

Researchers identify signals triggering dendrite growth

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A study in worms that are less than a millimetre long has yielded clues that may be important for understanding how nerves grow.

A team of researchers from the Queensland Brain Institute (QBI) has probed the molecular mechanisms which prompt the development of dendrites, in the nematode [Caenorhabditis elegans](#). The findings are published September 20 in the online, open access journal [PLoS Biology](#).

Dendrites are the branch-like structures in nerve cells, which receive [electrochemical signals](#) from other [nerve cells](#) or sensory inputs from the external environment.

Along with the cable-like structures called axons, which transmit [electrical impulses](#) between neurons, dendrites are crucial to nervous system function but their development has been poorly understood to date.

However, the QBI team has discovered that a ligand called LIN-44 and a receptor called LIN-17 work together to coax certain neurons in *C. elegans* to extend dendrites towards their targets.

"This is the first study to demonstrate, in vivo, that the initial outgrowth of a dendrite is controlled by these ligands and receptors," says Leonie Kirszenblat, the research assistant who carried out the study in the lab of Dr Massimo Hilliard.

Understanding these fundamental mechanisms of neuronal development may have practical, as well as theoretical implications, says Dr Hilliard.

"Having the ability to control dendritic growth may be important for growing neurons from stem cells, which could be useful in a range of neurologic conditions, including spinal injury," he says.

More information: Kirszenblat L, Pattabiraman D, Hilliard MA (2011) LIN-44/Wnt Directs Dendrite Outgrowth through LIN-17/Frizzled in *C. elegans* Neurons. PLoS Biol 9(9): e1001157. [doi:10.1371/journal.pbio.1001157](https://doi.org/10.1371/journal.pbio.1001157)

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