

**P013** A conserved transcriptional programme specifies insulin-producing neurons in *Drosophila*

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The functions of insulin/IGF signalling in growth and metabolism are evolutionarily conserved. Although the fruit fly *Drosophila* does not have a pancreas, it has insulin-like peptides and specialized insulin-producing cells. However, little is known about the *Drosophila* cell lineages and transcription factors involved in insulin regulation. We have identified a set of *Drosophila* neurons that produce one insulin-like peptide: Ilp7. Interestingly, Ilp7 neurons are distinct from the known *Drosophila* insulin-producing cells that secrete into the circulation and regulate global aspects of larval growth. Instead, Ilp7 neurons provide a local source of insulin for their target tissue, the visceral muscle of the gut. Developmental analysis indicates that, although Ilp7 neurons are generated early in embryogenesis, they are not initially specified as insulin-producing neurons. Instead, insulinergic identity results from the deployment of a late transcriptional programme that co-regulates cell survival and acquisition of neuroendocrine identity. Many of the genes required for Ilp7 expression in *Drosophila* are homologues of pancreatic insulin regulators. Therefore, our findings reveal striking similarities between the transcription factors regulating insulin expression in insect neurons and mammalian pancreatic  $\beta$ -cells.