nemaSync

C. Elegans Synchronizer

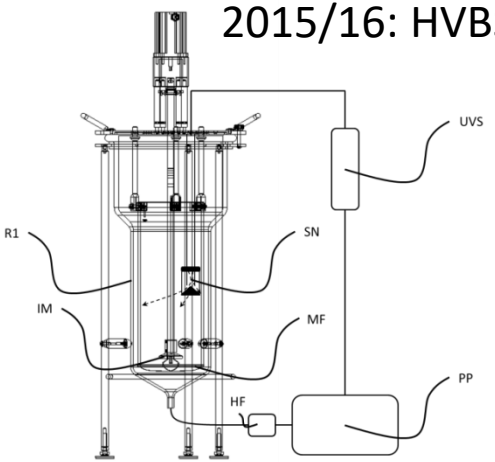
v3a

CES topics

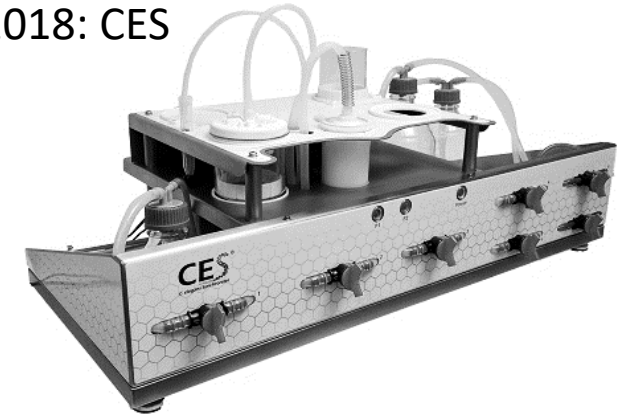
1. History of the CES development
2. How it works
3. Key advantages

History of the CES development

2015/16: HVBS



2018: CES



2019: CES-5000

2019: CES-700

How it works

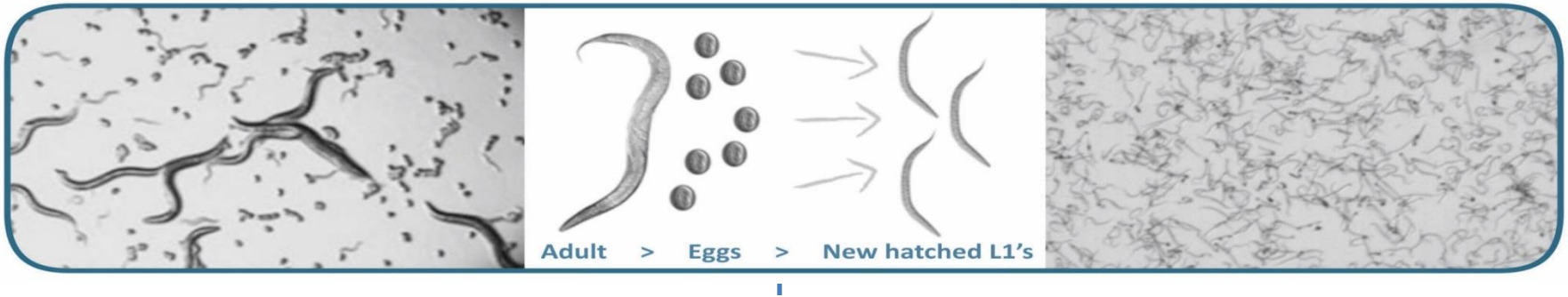
- The core of the CES System are the high precision filters that have a Zero-defect criteria in order to function properly. (i.e. they are ‘Absolute’).

How does it work:
https://www.nemasync.com/news-events#newsletter-sep-2019how-does-it-work

Why the CES filters special:
https://www.nemasync.com/news-events#newsletter-oct-2019why-the-ces-filters-are-special

How it works

2 Step process



The CES is **NOT** (!) a sieve trying to separate L1's from L2, L3 etc. The CES is a system - two-step protocol that will harvest L1's at the moment they hatch from the egg's.

