

# Wrapping culture plates with Parafilm M<sup>®</sup> increases *Caenorhabditis elegans* growth<sup>1</sup>

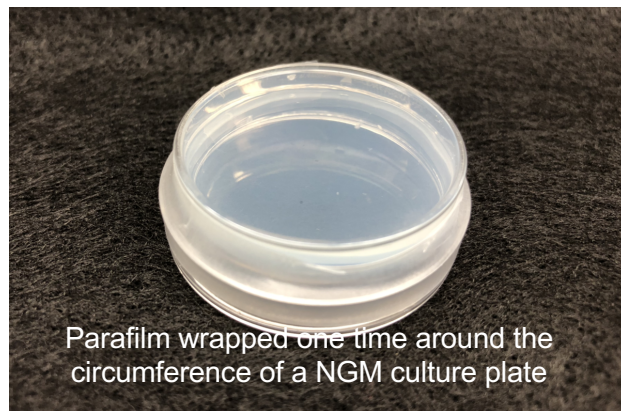


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## OBJECTIVE AND METHODS<sup>1</sup>

- Parafilm M<sup>®</sup> is a moisture-resistant thermoplastic commonly used to seal agar media plates for a variety of model organisms.
- Minimal research has evaluated the effects Parafilm wrapping could have on these organisms. Recent research in *Arabidopsis thaliana* cultures demonstrated that growth was affected by Parafilm wrapping and gas exchange may be affected as well (Banerjee *et al.*, 2019, PLOS ONE).
- Parafilm is used to seal Nematode Growth Media (NGM) agar plates on which *C.elegans* is cultured. We aimed to determine if Parafilm wrapping engendered developmental changes in *C. elegans* by comparing larval growth over 48 hours of animals cultured on Parafilm-wrapped and unwrapped control NGM plates.



## CONCLUSIONS AND IMPLICATIONS<sup>1</sup>

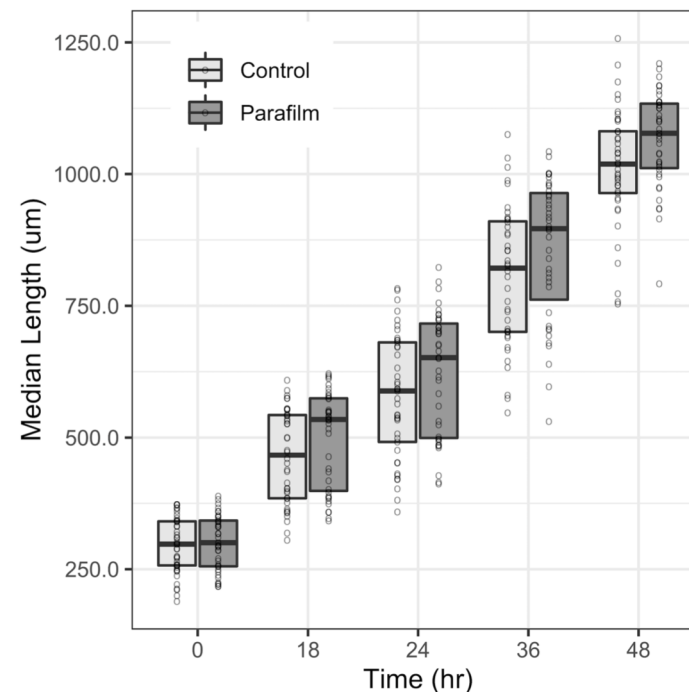
- Wrapping culture plates with Parafilm significantly accelerated and increased larval growth, with a 0.87  $\mu\text{m}/\text{h}$  increase in growth rate ( $\sim 6\%$ ) and a 37.90  $\mu\text{m}$  increase in the change in growth ( $\Delta\text{growth}$ ;  $\sim 5\%$ ) over 48 h.
- Investigators of all organisms should be aware that wrapping their experimental cultures with Parafilm may result in statistically detectable changes, such as in growth and possibly other developmental processes.

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<sup>1</sup>Shinn-Thomas, J.H., Scanga, S.E., Spica, P.S. *et al.* Wrapping culture plates with Parafilm M<sup>®</sup> increases *Caenorhabditis elegans* growth. *BMC Res Notes* 12, 818 (2019). <https://doi.org/10.1186/s13104-019-4854-3>



## RESULTS<sup>1</sup>



**Figure 1.** Larval growth over time. Median length ( $\mu\text{m}$ ) of worms in each treatment group at 0, 18, 24, 36, and 48 h after L1 transfer to plates. Data are displayed as boxplots overlaid with scatterplots of individual worm lengths (open circles) at each time point. Bold line within each box shows median length, and box shows Q3 (upper quartile) and Q1 (lower quartile).  $n = 39$  Parafilm and  $n = 41$  control<sup>1</sup>

	Median (IQR) length ( $\mu\text{m}$ )	
	Parafilm	Control
<b><math>\Delta\text{Growth}</math></b>	764.25 (39.3)	726.35 (97.3)
<b>Growth rate</b>	16.43 (1.3)	15.56 (1.7)

**Table 1.** Worms in cultures wrapped with Parafilm showed significantly greater  $\Delta\text{growth}$  (Mann–Whitney U test,  $W = 472$ ,  $p = 0.001$ ) and a significantly faster growth rate (Mann–Whitney U test,  $W = 479$ ,  $p = 0.002$ ) than worms in the control group. Cohen's  $d$  indicated a moderate impact of Parafilm wrapping on the  $\Delta\text{growth}$  and growth rate of *C. elegans* over 48 h (Cohen's  $d = 0.75$  and  $d = 0.74$  respectively).<sup>1</sup>