Supplement Table 1. Overview of marine viruses discussed in the review sections of temperature, salinity, and UV (Table 1-3).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Host | Virus | Family | genome type | genome size (kb) | Shape | Capsid size (nm) | Tail  (W x L) | Size of major polypeptides (kDa | Latent period (h) | Particle accumulation site and pattern | Burst size (cell-1) | Strain specificity | Source |
| Eukaryote Algal Viruses |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Phaeocystis globosa* (Pg-I) | Group I: PgV-06, -07T, -09T, -12T, -13T, -T14 | *Phycodnaviridae* | dsDNA | 466 ± 4 | icosahedral l | 153 ± 8 |  | 257, 161, 111, 52 | 10 | cytoplasm | 248 ± 120 | 4/12 | water, North Sea 1 |
| *P. globosa* (Pg-I) | Group IIA:PgV-03T, -05T | *Phycodnaviridae* | dsDNA | 177 ± 3 | icosahedral | 106 ± 7 |  | 119, 99, 75, 44 | 12 | cytoplasm | 344 ± 100 | 5/12 | water, North Sea1 |
| *P. globosa* (Pg-I) | Group IIB:PgV-04T, -10T, -11T | *Phycodnaviridae* | dsDNA | 177 ± 3 | icosahedral | 106 ± 7 |  | 119, 99, 75, 44 | 16 | cytoplasm | 382 ± 26 | 5/12 | water, North Sea1 |
| *P. globosa* (Pg-I) | Group IIC:PgV-01T | *Phycodnaviridae* | dsDNA | 177 ± 3 | icosahedral | 106 ± 7 |  | 119, 99, 75, 44 | 16 | cytoplasm | 378 | 12/12 | water, North Sea1 |
| *Micromonas pusilla* (LAC 38) | MpRNAV-01B | *Reoviridae* | Segmented, dsRNA | 25.5 | icosahedral | 65-80 |  | 120, 95, 67, 53, 32 | 36 | cytoplasm | 460-520 | 1/6 | coastal, water, Norway2 |
| *M. pusilla* (LAC 38) | MpV-03T, 06T, 08-12T, 14T, R3-4, B4-53 | *Phycodnaviridae* | dsDNA |  | icosahedral |  |  |  |  |  |  |  | water, North Sea |
| *M. pusilla* (CCMP 1545) | MpV-02T, 04-05T, 07T, 13T, R1-R2, SP13 | *Phycodnaviridae* | dsDNA |  | icosahedral |  |  |  |  |  |  |  | water, North Sea |
| *M. pusilla* (27) | SP1 | *Phycodnaviridae* | dsDNA |  |  |  |  |  |  |  |  |  | coastal water, Scripps pier 4 |
| *Chaetoceros debilis* (Ch48) | CdebDNAV18 |  | ssDNA | unknown | icosahedral | 30 ± 2 |  | 41, 37.5 | 12-24 | cytoplasm, random | 55 a | 3/4 | water and sediment, Japan5 |
| *C. lorenzianus* (IT-Dia51) | ClorDNAV | *Bacilladnavirus* | ssDNA, circular and dsDNA linear | 5.9, 0.9 | icosahedral | 32 ± 2 |  |  | <48 | nucleus, random | 22,000 a |  | coastal, water, Hiroshima Bay6 |
| *C. setoensis*  (IT07-C11) | CsetDNAV |  | ssDNA, circular | 5.8 | icosahedral | 33 ± 2 |  | 39, 33 | <48 | nucleus, random | 20,000 a |  | sediment, Hiroshima Bay7 |
| *C. socialis* | CsfrRNAV | *Bacilladnavirus* | ssRNA | 9.5 | icosahedral | 22 |  | 32, 28, 25 | < 48 | cytoplasm, random | 66 a |  | coastal, water, Hiroshima Bay 8 |
| *C. tenuissimus* | CtenRNAV01 |  | ssRNA, circular? | 9.4 | icosahedral | 31 ±2 |  | 33.5, 31.5, 30.0 | <24 | cytoplasm, crystalline arrays | 12,000 a |  | water, Ariake Sound |
| *Heterosigma. akashiwo* (93616) | HaV01 |  | dsDNA | 294 9 | icosahedral 10 | 202 ± 6 10 |  |  | 30-33 11 |  | 770 11 | 13/18 12 | coastal, water, Nomi Bay10 |
| *H. akashiwo* (H93616) | HaV08 |  | dsDNA |  |  |  |  |  |  |  |  |  |  |
| *H. akashiwo* (H93616) | HaV53 |  | dsDNA |  |  |  |  |  |  |  |  |  |  |
| *H. akashiwo* (H93616) | HaRNAV |  | ssRNA | 9100 nt 13 | icosahedral 13 | 25 13 |  | 33.9,29.0,26.1,24.6, 24.0 13 | 29 14 | cytoplasm, crystalline arrays 13 | 21,000 14 |  | river plume, Strait of Georgia 13 |
| *Heterocapsa circularisquama* (HU9433-P) | HcV03 |  | dsDNA |  | icosahedral | 197 ± 8 |  |  | 48-72 | cytoplasm, viroplasm | ~1300 | 18/18 | coastal, water, Japan 15 |