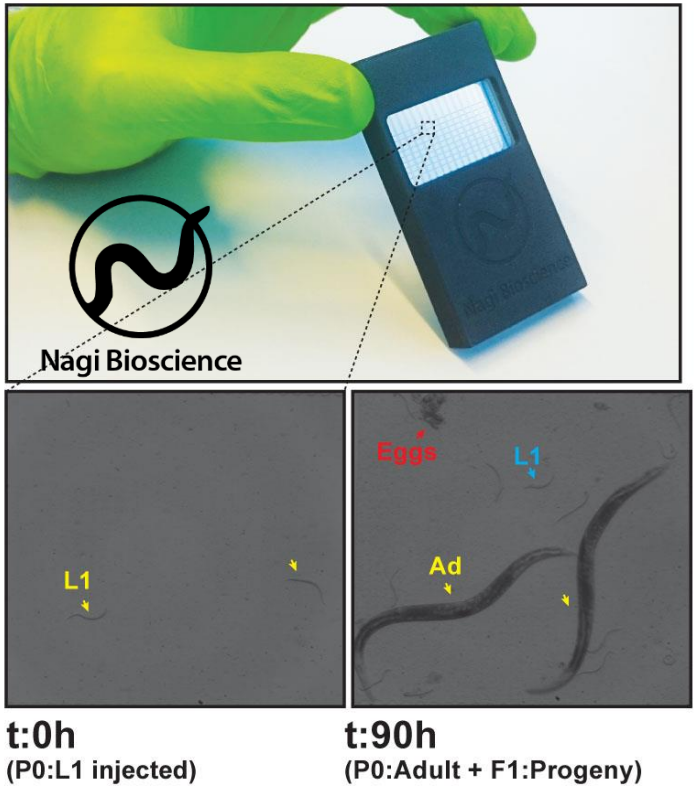
Step 1 Wash: Washing out all the debris and anything smaller than Adults. L1's, L2 up to L4 are removed, only Adults and most Eggs are kept for the next step.

Step 2 Harvest: Adults and Eggs are transferred from the Stabilizing filter to the Harvest filter. As soon as the eggs hatch, the L1's will transfer through the filter with little or no delay.

Test Results

The following 3 slides show the results with the CES protocol versus sedimentation and bleaching protocols, as acquired by Nagi Bioscience located at the Swiss Federal Institute of Technology (EPFL).

Nagi Bioscience is working on a Organism-on-Chip technology using *C. elegans*, creating a technological platform that is fully automated in vitro handling, culture and analysis.



Test Results

Reproducibility

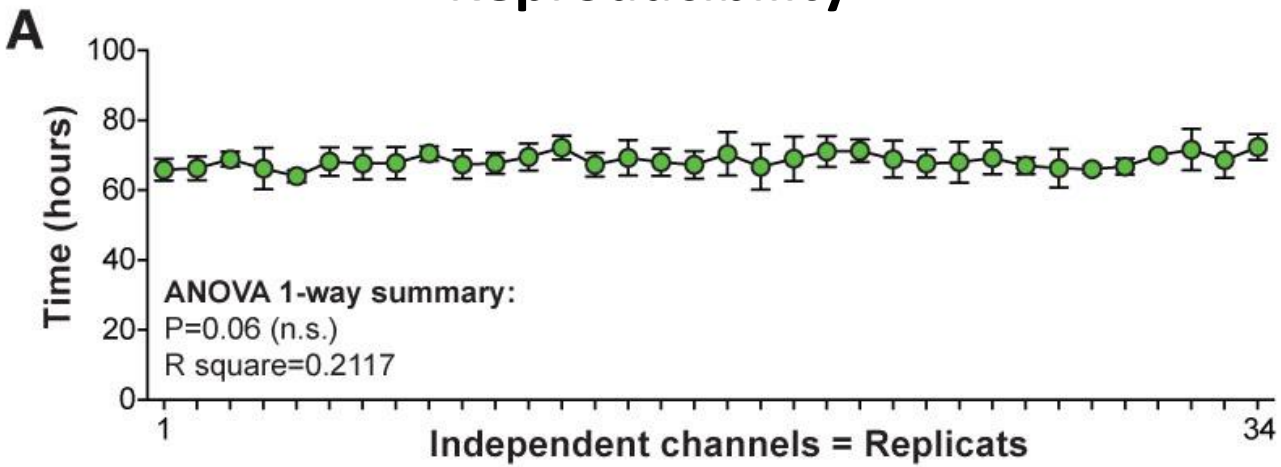


Figure A. Results showing the reproducibility of the CES to generate synchronous L1 population across 34 replicates.
L1 worms were injected and cultivated on chips during 5 days. Each channel (represented on the x-axis) corresponds to 3 to 8 microfluidic chambers containing 1 to 4 worms. Each dots represented on the graphic correspond to the timing (in hours) when the first egg is observed in average in the corresponding channel. The error bars represent the standard deviation.

