**Table S1:** Probiotic candidate shortlist

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| Taxonomic group | Strain | GenBank Accession no. | | Source | Antagonistic activityb |
| *Vibrio* sp. (PT1) | C013 | JX075050 | Surface water, Coral Sea | | Low |
| *Vibrio* sp. (PT2) | Ma31 | JX075051 | Aged seawater (AIMS) | | Low |
| *Vibrio* sp. (PT3) | PP05 | JX075052 | Salp (*Salpida*) | | Moderate |
| *Vibrio* sp. (PT4) | PP25 | JX075053 | Salp (*Salpida*) | | Moderate |
| *Pseudoalteromonas* sp. (PT1)c | EPP07 | JX075054 | *P. ornatus* phyllosoma, cultured | | Strong |
| *Pseudoalteromonas* sp. (PT1)c | K25 | JX075055 | Larviculture water (AIMS) | | Strong |
| *Pseudoalteromonas* sp. (PT1)c | PP107 | JX075056 | Arrow worm (*Chaetognatha*) | | Moderate |
| *Pseudoalteromonas* sp. (PT2) | EPP11 | JX075057 | *P. ornatus* phyllosoma, cultured | | Moderate |
| *Pseudoalteromonas* sp. (PT2) | PP81 | JX075058 | *P. ornatus* phyllosoma, wild | | Strong |
| *Pseudoalteromonas* sp. (PT2) | PP86 | JX075059 | *P. ornatus* phyllosoma, wild | | Strong |
| *Pseudoalteromonas* sp. (PT2) | PP87 | JX075060 | *P. ornatus* phyllosoma, wild | | Strong |
| *Ruegeria* sp. (PT1) | AH10 | JX075061 | Appendicularian (*Appendicularia*) | | Moderate |
| *Ruegeria* sp. (PT1) | K2 | JX075063 | Larviculture water (AIMS) | | Moderate |
| *Ruegeria* sp. (PT2) | EPP04 | JX075062 | *P. ornatus* phyllosoma, cultured | | Moderate |
| *Bacteroidetes* (PT1) | AH26 | JX075065 | Appendicularian (*Appendicularia*) | | Low |
| *Bacteroidetes* (PT1) | PPM04 | JX075064 | *P. ornatus* phyllosoma, cultured | | Low |

aAccession number in GenBank

bBased on inhibition zone in well diffusion assay: low (5-10 mm), moderate (11-20 mm) or strong (≥ 21 mm)

cAll *Pseudoalteromonas* PT1 isolates showed yellow pigmentation on MMA

Abbreviations: PT: phylotype