Title: The Regulation of the Transition from Meiosis to Mitosis
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In sexually reproductive organisms, gametes are produced by meiosis and matured by limited mitosis. The purpose of this study is to determine the mechanism of how gametic cells switch from mitotic to meiotic cycle. The hypothesis is that Alternative Polyadenylation (APA) is responsible for this transition from mitosis to meiosis. APA is functioned through the RNA 3'-processing, which produces the diverse 3' UTR profiles. The research studies confirm the hypothesis by studying the mutant germ cells that stuck in mitosis of *Drosophila spermatogenesis*. Researchers working with *Drosophila spermatogenesis* discovered that many distinct profiles of transcriptome-wide 3' UTR between mitosis and mitosis germ cells. They found that in mutant cells that stuck in mitosis, their 3' UTRS are shifted. This mutation has disrupted the transition of those mutant cells from switching from mitotic to meiotic cycle, which is indicated the role of APA in the transition. They also studied different wild type germs and mutant germs to see the effect of APA profile on the transition of mitosis to the meiosis of germ cells. By doing this, they were able to see how different proteins complex of RBP, such as Tut, Bam, Bgcn, impact the regulation of APA. Research showed that RNA-binding protein (RBP) Tut is responsible for directing the bind of 3'UTRS of 3'-processing factors that express the transition of cells from mitotic to meiosis. They proposed RBP Tut recruited the CCR4/Twin of readenylation complex to control APA profile to promote the cell transition of mitosis to meiosis.

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