



## A/Professor Roger Pocock

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Development and Stem Cells Program

### OTHER PROGRAM AFFILIATIONS



Metabolic Disease  
and Obesity



Neuroscience

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Our group aims to decipher fundamental mechanisms that control brain developmental and function. *C. elegans* has a small and well-defined nervous system that we use as a model to study neuronal development and function at single-neuron resolution. Sophisticated molecular genetic techniques, ease of observation and detailed anatomical, genetic and molecular information make the worm an excellent experimental model.

### Research Projects

1. microRNA regulation of stem cell development
2. Constructing of the brain using the TGF-beta pathway
3. CRISPRCas9 genome engineering to model oncogenic mutations
4. microRNA regulation of brain development



Image of head and tail ganglia of *Caenorhabditis elegans* marked with green fluorescent protein

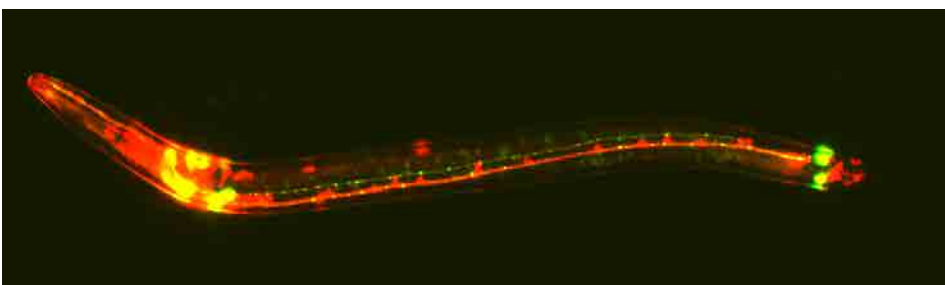


Image of the entire *Caenorhabditis elegans* nervous system marked with red fluorescent protein and expression of a neuropeptide marked with green fluorescent protein. Overlapping cells are yellow

### Selected significant publications:

1. Torpe N and **Pocock R**. 2014. Regulation of Axonal Midline Guidance by Prolyl 4-hydroxylation in *C. elegans*. *The Journal of Neuroscience*. 34(49):16348-57.
2. Gramstrup Petersen J, Rojo Romanos T, Juozaityte V, Redo Riveiro A, Hums I, Zimmer M and **Pocock R**. 2013. EGL-13/SoxD Specifies Distinct O2 and CO2 Sensory Neuron Fates in *Caenorhabditis elegans*. *PLoS Genetics* 9(5).
3. Pedersen M, Snieckute G, Kagias K, Nehammer C, Mulhaupt H, Couchman J and **Pocock R**. 2013. An Epidermal MicroRNA Regulates Neuronal Migration via Control of the Cellular Glycosylation State. *Science*. 341, 1404.
4. **Pocock R**, and Hobert O. 2010. Hypoxia activates a latent circuit for processing gustatory information in *C. elegans*. *Nature Neuroscience*. 13, 610-614.
5. **Pocock R** and Hobert O. 2008. Oxygen levels affect axon guidance and neuronal migration in *Caenorhabditis elegans*. *Nature Neuroscience*. 11, 894-900.