1999 International Worm Meeting abstract 754

A screen for mutants defective in the specification of programmed cell death in the postdeirid lineage

H Schwartz, B Horvitz

HHMI, Dept. Biology, MIT, Cambridge, MA 02139

During wild-type hermaphrodite development, 131 somatic cells undergo programmed cell death. While many genes involved in the execution of cell death have been identified, the mechanisms that control the commitment of specific cells to undergo programmed cell death are poorly understood. To date, mutations in three genes, *ces-1*, *-2*, and *-3* (cell death specification), have been found that affect specifically the deaths of particular cells. *ces-1* and *ces-2* have been cloned and shown to encode transcription factors.

We intend to perform a genetic screen for *ces* genes involved in the deaths of the sisters of the PVD neurons in the postdeirid lineage. We chose this lineage because the deaths occur during postembryonic development, making the deaths easy to identify using Nomarski optics, and because reporters exist that seemed likely to be expressed in these cells if their deaths were prevented by a mutation affecting programmed cell death.

In *ced-3* mutants that appear to be completely defective in programmed cell death, roughly half of the "undead" PVD sisters contain dopamine, like their "aunt" the PDE cell, as seen by formaldehyde-induced fluorescence. We have found that GFP reporters for dopaminergic neurons are expressed in 60% of undead PVD sisters in mutants defective in programmed cell death. We are beginning a screen using *cat-2*::GFP (kindly provided by Robyn Lints) to identify mutants in which the PVD sisters survive.