

Sex differences in *Drosophila* sleep patterns

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Female *Drosophila melanogaster*, like many other organisms, exhibit different behavioral repertoires after mating with a male. In female flies, these Post-Mating Responses (PMRs) include increases in egg production and oviposition (egg laying), decreases in receptivity (readiness to mate), and decreases in daytime sleep. Sex Peptide (SP), a protein transferred from the male during copulation, is largely responsible for these changes in behavior. Previous studies uncovered the receptor and neuronal circuits involved in receiving and relaying the mating signals that induce changes in egg laying and rejection behavior; however, less is known about the mechanisms that influence changes in sleep. In this study, we demonstrate that the canonical sex peptide receptor (SPR) is responsible for transmitting SP to induced post-mating decreases in sleep. Additionally, we show that the sensory neurons responsible for decreasing post-mating sleep are the same ones required to induce changes in egg laying and rejection behaviors. Thus, our data suggests that all three behaviors are governed through the same ligand/receptor pair acting through similar sets of neurons.