

## **Webinar**

### **Stem cell-niche interactions regulate signalling micro environment and innate immune response in Drosophila**

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Stem cells possess the ability to self-renew or to differentiate into mature cell types. Maintaining the balance between self-renewal and differentiation is highly crucial for maintaining tissue homeostasis and organismal development. Stem cells reside at a specialized structure called as the niche. The niche plays an instructive role in maintaining stem cell homeostasis. Owing to its genetic tractability and functional parallels to the vertebrates, *Drosophila* (fruit fly) has been widely used as a model organism to understand pertinent biological problems. Using *Drosophila* hematopoiesis as the system of analysis, I will highlight my work that elucidates how stem cell - niche communication mediated by two modes namely intercellular communication by septate junctions and cell-extracellular matrix communication mediated by integrins are important for shaping the stem cell environment. During physiological challenges like bacterial infection, the signalling micro-environment in the stem cell niche ecosystem undergoes changes that triggers infection- induced hematopoiesis. Both septate junction molecules and integrins can alter the cellular signalling landscape thereby acting as molecular switches between physiological and infection- induced hematopoiesis leading to immune activation in flies. I will also briefly discuss some of the biological questions related to ageing of the stem cell – niche micro-environment that we are beginning to explore in my lab at the Tata Memorial Centre - ACTREC.

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***4:00 PM***