

Identification and Characterization of EFL-3, a *C. Elegans* E2F Transcription Factor

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The development of an organism depends on cells receiving and executing their specific fates, though how this process is regulated remains largely unknown. Here, we identify a mechanism by which a specific cell fate, apoptosis, is determined through the cooperative efforts of Hox and E2F proteins. E2F transcription factors are critical, conserved regulators of the cell cycle and apoptosis. However, little is known about the two most recently discovered mammalian E2Fs—E2F7 and E2F8. In the nematode *Caenorhabditis elegans*, we identify a novel E2F7/8 homolog, EFL-3, and show that EFL-3 functions cooperatively with LIN-39, providing the first example in which these two major developmental pathways—E2F and Hox—are able to directly regulate the same target gene. Our studies demonstrate that LIN-39 and EFL-3 function in a cell type-specific context to regulate transcription of the *egl-1* BH3 only cell death gene and determine cell fate during development.