

The *Drosophila* flight system offers, due to a plethora of available genetic manipulations, great accessibility to neuronal computational properties, network behavior, developmental processes, and behavioral readout. The fly's wing power muscles are innervated by 12 identified motoneurons (MNs) per body side, of which at least five are organized into a minimal, weakly electrically coupled circuit, that perform identical input-output computations and share substantial amounts of excitatory input. Combining genetical impairment of dendrite growth with intracellular dye fills and electromyography, I seek to unravel which developmental mechanisms encode the complex task of partitioning correct amounts of input synapses to each MN. We hypothesize, that simple rules of competition and promiscuous partner matching during spatio-temporally coinciding stochastic, synaptotropic growth are sufficient to correctly partition excitatory input synapses to the MNs.