

Implications of Surface Topography, Substrate Chemistry, and Microbial Symbiosis on *Listeria monocytogenes* Biofilm on Food Contact Substances

Tingting Gu ^a, Boce Zhang ^{a,*}

^a. Food Science and Human Nutrition Department, University of Florida, Gainesville, FL, 32611, USA; * Correspondence: boce.zhang@ufl.edu

Introduction

- *L. monocytogenes* (*Lm*) biofilm is of significant food safety and public health concerns.
- Surface properties and microbial symbiosis are critical in *Lm* biofilm formation and can have significant food implications.

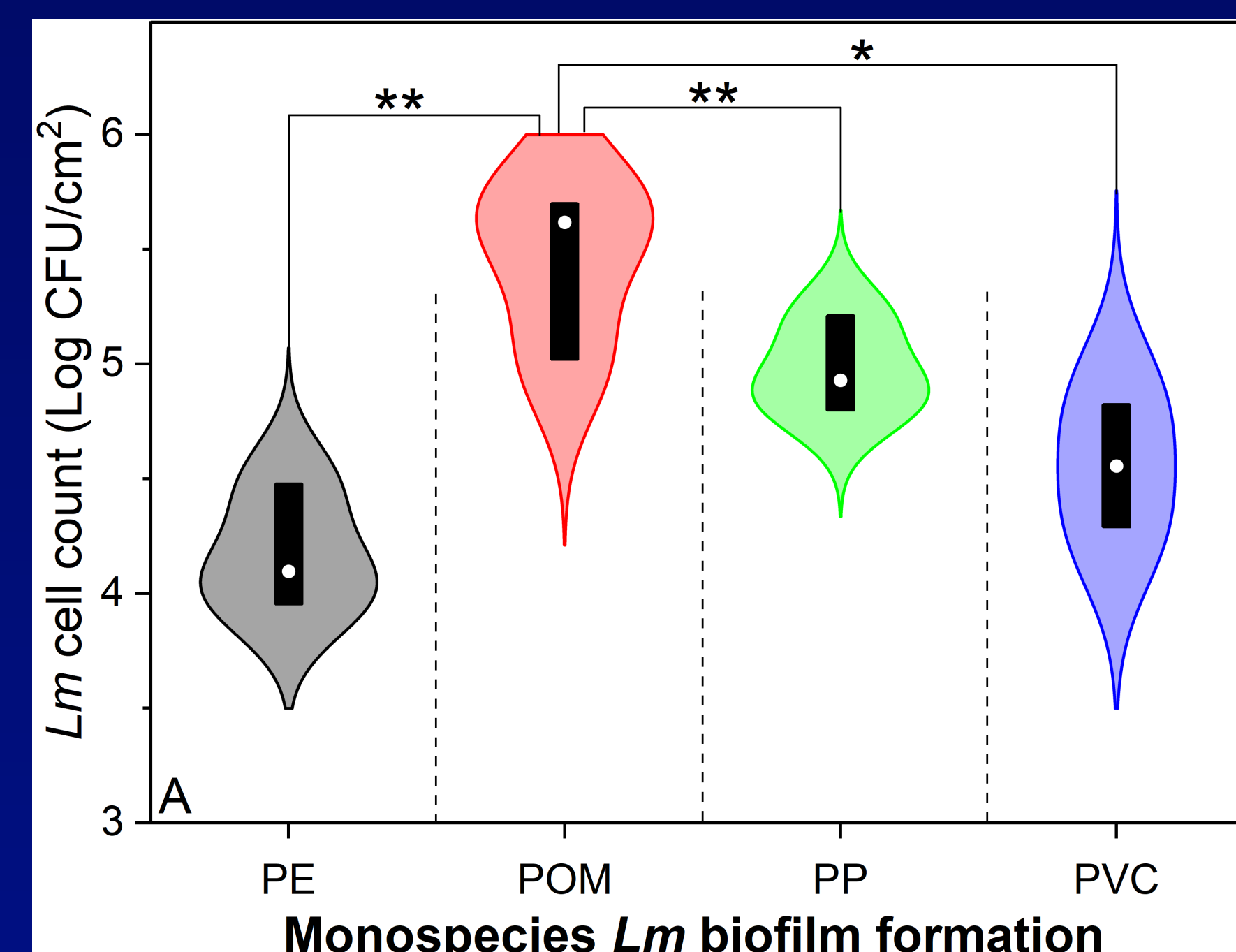
Aims

- Investigate the effects of surface topography, substrate chemistry, and symbiosis on *Lm* survival and biofilm formation.
- Study how the symbiosis is influenced by the micro-environment.
- Explore the potential mitigation strategies against *Lm* biofilm.

