Paul Lasko—Abstract

Drosophila sperm development is characterized by extensive post-transcriptional regulation whereby thousands of transcripts are preserved for translation during later stages. A key step in translation initiation is the binding of eukaryotic initiation factor 4E (eIF4E), as part of a complex that also includes eIF4G and eIF4A, to the 5' mRNA cap. In addition to canonical eIF4E-1, *Drosophila* has multiple eIF4E paralogs, including four (eIF4E-3, -4, -5, and -7) that are mostly expressed in the testis. *Drosophila* also has a testis-specific eIF4G paralog called eIF4G2. My seminar will present genetic and molecular data that support the conclusion that a cascade of different translation initiation complexes drives germline development during spermatogenesis. Canonical eIF4E-1 is expressed in early-stage germ cells and in somatic cells throughout spermatogenesis, while eIF4E-3 and eIF4E-5 are expressed and required at progressively later stages of germ cell development.