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Neurocalcin Delta/Membrane Guanylate Signaling Contributes to Circadian Rhythms

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Circadian rhythms govern several important physiological processes. The endogenous body clock, which resides in the suprachiasmatic nucleus, is entrained by several zeitgebers, including light. Disruption of the endogenous clock or phase results in severe dyshomeostasis as observed during jet lag or in shift workers. It has been documented that cyclic GMP plays a critical role in setting the phase in circadian rhythms. However, the molecular mechanism by which it is regulated is unclear. The results from this study suggest that membrane guanylate cyclase is the likely source in the suprachiasmatic nucleus. Further evidence is presented that the likely regulator of this activity is the Neuronal Calcium Sensor protein, neurocalcin delta. It is proposed that the neurocalcin delta/membrane guanylate cyclase system enables a tight coupling to calcium, which is already an established regulator of generation and maintenance of circadian rhythms.

Biography

Venkataraman received his MS from Madurai Kamaraj University, India and his PhD for the Indian Institute of Science, India. He is currently an Assistant Professor in the Department of cell Biology, Rowan SOM. He has published more than 50 papers and book chapters.

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