F101 A Screen for Lethal Mutations Near the *unc-29* on LG I in *C. elegans*

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The soil nematode *Caenorhabditis elegans* offers a great potential for genetic analysis, because of its rapid(3-day) life cycle. It produces many(300-350) progenies, has a small genome size(8×10^7 nucleotide pairs), and shows anatomical simplicity(<1000 cells). We have been screening mutations of *mef-2* gene, which encodes a muscle specific transcription factor, using EMS(Ethyl methanesulfonate). The *mef-2* gene of *C. elegans* has been cloned and mapped near the *unc-29* gene on chromosome I (LG I). Therefore, we screened new lethal mutations linked to the *unc-29* hoping to isolate mutations of the *mef-2* gene. We have screened about 5,200 EMS mutagenized haploids and isolated 9 candidates. We have been mapping these new mutations by 3-factor cross and deficiency complementation test. One of the candidates, 9-1-1 was discovered to have a lethal mutation located on the right side of *unc-13* and the outside of the region deleted by *nDf23*. The other candidate 9-3-1 was discovered to have a lethal mutation located on the left side of *dpy-5*. In this study, we has isolated 9 new mutations near *unc-29* region, and we are currently characterizing them.

F102 A new SNF2-like ATPase with a trithorax-like Phd-Zinc-finger domain

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As a side-product in attempts to clone the *Drosophila* homolog of mammalian CHD-1, we have cloned a new SNF2-like ATPase that maps to 76D1-2. The most striking feature of this putative ATPase are two Phd-Zinc-fingers, a protein-interaction motif found in several nuclear proteins including the *trithorax* gene product. We therefore named this gene *pha* for Phd-domain containing ATPase. *pha* encodes at least two RNAs of approx. 6.5 kb, that are present at high levels during the first 8 hours of embryogenesis. These two mRNA's differ in their short 5'-exons. The approx. 200 bp 5'-exon of *pha*-1 is located 86 bp from the shared main coding region, while the approx. 150 bp 5'-exon of *pha*-2 is 20 kb distal to the *pha*-1 exon. Conceptual translation predicts PHA proteins of 1973 and 1982 aa, respectively. PHA-protein is first detectable at the syncytical blastoderm stage, and is present in all nuclei.

The P-element stock P958 carries an insertion in the *pha*-2 5'-exon, resulting in recessive lethality in the larval stages. We have recently isolated deletions of the P958 P-element that eliminate the entire *pha*-coding region. These deletions are embryonic lethals with a severe segmentation defect, similar to strong dominant *torso* alleles, and suggest that the PHA protein may contribute to the function of some segmentation genes.