Abstract/Session Information for Program Number 627C

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Abstract Content

Program Nr: **627C**

Two Modifier Screens for New Genes Involved in Programmed Cell Death. **Brendan D. Galvin**, Bob Horvitz. HHMI, Dept. Biology, MIT, Cambridge, MA 02139, USA.

Most genes involved in the execution of programmed cell death (PCD) in *C. elegans* have been identified by screening for mutations that cause the survival of cells that normally die. The cloning of these genes has identified many key proteins that control PCD. To identify additional genes that play a role in PCD, we performed two modifier screens using a *lin-11::gfp* reporter that expresses in the Pn.aap cells. In the ventral cord of wild-type animals, six of the Pn.aap cells survive and express *lin-11*, while the other six undergo PCD. By contrast, all 12 Pn.aap cells survive and express *lin-11* in strains homozygous for a strong loss-of-function mutation in *ced-3* or other genes required for killing. The presence or absence of Pn.aap cells can be easily assessed in strains carrying the *lin-11::gfp* reporter using a fluorescence-equipped dissecting microscope.

The first modifier screen, a *ced-4* suppression screen, is designed to identify genes that protect cells from undergoing PCD. We screened for a reduced number of GFP-positive cells in the ventral cords of animals bearing a partial loss-of-function mutation in *ced-4*. To date, we have screened clonally approximately 5,000 mutagenized haploid genomes for zygotic defects in cell survival. We have screened 35,500 genomes non-clonally. Two strong suppressors, *n3418* and *n3696*, were isolated. *n3418*, identified in the clonal screen, is a recessive suppressor of the *ced-4* PCD defect and also causes sterility. We have mapped *n3418* to a small region LGIII. *n3696*, identified in the non-clonal screen, is a dominant suppressor and is an intragenic mutation in *ced-4*.

The second modifier screen, a *ced-3* enhancer screen, is designed to identify genes that play a role in the execution of PCD. Again using the *lin-11::gfp* reporter, we screened for an increased number of GFP-positive cells (*i.e.*, a decrease in PCD) in the ventral cords of animals bearing a partial loss-of-function mutation in *ced-3*. We screened approximately 22,000 genomes non-clonally and isolated 175 independent mutants that have increased Pn.aap like cells in a *ced-3(n2427)* background. These include mutations in *ced-1*, *ced-2*, *ced-3*, *ced-4*, *ced-5*, *ced-6*, *ced-7*, *ced-9*, *ced-10*, *dpl-1*, *egl-1*, *pag-3* and *sel-10*. Based upon complementation tests and map position, we have identified at least two new cell-killing genes.

Session Information

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Session Type: POSTER, **Session Time:** Monday-Wednesday

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Abstract Information

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