Test Results

Healthy worms

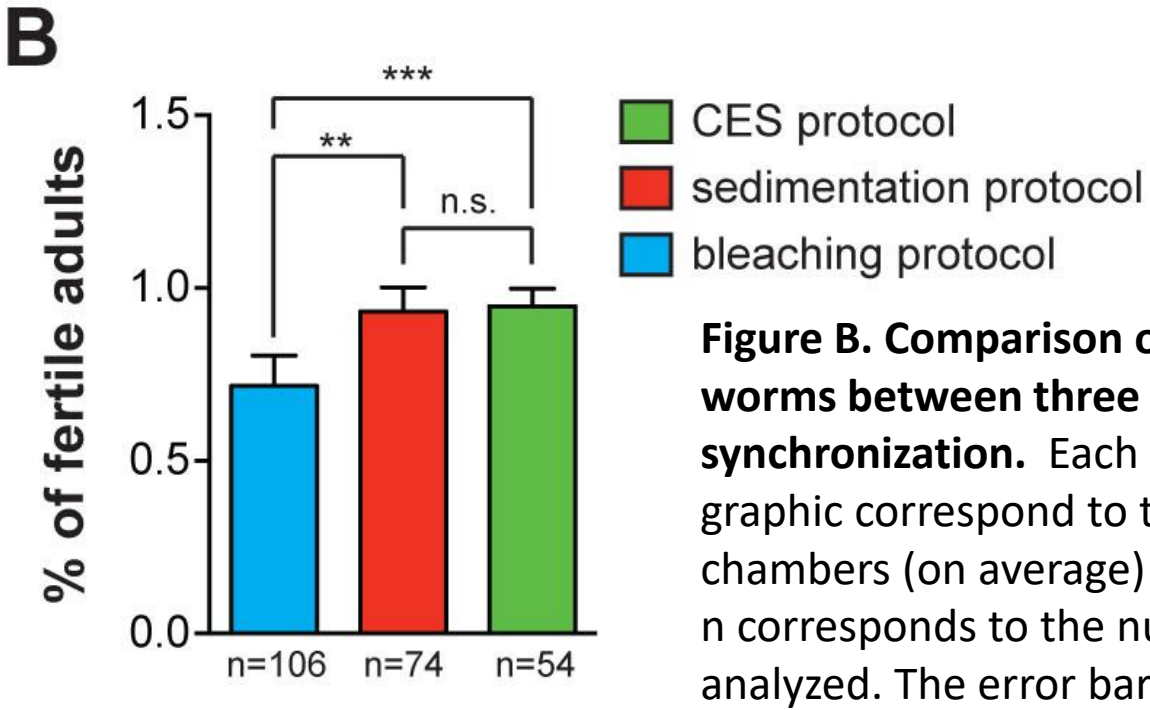


Figure B. Comparison of the percentage of fertile worms between three methods of L1 synchronization. Each bar represented on the graphic correspond to the percentage of chambers (on average) with fertile adult worms. n corresponds to the number of chambers analyzed. The error bars represent the 95% CI.

