

Scientists develop a robot that performs genetic manipulations of *C. elegans*

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Caenorhabditis elegans. Credit: Wikipedia

A robotic system capable of imaging and transferring the model organism *Caenorhabditis elegans* could replace hours of tedious lab work, according to a study published in *PNAS Nexus*.

Laboratory workers spend untold hours every year manipulating *C. elegans*, a tiny nematode worm used in genetics research that reproduces quickly and is optically transparent. Often, the labor required to manage and manipulate the animals is a major bottleneck for using the worms to address questions in biology.

Fang-Yen, Zihao (John) Li, Anthony Fouad and colleagues developed WormPicker, a robotic system capable of handling [routine tasks](#), increasing the productivity of human researchers. WormPicker's imaging system autonomously detects nematode age, sex, shape, expression of fluorescent reporters, and other phenotypes.

A [robot arm](#) holding a wire loop can pluck selected individuals out of a [petri dish](#) and transfer the animals to another dish—electrically sterilizing itself with heat between each transfer. The authors put the robot through several standard tasks, including genetic crossing, genetic mapping, and genomic integration of a transgene.

The authors show that the robot performs a fluorescent *C. elegans* sorting task at a rate comparable to that of human researchers.

The authors expect the [robotic system](#) to accelerate studies in diverse areas of *C. elegans* biology. To make WormPicker as accessible as possible, the authors are providing a list of components and have made all the design files and system software freely available online.

More information: Zihao Li et al, A robotic system for automated genetic manipulation and analysis of *Caenorhabditis elegans*, *PNAS Nexus* (2023). [DOI: 10.1093/pnasnexus/pgad197](https://doi.org/10.1093/pnasnexus/pgad197)

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