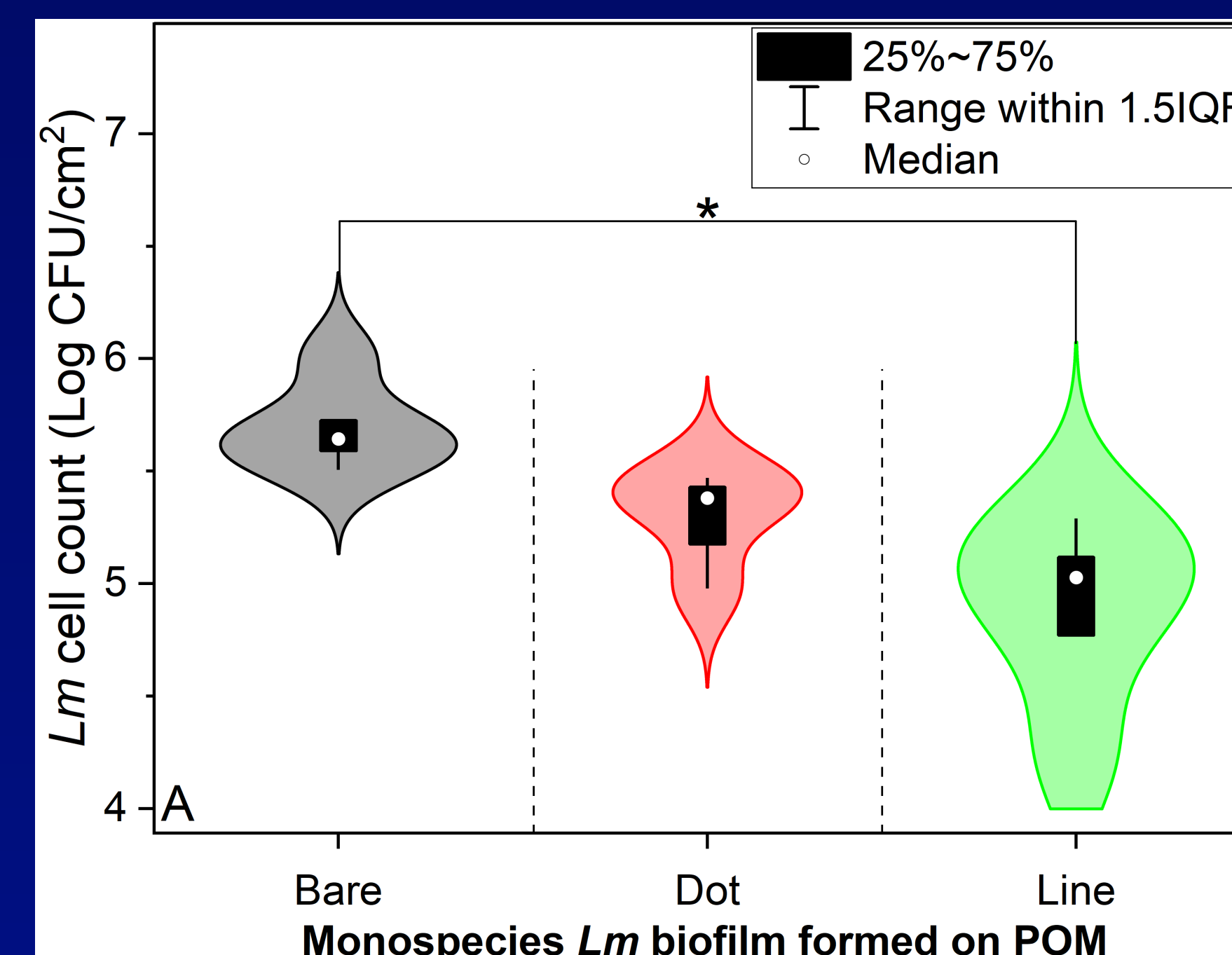
Methods

- Modified surface topography on plastic food contact surfaces.
- Cultured cocktail biofilms of *Lm* with symbionts under simulated food processing conditions (4°C for 7 days).
- Quantified *Lm* survival & biofilm formation.