| *H. circularisquama* (HU9433-P) | HcV05 |  | dsDNA |  |  |  |  |  |  |  |  |  | coastal, water, Japan 16 |
| *H. circularisquama* (HU9433-P) | HcV08 |  | dsDNA |  |  |  |  |  |  |  |  | 12/14 | coastal, water, Japan 16 |
| *H. circularisquama* (HU9433-P) | HcV10 |  | dsDNA |  |  |  |  |  |  |  |  |  | coastal, water, Japan 16 |
| *H. circularisquama* (HU9433-P) | HcRNAV34 |  | ssRNA | 4.4 17 | icosahedral | 30 ± 2 |  | 38 17 | 24-48 | cytoplasm, crystalline arrays or random | 21000 a | 2/4 b | coastal, water, Japan 17 |
| *H. circularisquama* (HCLG-1) | HcRNAV109 |  | ssRNA | 4.4 17 | icosahedral | 30 ± 2 |  | 38 17 | 24-48 | cytoplasm, crystalline arrays or random | 3400 a | 2/4 b | coastal, water, Japan 17 |
| Bacteriophages |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Pseudomonas putrefaciens* P19X | Phage 27 |  | dsDNA |  | icosahedral | 77 | 14 x 176 |  |  |  |  |  | coastal, water 18 |
| *P. putrefaciens* P13 | Phage 23 |  | dsDNA |  | icosahedral | 76 | ? |  |  |  |  |  | fish 18 |
| *P. putrefaciens P2* | Phage 25F |  | dsDNA |  | icosahedral | 55 | 14 x 176 |  |  |  |  |  | coastal, water 18 |
| *Pseudoalteromonas marina* | φRIO-1 | *Podoviridae* | dsDNA |  | icosahedral | 51 | 12 x 15 |  | 1 |  | 118 | 1/2 | water, East Sea 19 |
| *Vibrio sp.* | unknown |  | dsDNA |  | hexagonal | 60 | ? |  |  |  |  |  | Deep, water, mud, Indian Ocean 20 |
| *Vibrio (Beneckea) harveyi* | h*v*-1 |  | dsDNA | 43.9 | icosahedral | 70 | 12 x 220 |  | 0.75 |  | 100 |  | squid/mud, Atlantic 21 |
| *V. natriegens* | nt-1 | *Myoviridae* *22* | dsDNA |  | prolate | 120 | ? X 110 |  |  |  |  |  | estuary water, Chesapeake Bay 23 |
| *V. natriegens* | nt-6 |  | dsDNA |  | icosahedral | 60 | ? X 40 |  |  |  |  |  | estuary water, Chesapeake Bay 23 |
| *V. fischeri* MJ-1 | rp-1 |  | dsDNA |  | icosahedral | 83 | 16 x 83 |  | 0.3833 |  | 100 | 21/27 | coastal water, Mexico 24 |
| PWH3a | PWH3a-P1 |  | dsDNA |  |  | 50 | ? x ? |  |  |  |  |  | coastal water, Gulf of Mexico 25 |
| *Pseudomonas sp.* | 06N-58P |  | ssRNA |  | icosahedral | 60 |  |  | 0.5833 |  | 170 |  | seawater, 5 miles offshore, Japan 26 |
| *Bacillus sp.* w13 | BVW1 |  | dsDNA | 18 | icosahedral | 70 | 15 x 300 | 32, 45, 50, 57, 60, 70 |  |  |  | 1/5 | deep, water and sediment, hydrothermal fields, Pacific Ocean 27 |
| *Geobacillus sp.* E26323 | GVE1 | *Siphoviridae* | dsDNA | 41 | icosahedral | 130 | 30 x 180 | 34, 37, 43, 60, 66, 100 |  |  |  | 1/4 | deep, water and sediment, hydrothermal fields, Pacific Ocean 27 |
| *Colwellia psychrerythraea* 34 H | Phage 9A | *Siphoviridae c 28* | dsDNA | 104 28 | icosahedrall | 90 | ? X 200 |  | 4-5 |  | 55 | 2/8 | water, nepheloid layer, Arctic 29 |
| 21C (C. *psychrerythraea)* d | 21c | *Siphoviridae* | dsDNA | 40-50 | icosahedral | 46-48 | 9-11 x 151-188 |  |  |  |  |  | sea ice, Artic 30 |
| *Aeromonas sp.* | unknown |  |  |  | icosahedral | 53 | 15 x 160 |  |  |  |  |  | sediment, Pacific Ocean 31 |
| *Listonella pelagia* | φHSIC | *Siphoviridae* | dsDNA | 36 | icosahedral | 47±3.7 | ?x146±3.7 |  | 1.5 |  | 47 |  | coastal water, Hawaii 32 |
| *Shewanella piezotolerans* | SW1 |  | ssDNA | 7,718 nt 33 | filamentous 33 |  |  |  |  |  |  |  | prophage, host was isolated from deep, sediment, Pacific  34 |
