Supplementary Figure

Schematic describing the basic circuitry of the lamprey spinal locomotor CPG and its excitatory pathways.

Locomotion is initiated and maintained by MLR-evoked excitation of the reticulospinal system in the mesencephalon (Dubuc et al 2007) which in turn excite left and right spinal hemi-spinal cords. The reticulospinal neurons provide excitation principally to interneurons of the spinal CPG within the ventral horn to activate locomotion (Zelenin et al 2001) although they also excite motoneurons to a lesser extent. Locomotion continues provided that the reticulospinal neurons continue to fire action potentials repetitively and to excite the spinal ventral horn interneurons. We have demonstrated that the output of these neurons is inhibited by a direct effect of Gβγ released by presynaptic 5-HT\textsubscript{1B/1D} receptor activation, on the SNARE complex. Further excitation in the spinal cord necessary for appropriate phase coupling (Williams 1992) is provided by excitatory interneurons (Buchanan and Grillner 1987) which as a class excite all their ipsilateral interneuron partners as well as motoneurons. The synaptic output of these interneurons is also inhibited by 5-HT\textsubscript{1B/1D} receptors (Parker and Grillner 1999; Schwartz et al 2005) although the presynaptic molecular targets have not yet been resolved.