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**Clique of functional hubs orchestrates population bursts in developmentally regulated neural networks**

**It has recently been discovered that single neuron stimulation can impact network dynamics in immature and adult neuronal circuits. Here we report a novel mechanism which can explain in developing neuronal circuits, typically composed of only excitatory cells, the peculiar role played by a few specific neurons in promoting/arresting the population activity. For this purpose, we consider a standard neuronal network model, with short-term synaptic plasticity, whose population activity is characterized by bursting behavior. The addition of developmentally regulated constraints on single neuron excitability and connectivity leads to the emergence of functional hub neurons, whose stimulation/deletion is critical for the network activity. Functional hubs form a clique, where a precise sequential activation of the neurons is essential to ignite collective events without any need for a specific topological architecture. Unsupervised time-lagged firings of supra-threshold cells, in connection with coordinated entrainments of near-threshold neurons, are the key ingredients to orchestrate population activity.**

*Reference of the paper:*

*S. Luccioli, E. Ben-Jacob, A. Barzilai, P. Bonifazi, and A. Torcini,*

*"Clique of functional hubs orchestrates population bursts in developmentally regulated neural networks",*

*PLOS Computational Biology (2014), in press.*