

Molecular barcodes -- identification of 16 new species of *Caenorhabditis*

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Caenorhabditis are usually thought of as soil nematodes, happily living in compost heaps. The famous (scientifically speaking) *Caenorhabditis elegans* has provided a wealth of information about developmental processes and cell death. These tiny worms have been at the forefront of three Nobel prizes and have even been sent into space! However all other known *Caenorhabditis* species are as distantly related to *C. elegans* as mouse is to man. New research published in BioMed Central's open access journal *BMC Evolutionary Biology* looked at the relationship between the ten known species of *Caenorhabditis* and found another 16. In the process it was discovered that these particular nematodes prefer to live in rotting fruit and vegetation rather than soil.

A team of researchers, led by Dr Karin Kiontke, from New York University, and Marie-Anne Félix, from the Institute Jacques Monod in Paris, delved into rotting vegetation collected from around the world. They found *Caenorhabditis* worms in samples from temperate and tropical climates across four continents, but only in those which contained rotting fruit or vegetable material. Some species, like *C. elegans*, were found in many locations, but others in only one.

'Worms' were separated according to physical characteristics such as color, tail length, and position of reproductive organs. True separation between species was determined by the animals being unable to mate or to produce viable offspring, and the species were molecular barcoded using the ITS2 regions of DNA.

Dr Kiontke explained, "Using our new data we were able to generate an evolutionary tree for all 26 species which showed that the history of *Caenorhabditis* has had many evolutionary reversals and convergences. For example, the spicules (the male reproductive organs) increased in length after the first species diverged from the *Caenorhabditis* ancestor, but decreased again in a more modern ancestor of five present-day species. Also, it is clear that hermaphroditism has evolved independently three times within the *Caenorhabditis* genus. The newly discovered species will be an important resource for future research and will doubtless teach us much more about the evolution of genomes, reproductive modes and development. Although we still have not yet found the elusive close relative for *C. elegans* we now know where to search."

More information: A phylogeny and molecular barcodes for *Caenorhabditis*, with numerous new species from rotting fruits Karin C Kiontke, Marie-Anne Félix, Michael Ailion, Matthew V Rockman, Christian Braendle, Jean-Baptiste Pénigault and David HA Fitch *BMC Evolutionary Biology* (in press)

Provided by BioMed Central

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