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Molecular pathways regulating sleep and SUD

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Mental disorders, including addiction, are often accompanied by sleep perturbances. The relationship between sleep and addiction is complex and bidirectional: on one hand, most addictive substances cause sleep alterations, on the other hand, deficient sleep can be a risk factor for substance abuse. When analyzing sleep, most studies focus on the daily sleep amount, however, sleep depth is also crucial for good sleep quality and its restorative functions. Due to their complex relationship, investigating sleep and addiction in clinical studies is challenging. That is why it is advantageous to turn to model organisms. Work with flies is fast, translatable and allows for unbiased high-throughput genetic approaches otherwise undoable in mammalian models. I have performed a high-throughput genetic screen in *Drosophila* to identify genes involved in sleep depth regulation. The screen uncovered how a gut-secreted neuropeptide in response to protein ingestion targets a small subset of dopaminergic cells in the fly brain to regulate sleep depth. I will study the conserved genes identified in the screen to uncover mechanisms shared between sleep depth and SUD-related behaviors and molecular pathways and pave a way towards the development of sleep therapeutics that could ultimately aid in the treatment and prevention of cocaine addiction.