A PUTATIVE ROLE FOR TANGO IN THE CIRCADIAN CLOCK OF *DROSOPHILA MELANOGASTER*

Bauzer, L.G.S.R. [1], Özkaya-Rosato, Ö. [1], Codd, V. [2], Rosato, E.[1]

[1] Department of Genetics, [2] Department of Cardiovascular Science
University of Leicester, Leicester, UK

Living organisms can anticipate predictable environmental cycles using self-sustained pacemakers found in the brain and in a variety of tissues. This internal clock generates rhythms that can persist even in the absence of environmental time cues. The clock mechanism involves negative feedback-loops associated with daily oscillations of several genes expression at both the RNA and protein levels. The mammalian *Aryl Hydrocarbon Receptor Nuclear Translocator* (*ARNT*) homologous gene *tango* (*tgo*) is essential for normal *Drosophila melanogaster* development. TANGO (TGO) is a transcription factor, which belongs to the PAS (Per-Arnt-Sim) superfamily and, in the yeast-two-hybrid system, physically interacts with the circadian proteins CLOCK (CLK) and CRYPTOCHROME (CRY), suggesting a possible role for *tgo* in the circadian clock. Miss-expression of *tgo* does not interfere with the 24h period of locomotor activity but causes abnormal behavioural responses to light. However, generalised reduction of TGO promotes internal desynchronization between the morning and evening clock oscillators, suggesting that TGO might be involved in neuronal crosstalk. Moreover, miss-expression of *tgo* seems to promote an advance in the phase of expression of TIMELESS protein, a key regulator of circadian light-responses in *Drosophila*. In conclusion, this study indicates that TGO does not control the clock inner molecular cogs but strongly suggests potential functions for TGO in the input and/or output mechanisms.

Acknowledgments: Capes supported this work
Key Words: *Drosophila melanogaster*, circadian clock, TANGO