

Traffic jams in neurons are useful.....



Traffic jams are the bane of every driver on Indian roads. Crowding is similar both on Indian roads and neurons with many types of vehicles/neuronal cargo all using the same set of roads. Vehicular traffic stops at red lights, when road is occupied with other materials and with other cargo. The lab of neurobiologist Sandhya Koushika, TIFR in a inter-disciplinary collaboration with theoretical physicist Gautam Menon, IMSc have show that healthy neurons have naturally occurring traffic jams and they discover how some of the causes of these traffic jams (published Traffic, March 2018 and on the cover of the journal). Akin to road traffic, different types of neuronal cargo come to a complete stop in neurons when they bump into each other especially in areas that are rich in actin (filamentous proteins that form a mesh like structure). This shows that cargo traffic in the neuron is unlike that seen in inter-state highways but more akin to small roads in a mid-sized Indian city where multiple obstacles are often found on or along side relatively narrow roads. This study led by PhD student Parul Sood shows that the accumulation of cargo along the narrow transport path is dependent on neuronal needs. Neurons that are stimulated have fewer traffic jams, suggesting that these locations that form due to physical crowding can be co-opted to respond to the needs of the cell.

Article with video abstract can be found at

https://onlinelibrary.wiley.com/doi/abs/10.1111/tra.12544#.WsImv_ICZ40.twitter

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