CDB SEMINAR

Speaker: Paul Lasko

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Title: "Vasa and translational control in the Drosophila germ line"

Date:	Wednesday, May 19
Time:	16:00 P.M.～ 17:30 P.M.
Place:	7th floor Conference Room of Building A, CDB

Summary:

The *Drosophila* protein Vasa (VAS) is essential maternally for posterior patterning and germ cell specification. In the developing ovary and embryo, VAS is mostly present in germline RNPs, a general term for large cytoplasmic ribonucleoprotein particles such as nuage particles and polar granules. These particles, and VAS specifically, are involved in localizing and regulating translation from asymmetrically distributed RNAs. To investigate the composition of germline RNPs, we have purified VAS-containing RNPs from chemically cross-linked embryo extracts and identified its components by mass spectrometry. The two major proteins present in the complex were Fat facets (FAF) and VAS. FAF is a deubiquitinating enzyme, and we observe an increase in VAS ubiquitination and a decrease in VAS levels in *faf* mutant extracts. In situ, VAS accumulation at the oocyte posterior is substantially reduced in *faf* mutant egg chambers, and most embryos produced by *faf* mutant females fail to form pole cells. We conclude that FAF interacts with VAS physically and reverses the ubiquitination of VAS, thereby protecting VAS from proteasomal degradation, stabilizing it in the *Drosophila* pole plasm. Other proteins and RNAs identified in these complexes will also be discussed.

VAS also interacts with the general translation initiation factor eIF5B (dIF2), and thus may regulate translation of specific mRNAs. In order to determine which functions of VAS are related to translational control we created specific *vas* mutations that reduce or eliminate interaction with eIF5B, and analyzed these transgenically. We found that Vas-eIF5B binding is required for oogenesis, and that *grk* mRNA is a likely target for Vas-mediated translational regulation. Conversely, eIF5B interaction is not required for localization of Vas to the pole plasm nor for establishment of the posterior Nanos gradient.

Host **Akira Nakamura** **Germline Development ,CDB**

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