Abstract

Oriented cell growth is closely linked to cytoskeleton organization and cell polarity.

Polymerization of actin involving WRC and Arp2/3 complexes allows neurons to branch dendrites, cells, thanks to actin bundles, form filopodia exploring their surroundings, different arrangements of microtubules ensure transport to different regions of cells, actin dynamics or fluid pressure is used for oriented growth. In this work, attention is focused on the processes of microtubule orientation of neurons, the structural organization of cytoskeleton components, their dynamics and interactions in cell regions providing oriented growth. Finally, attention is paid to terminal growth and lumenogenesis of the canal cell.

Although these are two different cell types, the literature suggests that the mechanisms of terminal growth are similar, which could allow the use of the canal cell model *Caenorhabditis elegans* for advanced microscopic methods with the advantage of larger size.