

# Biology Seminar

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## **Nutritional control of *Caenorhabditis elegans* post-embryonic development**

Larvae of the nematode *C. elegans* hatch in a state of developmental arrest (L1 arrest) and initiate post-embryonic development only in the presence of food.

Larvae can survive L1 arrest for weeks, and development is initiated rapidly in response to feeding. Using L1 arrest and recovery as a model, we are characterizing signaling pathways and gene regulatory mechanisms that mediate developmental responses to nutrient availability. We seek to understand how development is coordinated across the animal during arrest and recovery, and how the rapid developmental response to feeding is accomplished. Insulin-like signaling is a key regulator of L1 growth and arrest, and our working model is that it coordinates individual cells so that a coherent regulatory state is maintained across the animal. We have also found that growth and development genes are poised for expression during L1 arrest. RNA Polymerase II accumulates at the promoters of these genes during arrest, as if 'paused' just after beginning elongation, and these genes are rapidly transcribed in response to feeding.

