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Title: Massively parallel *C. elegans* tracking provides multi-dimensional fingerprints for phenotypic discovery

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Massively parallel *C. elegans* tracking provides multi-dimensional fingerprints for phenotypic discovery

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Highlights:

- The *Wide Field-of-View Nematode Tracking Platform* is a novel multiparametric tracking platform that can monitor more than 5.000 animals in parallel.
- The platform is optimised for extracting features important for characterising the behaviour of *C. elegans*, a widely used model organism in biomedical research.
- The platform provides a high power of detection and statistical power, allowing reliable detection of even small changes in worm behaviour and reducing the risk of false positive results.
- The capabilities of the platform are demonstrated by screening potential drug leads for neurodegenerative disorders such as Parkinson's and Alzheimer's disease.
- Full details are provided to build the platform, and open source codes are provided to analyse the resulting data, making it readily accessible to the community.

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