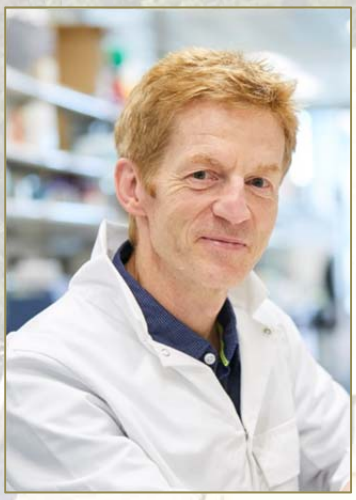
EXTERNAL SEMINAR

Inmed Conference Room

Monday, 4st December 2017 - 2 p.m.




## François GUILLEMOT

**Invited by: Claudio RIVERA**

***The Francis Crick Institute - London***

Francois.Guillemot@crick.ac.uk


# Post-translational regulation of stem cell quiescence and activity in the adult brain

Neural stem cells located in restricted regions of the adult brain produce neurons that have important functions in memory and mood control. While the niche signals that control neural stem cells fates have been extensively investigated, little is known of the intrinsic mechanisms that mediate the activity of these extrinsic signals and implement appropriate fate decisions. Using high throughput genomic analysis and genetic approaches in stem cell cultures and in vivo, we characterise transcription factors that regulate the transitions between neural stem cell quiescence, activation and differentiation in response to niche signals.

We found that expression of the transcription factor Ascl1 by stem cells of the adult hippocampus is essential for their activation, and that regulation of Ascl1 protein levels determines the rates at which stem cells self-renew and new neurons are produced. Reduced levels of Ascl1 slow down stem cell proliferation and neurogenesis while increased levels accelerate proliferation and lead eventually to stem cell exhaustion and inhibition of neurogenesis. Ascl1 protein levels are controlled by different post-translational mechanisms in proliferating stem cells and quiescent stem cells.

Interestingly, we have obtained evidence that stem cells that have proliferated and returned to quiescence are molecularly and functionally distinct from stem cells that have never be active.


Parc Scientifique de Luminy
163 Avenue de Luminy
13273 MARSEILLE Cedex 09


Aix*Marseille université Initiative d'excellence

Inmed Institut de neurobiologie de la méditerranée

Instituts thématiques Inserm Institut national de la santé et de la recherche médicale