



## Seminar/Talk

# Time to decide - how fruit flies think it over

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Host: Harald Janovjak

Decisions take time because the information needed to make them is rarely available all at once but must be gathered sequentially. In fruit flies discriminating two odours, the amount of time taken varies with the difficulty of the comparison and is influenced by approximately 160  $\alpha\beta$  core ( $\alpha\beta$ c) Kenyon cells of the mushroom bodies. These neurons are distinguished by the expression of FoxP, a transcription factor whose human orthologues are important determinants of cognitive ability. FoxP mutants are slower to commit than wild-type flies and, in some allelic combinations, are also more error-prone.

I will report on progress in characterizing the physiology of  $\alpha\beta$ c Kenyon cells and its regulation by FoxP. Specifically, I will show that these neurons integrate subthreshold depolarizations evoked by individual quanta of sensory information over exceptionally long timeframes, and that the ability to do so dictates behavioural performance. FoxP affects reaction times by tuning the integrative properties of  $\alpha\beta$ c Kenyon cells via repression of a dendritic potassium channel. I will outline a quantitative correspondence between cellular biophysics and psychophysical performance that suggests a mechanistic connection between synaptic integration and the accumulation of sensory information over time.

**Wednesday, July 5, 2017 11:00am - 12:00pm**

Mondi Seminar Room 3, Central Building



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