Test Results

Synchronization

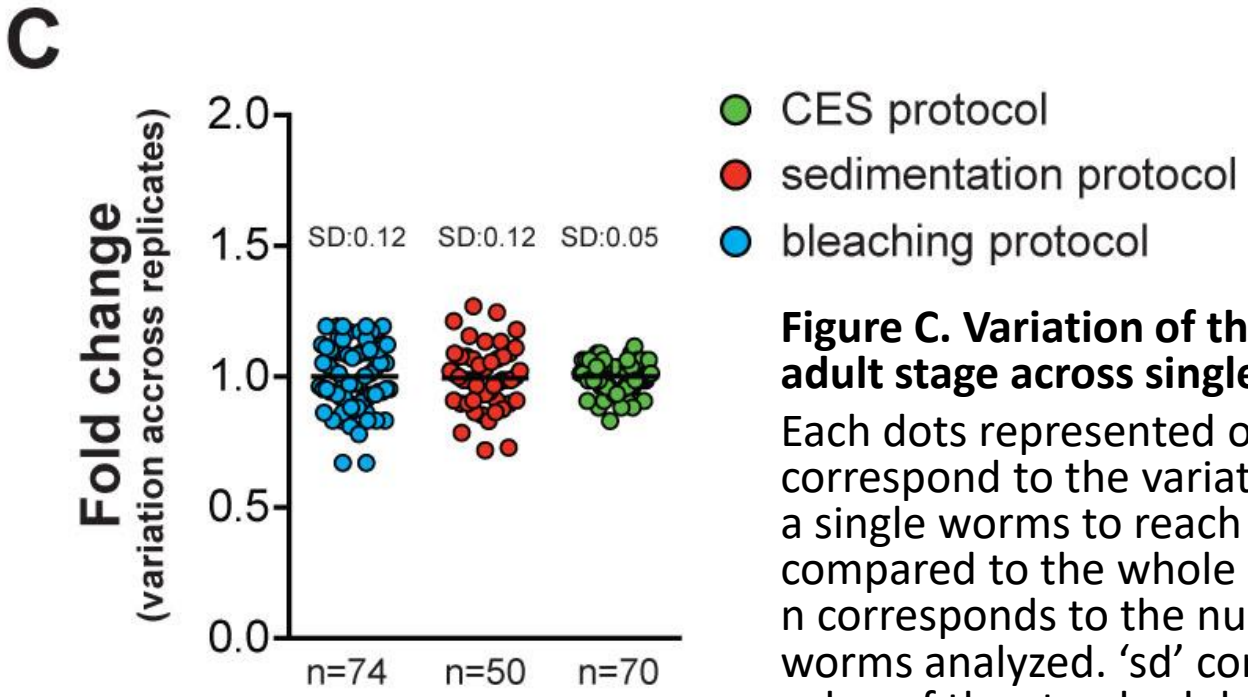
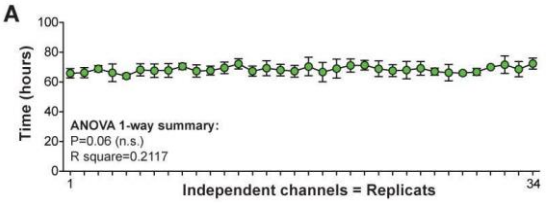


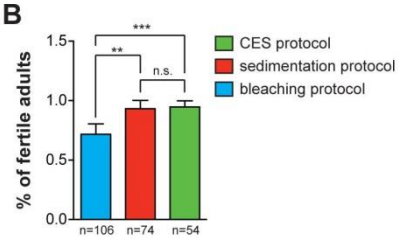
Figure C. Variation of the timing to reach the adult stage across single individuals.

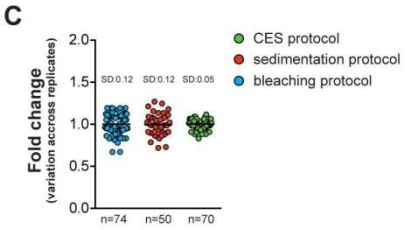
Each dots represented on the graphic correspond to the variation of the timing for a single worms to reach the adult stage, compared to the whole population analyzed. n corresponds to the number of single worms analyzed. ‘sd’ corresponds to the value of the standard deviation.

Key advantages

- **Consistent - reproducible data** (Fig. A)
- **Healthy worms** (Fig. B)
- **Improved level of synchronization** (Fig. C)
- **Phenotype free** worms synchronized **without bleach, chemicals** and starvation
- **Little or no training** required.
- Say goodbye to the '*art of bleaching*'.

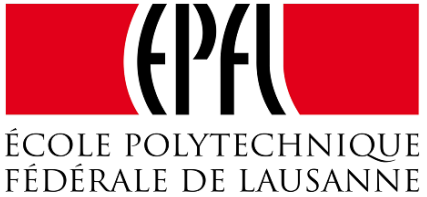






Current users of the CES

宮崎大学
University of Miyazaki



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Universiteit Utrecht

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BIOZENTRUM
Universität Basel
The Center for
Molecular Life Sciences

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Thank You

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