# A SCREEN FOR MUTANTS DEFECTIVE IN THE SPECIFICATION OF THE PROGRAMMED CELL DEATHS OF THE MALE-SPECIFIC CEM NEURONS

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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 four genes, *ces-1*, *-2*, and *-3* (cell death specification), and *egl-1*, have been found to affect specifically the deaths of particular cells. *ces-1* and *ces-2* encode transcription factors. Mutations in a transcriptional regulatory element of *egl-1,* which encodes a protein required for all somatic cell deaths, cause inappropriate expression of *egl-1* in the HSNs in hermaphrodites, resulting in their deaths.

We have performed a genetic screen for hermaphrodites in which the male-specific CEM neurons fail to undergo programmed cell death. The CEM neurons die during normal hermaphrodite development, but survive and differentiate in males. The reporter *pkd-2*::*gfp* (kindly provided by Maureen Barr and Paul Sternberg) expresses in the CEMs of males and in the CEMs of *ced-3* hermaphrodites, which are defective in programmed cell death. By using the *pkd-2::gfp* reporter as a marker for CEM survival, we were able to screen efficiently for survival of a single cell using a dissecting microscope fitted with fluorescence optics. We expect this screen to yield mutations in the sex determination and programmed cell death pathways and hope it will also yield mutations in genes specifically required for the deaths of the CEM neurons in hermaphrodites.

A screen of 60,000 mutagenized haploid genomes yielded at least 135 independent mutations that cause survival of the CEMs, including at least 50 that cause sexual transformation and at least 29 alleles of known cell-death genes. We are currently mapping the uncategorized mutations and placing them into complementation groups.