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Higher throughput high resolution multi-worm tracker[1] AVELINO JAVER, KEZHI LI, BERTALAN GYENES, ANDRE BROWN, MRC CSC, Imperial College London, BEHAVIOURAL GENOMICS TEAM — We have developed a high throughput imaging system for tracking multiple nematode worms at high resolution. The tracker consists of 6 cameras mounted on a motorized gantry so that up to 48 plates (each with approximately 30 worms) can be imaged without user intervention. To deal with the high data rate of the cameras we use real time processing to find worms and only save the immediately surrounding pixels. The system is also equipped with automatic oxygen and carbon dioxide control for observing stimulus response behaviour. We will describe the design and performance of the new system, some of the challenges of truly high throughput behaviour recording, and report preliminary results on inter-individual variation in behaviour as well as a quantitative analysis of *C. elegans* response to hypoxia, oxygen reperfusion, and carbon dioxide.

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