257th WPI-IIIS Seminar
~Mini Symposium~

Mitochondrial and neuronal dynamics controlling the pressure to sleep

The inescapable need to sleep is universal, yet mysterious. To unveil its workings, we studied fly sleep-control neurons. These cells track the mounting pressure to sleep via the flow of electrons through their mitochondria. Lack of sleep shifts these cells' gene expression, alters their mitochondria, and changes their excitability.

The key signal is mitochondrial energy metabolism: when ATP supply and electron flow become mismatched, the neurons respond by promoting sleep.

These same neurons also generate slow brain oscillations whose strength reflects accumulated sleep need.

This neuroenergetic feedback connects cellular energy state to the brain circuits that decide when to sleep.

Dr. Raffaele Sarnataro

The Francis Crick Institute

Date: **Tuesday, August 4, 2026**

Time: **15:45 – 16:30**

Venue: **1F Auditorium, IIIS Building**

＊On-site participation only

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