| 1A *(S. frigidimarina* LMG 19867)d | 1a | *Myoviridae* | dsDNA | 70 | icosahedral | 94-103 | 11-15 x 94-103 |  |  |  |  |  | sea ice, Artic 30 |
| *Salmonella enterica* | PRD1 | *Tectiviridae* 22 | dsDNA | 15 22 | icosahedral | 66 22 |  |  |  |  |  |  | sewage |
| *S. enterica* | P22 |  | dsDNA |  | icosahedral |  |  |  |  |  |  |  |  |
| *Pseudomonas syringae* | φ6 |  | dsRNA |  |  |  |  |  |  |  |  |  |  |
| *Pseudolateromonas sp.* | PM2 | *Corticoviridae* 35 | circular, dsDNA 35 | 10.1 35 | icosahedral | 60 36 |  |  | 1 36 | Cytoplasm 36 | 50-600 36 |  | coastal, water, Pacific 35 |
| *Salicola sp.* | SCTP-1 |  |  |  | Icosahedral | 55 | ? x 95 |  |  |  |  |  | water, solar salterns, Italy 37 |
| *Salicola sp.* | SCTP-2 |  |  |  | Icosahedral | 125 | ? x 145 |  |  |  |  |  | water, solar salterns, Italy 37 |
| *Cytophaga* sp. | NCMB 384 |  | dsDNA |  |  |  |  |  | 2.5 |  | 28 |  | coastal, water, North Sea 38 |
| *Cytophaga* sp. | NCMB 385 |  | dsDNA |  |  | 78 | ? x 97 |  | 3.0 |  | 20 |  | coastal, water, North Sea 38 |
| *Photobacterium leiognathi* | LB1VL-P1b |  | dsDNA |  |  |  |  |  |  |  |  |  |  |
| Unknown bacteria | LMG1-P4 |  | dsDNA |  |  | 83 | ? x 104 |  |  |  |  |  | water, hypersaline lagoon, Gulf of Mexico 25 |
| Unknown CB 38 | CB 38Φ |  |  |  |  |  |  |  |  |  |  |  |  |
| Unknown CB 7 | CB 7Φ |  |  |  |  |  |  |  |  |  |  |  |  |
| Unknown H2 | H2/1 |  | dsDNA |  | Icosahedral | 64 | ? x 71 |  |  |  |  |  | water, North Sea 39 |
| Unknown H11 | H11/1 |  | dsDNA |  | Icosahedral | 62 | ? x 75 |  |  |  |  |  | water, North Sea 39 |
| Unknown H40 | H40/1 |  | dsDNA |  | Icosahedral | 62 | ? x 117 |  |  |  |  |  | water, North Sea 39 |
| Unknown H85 | H85/1 |  | dsDNA |  | Icosahedral | 57 | ? x 120 |  |  |  |  |  | water, North Sea 39 |
| Unknown PR1 | PR1/1 |  | dsDNA |  | Icosahedral | 41 |  |  |  |  |  |  | Coastal waters, Santa Monica Bay 39 |
| Unknown PR2 | PR2/1 |  | dsDNA |  | Icosahedral | 86 | ? x 142 |  |  |  |  |  | Coastal waters, Santa Monica Bay 39 |
| Unknown PR3 | PR3/1 |  | dsDNA |  | Icosahedral | 42 | ? x ? |  |  |  |  |  | Coastal waters, Santa Monica Bay 39 |
| Unknown PR4 | PR4/1 |  | dsDNA |  | Icosahedral | 52 | ? x ? |  |  |  |  |  | Coastal waters, Santa Monica Bay 39 |
| Archaeal Viruses |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Halorubrum sp.* | HRTV-1 |  |  |  | Icosahedral | 55 | ? x 85 |  |  |  |  |  | water, solar salterns, Italy 37 |
| *Haloarcula hispanica* | HHTV-1 |  |  |  | Icosahedral | 55 | ? x 110 |  |  |  |  |  | water, solar salterns, Italy 37 |
| *H. hispanica* | HHPV-1 |  | dsDNA |  | pleomorphic |  |  |  |  |  |  |  | water, solar salterns, Italy 37 |
| *H. hispanica* | SH1 |  | dsDNA | 30.9±1.0 40 | Icosahedral | 70 40 |  |  | 5-6 40 |  | 200 40 |  | water, hypersaline lake, Australia |
| *H. californiae* | HCTV-1 |  |  |  | Icosahedral | 70 | ? x 80 |  |  |  |  |  | water, solar salterns, Italy 37 |
| Cyanophages |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Synechococcus sp.* DC2 | S-PWM1 | *Myoviridae* | dsDNA | 65 | Icosahedral |  |  |  |  |  |  | 1/8 | coastal water, Gulf of Mexico {Suttle, 1993 #893} |
| *Synechococcus sp.* DC2 | S-PWM3 | *Myoviridae* | dsDNA |  | Icosahedral |  |  |  |  |  |  | 4/8 | coastal water, Gulf of Mexico {Suttle, 1993 #893} |

a infectious units, bviruses infectious against different hosts, *c”unclassified",* d highest identities based on 16S analysis

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