The tail of cryptochromes: Cogs within mammals' circadian clock

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Video Byte

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Abstract

Cryptochrome proteins help organisms from plants to insects to mammals set their biological clocks to the rising and setting of the sun. But while the often photoreceptive N-terminal domain is highly conserved a distinctive C-terminal tail diverges and is a distinctive feature of cryptochrome (CRY) proteins in organisms ranging from plants to insects to mammals. Growing evidence suggests that this intrinsically disordered C-terminal tail binds reversibly with the N-terminal domain modulating the feedback loop that generates a circadian oscillation of gene expression with a period of approximately 24 hours. In humans, the intrinsically disordered tail of the protein CRY1 was recently linked to circadian timekeeping and delayed-phase sleep disorder or “night owl” behavior. Further studies examining the role played by CRY1’s tail could help researchers understand how intrinsically disordered regions in proteins affect circadian timing and how that timing runs out of sync with the environment.