

DICER INTERACTS WITH THE P-GRANULE COMPONENT GLH-1; BOTH LOCALIZE TO *C. ELEGANS* NUCLEAR PORES AND TO STRESS-INDUCED OOCYTE RNP GRANULES

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ABSTRACT

P granules are ribonucleoprotein complexes specific to the cytoplasmic side of the nuclear pores of *C. elegans* germ cells. While P granules are implicated in post-transcriptional control of maternally-transcribed mRNAs, their function remains elusive. Our laboratory is particularly interested in the P-granule component GLH-1 (Germline RNA Helicase-1). Through genetic studies our laboratory has shown that GLH-1 is essential for fertility; however, the biochemical function of the GLH complex is still unknown. With immunoprecipitations and GST-pulldowns, we report that GLH-1 and the riboendonuclease Dicer bind one another and their interaction is not RNA-dependent. Both GLH-1 protein and mRNA levels are reduced in the *dcr-1(ok247)* mutant background; conversely, a reduction of DCR-1 protein in the *glh-1(gk100)* deletion strain is also observed. Thus, in complex in the *C. elegans* germline, these two proteins seem interdependent. In addition, evidence indicates Dicer protein levels, like those of GLH-1, are regulated by proteosomal degradation and are much increased when the Jun N-terminal kinase KGB-1 is missing in the *kgb-1(um3)* null. In the adult *C. elegans* germline DCR-1 is located throughout the cytoplasm as well as at the inner nuclear pores of the germ cell nuclei, in close opposition to GLH-1. Under stress conditions in

oocytes GLH-1 and DCR-1 both re-locate and recruit other components to large cytoplasmic RNP granules. We hypothesize the GLH-1/DCR-1 complex may function in the transport, deposition, or regulation of maternally-transcribed mRNAs perhaps with their associated miRNAs.

