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Steps Toward an Understanding of the Physiological role of $G_q\alpha$ Genes in
Drosophila Melanogaster

This experiment sought to investigate the roles of $G_q\alpha$ genes CG17759, CG27760, and CG30054 on *Drosophila melanogaster* physiology. The functions of the genes were explored by observation of their expression patterns during early embryogenesis as well as through the introduction of a dominant gain of function mutation. The dominant mutant genes were modified such that the protein product no longer has its GTP-ase activity and remains constitutively active. DNA constructs were engineered using Polymerase Chain Reaction (PCR) with specially designed oligonucleotides to change an amino acid from glutamine (Q) to leucine (L). The mutated gene was placed downstream of UAS, a binding site of the yeast transcriptional activator GAL4. The dominant form of the mutated gene can be selectively activated, after transformation into *Drosophila*, by crossing *Drosophila* containing the construct with *Drosophila* in whom the gene encoding GAL4 has been inserted randomly. Analysis of phenotypic and behavioral changes in *Drosophila* with the mutated forms of CG17759, CG17760 or CG30054 will provide insights into the normal function of these genes in *Drosophila*.