## Genetic Screens for Genes Involved in Left-Right Asymmetric Programmed Cell Death

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The body plan of Caenorhabditis elegans is mostly bilaterally symmetric. Much of the symmetry can be traced to a series of symmetric cell divisions of homologous blastomeres, which, through similar cell lineages, give rise to a set of left-right paired cells. To create an asymmetric cell, bilateral symmetry in cell lineages must be broken. The complete cell lineage of C. elegans reveals various mechanisms by which asymmetric cells are generated: one such mechanism involves a programmed cell death that eliminates one of two members of a left-right symmetrical pair.

Two blastomeres, ABalapap and ABalappp, are homologous cells that give rise to identical sets of left-right paired cells except for two sister neurons, ALA and RMED, that are generated on only the right side as some of the descendants of ABalappp. On the left side, among the cells descended from ABalapap, the homologous cell of the mother of ALA and RMED (ABalapapaa) undergoes programmed cell death, thereby breaking left-right symmetry. We hope to investigate how this programmed cell death is specified and how this asymmetry in cell lineages is established. To this end, we are planning to perform two genetic screens.

unc-25::gfp is expressed in all GABAergic neurons, including RMED. Using this reporter gene, we will screen for mutants lacking RMED, with a particular interest in mutants suppressible by a defect in programmed cell death. For the second screen, an ALA marker, ceh-17::gfp, will be used to look for mutants containing an extra ALA-like cell. Candidates from these screens might include mutants in which the asymmetric cell lineage becomes symmetric or specification of the programmed cell death is abnormal.

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