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High-throughput screening of multiple *Caenorhabditis elegans* strains

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ABSTRACT

I developed this method for growing worms to avoid the steps of bleaching, refeeding and washing worms off plates. When using hundreds of strains these are very time consuming. Eggs will hatch on 24 well plates and worms will be imaged on the same plates. This way one person can easily screen 30 strains per week, with 3 bioreps.

MATERIALS

NGM, peptone-free NGM, LB, OP50, 60 mm plates, 24 well plates, worm pick

OPEN ACCESS

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We use this protocol and it's working

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Preparing plates

- 1 Prepare 60 mm NGM plates for worm maintenance. Dry plates for 1 hour under flow hood. If using 40 strains per week, you need at least 120 seeded plates per week (chunking Monday,

Wednesday and Friday).

Always use the same agar, peptone and LB throughout the project (do not change reagents mid project).

- 2 Prepare overnight cultures of OP50 *E. coli* by picking one colony into a 50 mL Falcon tube containing 30 mL LB Miller. Incubate overnight at 37°C with 200 rpm shaking.
- 3 Seed plates with 200 µL liquid culture. Keep plates in cold room until ready to use.
- 4 Prepare 24 well plates with peptone free NGM by dispensing 600 µL per well using Integra VIAFILL dispenser. Dry plates for 1 hour under hood. Prepare enough 24 well plates for 2 weeks and keep them in cold room until use. Seed plates with 15 µL OP50 per well the day before experiment.

Maintaining worms

- 5 Get strains out of freezer and grow them for at least a week without starving. I chunk worms every Monday, Wednesday and Friday. Make a very small chunk on Friday so that they are not starving the following Monday.

Picking worms

- 6 Have worms on 60 mm plates with plenty of food and eggs. 24 well plates need to be seeded with 15 µL OP50 the day before and left on bench. Pick 5 to 20 eggs per well. Use 2 rows per strain and save the plate maps to make the metadata. Keep plates at 20°C for 3 days.

* If there are not enough eggs, pick an adult worm and allow it to lay eggs on wells. Remove the worm.

* Pick eggs Monday, Tuesday and Friday for imaging Thursday, Friday and Monday.

Imaging on Hydra

- 7 Allow eggs to hatch and grow on plates for 3 days. Worms should be day 1 adults. Acclimate worms on imaging room for at least 30 min. Start imaging 24 well plates.

