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# *Supplementary Material*

**TABLE S1.** Correlation analysis of between larval settlement and metamorphosis and bacterial density, biofilm thickness, and CPS content.

| | Bacterial density | | Biofilm thickness | | CPS content | |
|---|---|---|---|---|---|---|
| | r | *p* | r | *p* | r | *p* |
| Settlement and metamorphosis (%) | -0.064 | 0.596 | -0.245 | 0.328 | 0.592 | 0.01* |

**TABLE S2.** Effects of polysaccharides from different bacteria on settlement and metamorphosis of marine invertebrate larvae.

| **Type of polysaccharide** | **Bacteria** | **Marine invertebrates** | **Function** | **Reference** |
|---|---|---|---|---|
| Exopolysaccharide | *Pseudomonas* sp. strain S9 | *Ciona intestinalis* | Decrease in exopolysaccharide reducedlarval metamorphosis rate | Szewzyk et al., 1991 |
| Exopolysaccharide | *Pseudomonas marina* | *Janua brasiliensis* | Induce larval settlement and metamorphosis | Kirchman et al., 1982 |
| Exopolysaccharide or glycoprotein | *Alteromonas* sp. 1 | *Mytilus galloprovincialis* | A surface-bound cue on the biofilm might be associated with the bacterial exopolysaccharide or glycoprotein | Bao et al., 2007 |

| | | | | |
|---|---|---|---|---|
| Colanic acid | *Pseudoalteromonas marina* | *Mytilus coruscus* | Bacterial polysaccharide biosynthesis-related gene 01912 may regulate mussel settlement by producing CA via the coordination of c-di-GMP | Peng et al., 2020 |
| Cellulose/ Colanic acid | *Pseudoalteromonas marina* | *Mytilus coruscus* | Bacterial cellulose synthesis gene manipulates c-di-GMP that controls secretion of exopolysaccharides including cellulose and colanic acid , and regulates mussel settlement. | Liang et al., 2021 |
| Colanic acid | *Pseudoalteromonas lipolytica* | *Mytilus coruscus* | Deletion of *AT00_17125* resulted in reduced capsular polysaccharide production and larval settlement metamorphosis | Zeng et al., 2015 |
| Lipopolysaccharide | *Pseudoalteromonas marina* | *Mytilus coruscus* | LPS directly induced larval metamorphosis. | Wu et al., 2022 |
| | *Cellulophaga lytica* | *Hydroides elegans* | Lipopolysaccharide in OMVs can induce larval metamorphosis | Freckelton et al., 2022 |