

Internal Webinar

TCP-1 complex regulates development and maintenance of both somatic and germline stem cells in drosophila testis

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Tissue homeostasis relies on the ability of adult stem cells to constantly self-renew and produce differentiated daughter cells. Self-renewal and differentiation greatly depends on the interaction of germline with other cell types. The *Drosophila* male germline provides a valuable and established model to study soma and germline communication. Similar to other model systems, *drosophila* male gonads are composed of two different cell types; germline which gives rise to gametes and the soma, which supports germline development and ensures proper differentiation into mature sperm. Disruption of soma-germline communication has severe consequences on spermatogenesis, resulting in tumour formation and sterility. Several studies have demonstrated the requirement of soma-germline communications in regulating stem cell behaviour during spermatogenesis, but how cyst cells dictate germline proliferation remains still unanswered. In order to get better understanding of the soma-germline interaction we have performed transcriptional profiling of the whole soma with an aim of identifying novel genes and signalling pathways active in somatic population, which have a key role in regulating germline behaviour. This dataset helped us to uncover several novel and interesting factors in soma: one of them being a CCT (chaperone containing T-complex), which encodes a multi-subunit molecular chaperone complex. Although CCT's are known to regulate various cellular processes in diverse tissues, their role in stem cell maintenance is hardly understood. To elucidate the role of CCT's in stem cell maintenance, we have performed RNAi mediated knockdown of CCT subunits in both somatic and germline population. Depletion of CCT subunits strongly affects the proliferation and differentiation of both stem cell populations leading to development of agametic testes.

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