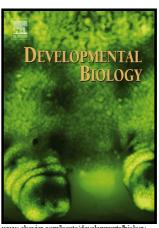
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Vaccinia-Related Kinase 1 is required for early uterine development in

Caenorhabditis elegans

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Summary

Protein kinases regulate a multitude of processes by reversible phosphorylation of

target molecules. Induction of cell proliferation and differentiation are fundamental to

development and rely on tightly controlled kinase activities. Vaccinia-Related

Kinases (VRKs) have emerged as a multifunctional family of kinases with essential

functions conserved, from nematodes and fruit flies, to humans. VRK substrates

include chromatin and transcription factors, whereas deregulation of VRKs is

implicated in sterility, cancer and neurological defects. In contrast to previous

observations, we describe here that Caenorhabditis elegans VRK-1 is expressed in all

cell types, including proliferating and post-mitotic cells. Despite the ubiquitous

expression pattern, we find that vrk-1 mutants are particularly impaired in uterine

development. Our data show that VRK-1 is required for uterine cell proliferation and

differentiation. Moreover, the anchor cell, a specialized uterine cell, fails to fuse with

neighboring cells to form the utse syncytium in vrk-1 mutants, thus providing further

insight on the role of VRKs in organogenesis.

Keywords

Anchor cell; Cell fusion; MosSCI; Protein kinase; Uterine development; VRK1

1. Introduction

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