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cGMP kinase and food-related behaviours

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The repeated incorporation of common gene activities and pathways into diverse behavioural and environmental contexts throughout evolution is similar to findings in developmental biology showing that principle regulators have been co-opted to generate novel patterns [1]. Nevertheless, such genetic systems must be flexible enough to generate adaptive phenotypes in the midst of unique environmental and developmental constraints. For the *foraging* gene which encodes a cGMP dependent protein kinase (PKG), variation in gene activity has been associated with distinct alleles within populations in some species (e.g. *D. melanogaster*) and developmental transitions over the lifecycle of single individuals in others (e.g. honeybees [2] and ants). Here we show that the *foraging* gene in *Drosophila* also plays a role in behavioural plasticity within the lifetime of the individual. *foraging* affects food-related locomotion, food intake, responses to food deprivation, energy homeostasis, sucrose responsiveness [3] and learning. Recent immunohistochemical analysis of *for* expression combined with behaviour genetic analysis enables us to begin to draw parallels between PKG function in invetebrates and mammals.

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