



Comparison of Autism Linked Genes, SHANK3 and DLGAP2, in humans with its fly homologs, Prosap and Vulcan

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Scaffolding proteins play a critical role in the postsynaptic density structure of the excitatory synapses, regulating processes such as glutamate receptor trafficking, signaling efficiency, and dendritic structure. Due to the interconnected network of synapses and proteins, mutations can cause genetic variability in scaffolding proteins which can cause postsynaptic density dysfunctions in synaptic plasticity, signaling efficiency and dendritic spine morphology, increasing the risk for autism spectrum disorders. Two families of proteins in humans linked to autism spectrum disorders are SHANK and DLGAP. In this review we provide a side by side comparison of 2 autism linked genes in humans, SHANK3 and DLGAP2, and compare it to its fly homologs, Prosap and Vulcan, respectively, analyzing how these genes affect the anatomical, molecular, and behavioral components in both humans and flies. We will also address unknown information about these genes and discuss ideas on how to achieve further progress in this field.