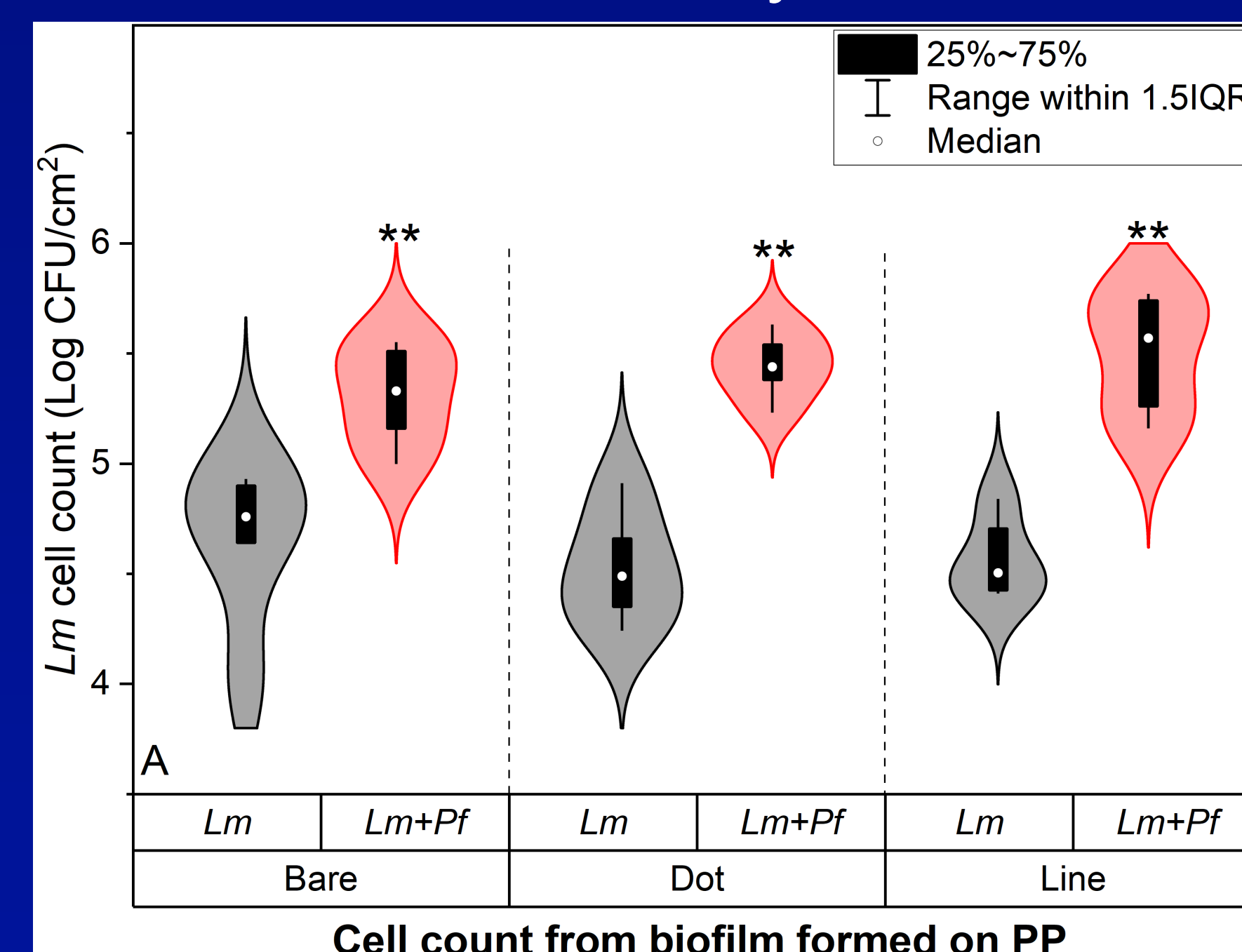
Results



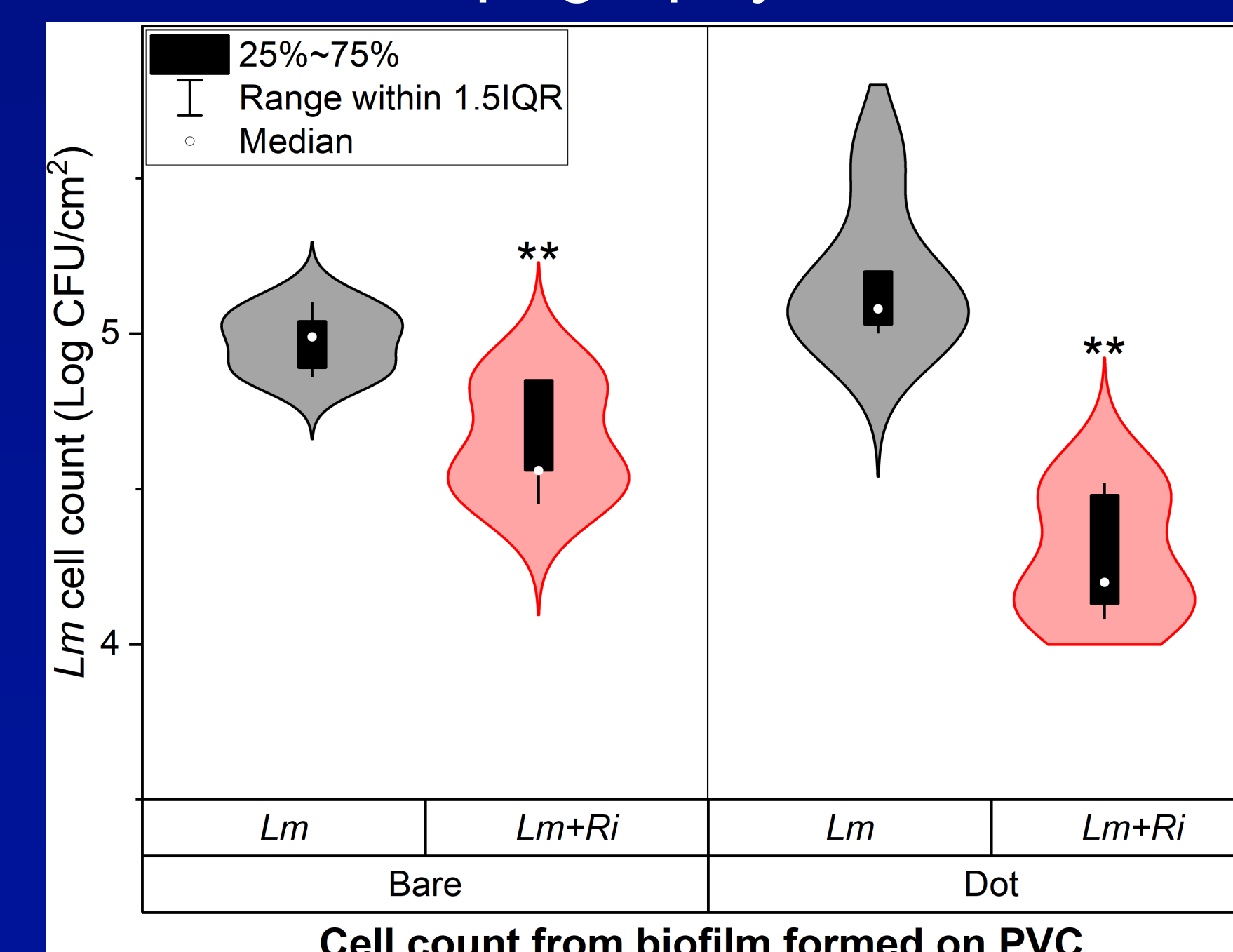
- *Lm* survival was impacted by substrate chemistry.



