpurification, bioinformatics, databases, genetics, confocal microscopy |
| **References** |
| Importance of circadian timing for aging and longevity.https://doi.org/10.1038/s41467-021-22922-6. |