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## Light and temperature effects on the circadian clock

The circadian clock is endogenous 24h timer driving numerous metabolic, physiological, biochemical and developmental processes. The clock has a complex interaction with its environment as it responds to light and temperature cues. It can be entrained to daily cycles of light and temperature, yet it also remains very robust to their stochastic fluctuations. Another key striking feature of the clock is that it can maintain nearly constant period over a broad range of physiological temperatures (a feature called temperature compensation). These properties enable the clock to do a variety of functions: it can be used to predict transitions at dusk and dawn, measure day length, and it allows an organism to respond accurately to seasonal rhythms. Elucidating the interaction of the clock with its environment can help us gain greater understanding of the design principles of this important mechanism. Here I will present some recent work in this direction [1, 2].

### REFERENCES

- [1] M. Domijan and D.A. Rand, *Balance equations can buffer noisy and sustained environmental perturbations of circadian clocks* Interface Focus **1** 177–186.
- [2] P.D. Gould, N. Ugarte, J. Foreman, M. Domijan, D. McGregor, S. Penfield, D.A. Rand, A. Hall, K. Halliday, A.J. Millar, *Photoreceptors contribute temperature-specific regulation to the biological clock in Arabidopsis*, preprint.