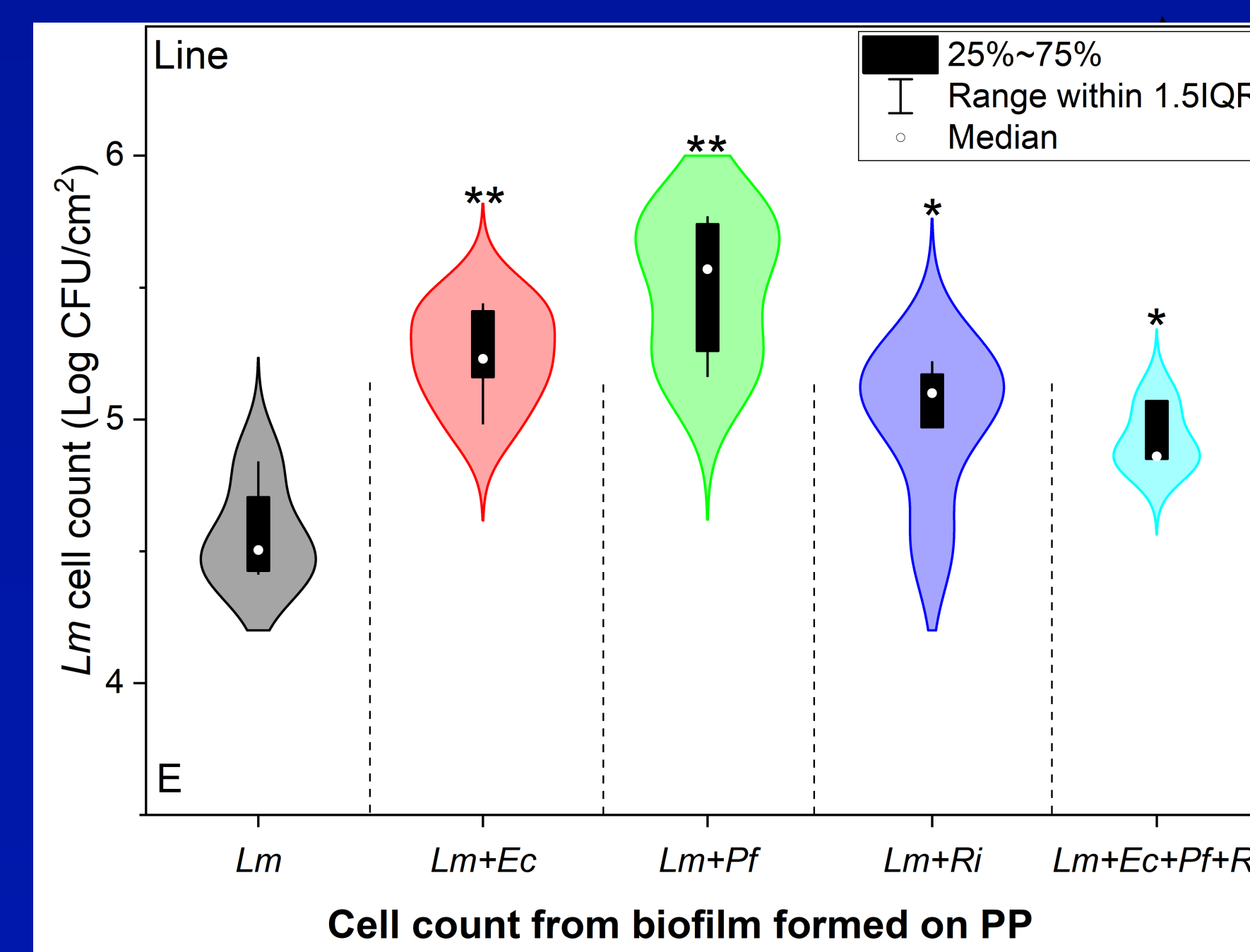
- *Lm* survival was impacted by surface topography.



