

List of Terms for Molecular Mechanisms of Synaptic Vesicle Release

*** You only need to know the terms in BOLD ***

CAMKII: ("calcium/calmodulin-dependent kinase II") Binds calcium and changes synapsin so that it can no longer anchor the vesicles. This allows the vesicles to move toward the target membrane.

complexin: May function to stabilize the SNARE complex.

munc18-1: Unclear function; may inhibit vesicle fusion by binding syntaxin.

NSF: ("N-ethyl maleimide sensitive factor") Disassembles the SNARE complex.

Rab = GTPase. In its GTP bound form, it functions in initial membrane contact.

SNAP: ("soluble NSF attachment proteins") Binds to SNARE complex. NSF binds to SNAP in order to disassemble the SNARE complex.

SNAP-25: ("synaptosomal-associated protein of 25 kDa") Component of SNARE complex. Attached peripherally to the target membrane.

SNARE complex: ("SNAP receptor", a.k.a "core complex") Composed of 3 different proteins (requires one synaptobrevin, ~~two~~ SNAP-25 and one syntaxin). Enables vesicle fusion, but is not sufficient for fusion pore opening.

synapsin: Anchors reserve vesicles to neurofilaments, preventing them from entering the active zone.

synaptobrevin: Component of the SNARE complex. Located in the vesicle membrane.

synaptotagmin: Located in the vesicle membrane. Binds both the SNARE complex as well as calcium. May play important role in opening the fusion pore during calcium-triggered vesicle release.

syntaxin: Component of the SNARE complex. Located in the target membrane.

transporters: Proteins embedded in the vesicle membrane that fill the vesicles with neurotransmitter. Examples: vAChT (acetylcholine), vGAT (GABA), vMAT (dopamine, norepinephrine), vGluT (glutamate).