**Supplementary Table 1.** **Mock viral community member characteristics**

|  |  |  |  |
| --- | --- | --- | --- |
| Phage | Taxonomy | GC (%) | Genome Size (kbp) |
| *Pseudoalteromonas* phage HM1 | Myoviridae | 35.7 | 129.4 |
| *Cellulophaga* phage 38:1 | Podoviridae | 38.1 | 72.5 |
| *Cellulophaga* phage 38:2 | Myoviridae | 33.5 | 54.0 |
| *Pseudoalteromonas* phage HP1 | Podoviridae | 44.7 | 45.0 |
| *Cellulophaga* phage 18:1 | Siphoviridae | 36.5 | 39.2 |
| *Pseudoalteromonas* phage HS2 | Siphoviridae | 40.2 | 38.2 |