- *Lm* survival was synergistically impacted by symbionts.

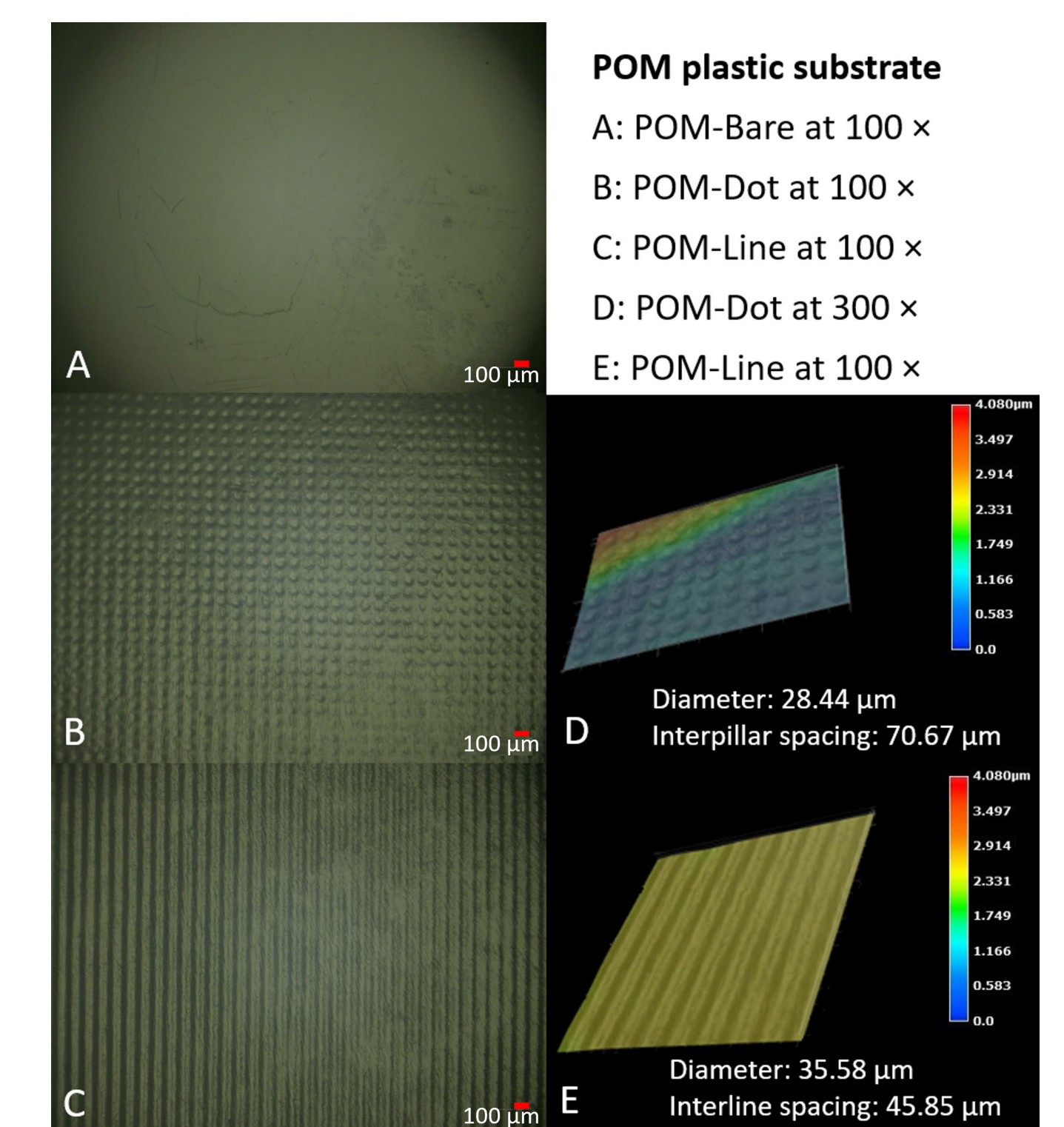
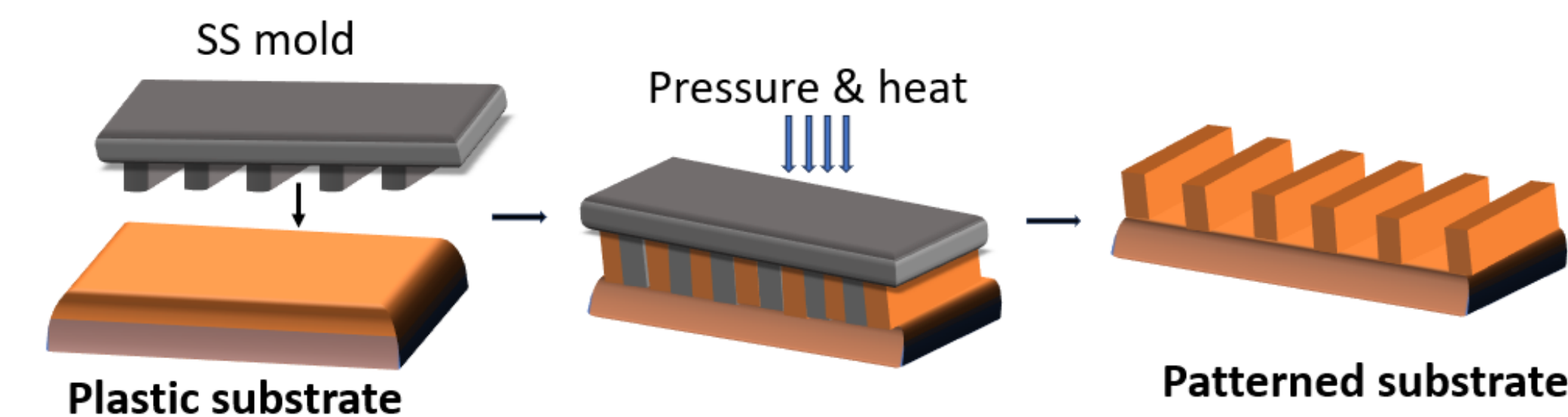


- *Lm* survival was antagonistically impacted by symbionts.



- Symbiosis significantly affected *Lm* survival.

Extra Information



- Micro-pillar and micro-line patterns were generated with a high degree of pattern uniformity.

Conclusions

- Synergistic symbiosis with *Lm* should be mitigated to avoid negative food safety implications.
- Antagonistic symbiosis may indicate potential intervention strategies against *Lm* biofilm.
- Symbiosis is critical for *Lm* survival and biofilm formation, but more studies are needed to better understand this complex relationship.

Acknowledgements

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