**Supplementary Table S1.** Primers and probes used in the study.

|  |  |  |
| --- | --- | --- |
| Target  | Primer and probe sequences (5′–3′) | Reference |
| Major histocompatibility class II | AS\_MHCII\_F | AGAAGCCTGGAACAAAGGTCCTGA | (Ahmed, 2022) |
| AS\_MHCII\_R | AACTGTCTTGTCCAGTATGGCGCT |
| Interleukin 1 beta | AS\_IL1β\_F | AACACCGGGGTTGACATCAG |
| AS\_IL1β\_R | TTAGTTGTGGCGCTGGATGG |
| Transforming growth factor beta | AS\_Tgf β\_F | GCCATCCGTGGACAGATACT |
| AS\_Tgf β\_R | TCTCCCTCCTGGTCAATCTCT |
| Tumour necrosis factor | AS\_TNFα\_F | AGGTTGGCTATGGAGGCTGT |
| AS\_TNFα\_R | TCTGCTTCAATGTATGGTGGG |
| Interleukin 10 | AS\_IL10\_F | TCCTCTCTCCTCCTATCCGTGC |
| AS\_IL10\_R | ATAAAGGAGCAGCAACGGTCG |
| Beta-actin | AS\_ β actin\_F | CCATCCAGGCAGTGTTGT |
| AS\_ β actin\_R | CGGAGTCCATGACGATACC |
| 16S rRNA V3-4 | V3-4 [314F] | CCTACGGGNGGCWGCAG | (Huang et al., 2018; Kiruthiga et al., 2018) |
| V3-4 [805R] | GACTACHVGGGTATCTAATCC |
| V3\_V4\_TaqMan | ATTACCGCGGCTGCTGG |
| 16S rRNA V4 | 16S\_V4F  | TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAYTGGGYDTAAAGNG  | (Ma et al., 2017) |
| 16S\_V4R\_1  | GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTACCRGGGTHTCTAATCC  |
| 16S\_V4R\_2  | GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTACCAGAGTATCTAATTC  |
| 16S\_V4R\_3  | GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCTACDSRGGTMTCTAATC  |
| 16S\_V4R\_4 | GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTACNVGGGTATCTAATC |
| Atlantic salmon elongation factor(EFA) | EFA-Probe | ATCGGTGGTATTGGAAC | (Olsvik et al., 2005) |
| EFA-F | CAG AGG TTT TTC ATA CGC CAG AA |
| EFA-R | GAG GTC ACG GTG ATG ACA GAA C |
| Rainbow trout elongation factor  | OMelf-F | CCC CTC CAG GAT GTC TAC AAA | (Kvåle, 2020) |
| Omelf-R | CAC ACG GCC CAC GGG TAC T |
| OMelf-probe | ATC GGC GGT ATT GGA AC |
| Halobacterium salinarum(Hsal) | Hsal-Probe | AGG CGT CCA GCG GA | (Andersen et al., 2010) |
| Hsal-F | GGG AAA TCT GTC CGC TTA ACG |
| Hsal-R | CCG GTC CCA AGC TGA ACA |
| Infectious salmon anemia virus(Segment 7) (ISAV) | ISAV-Probe | CAC ATG ACC CCT CGT C | (Plarre et al., 2005) |
| ISAV-F | TGG GAT CAT GTG TTT CCT GCT A |
| ISAV-R | GAA AAT CCA TGT TCT CAG ATG CAA |
| Salmon gill poxvirus(SGPV) | SGPV-Probe | TTA TAC ACC ATC ACA TTT GTG | (Nylund et al., 2021) |
| SGPV-F | CAG AGG TTT TTC ATA CGC CAG AA |
| SGPV-R | GAG GTC ACG GTG ATG ACA GAA C |
| Salmonid alphavirus(SAV) | SAV-Probe | CTG GCC ACC ACT TCG A | (Hodneland and Endresen, 2006) |
| SAV-F | CCG GCC CTG AAC CAG TT |
| SAV-R | GTA GCC AAG TGG GAG AAA GCT |
| Piscine orthoreovirus (PRV) | PRV-Probe | CTG GCT CAA CTC TC | (Nylund et al., 2018a) |
| PRV-F | CAA TCG CAA GGT CTG ATG CA |
| PRV-R | GGG TTC TGT GCT GGA GAT GAG |
| Piscine myocarditis virus(PMCV) | PMCV-Probe | TGG TGG AGC GTT CAA | (Nylund et al., 2018a) |
| PMCV-F | AGG GAA CAG GAG GAA GCA GAA |
| PMCV-R | CGT AAT CCG ACA TCA TTT TGT GA |
| Infectious pancreatic necrosis virus(IPNV) | IPNV-Probe | TCT TGG CCC CGT TCA TT | (Watanabe et al., 2006) |
| IPNV-F | ACC CCA GGG TCT CCA GTC |
| IPNV-R | GGA TGG GAG GTC GAT CTC GTA |
| Tenacibaculum maritimum(Tmar) | Tmar-Probe | TGA ATC AAA TGC GAT CTT | (Frisch et al., 2018) |
| Tmar-F | GCC AAT AGC AAC GGG ATA CC |
| Tmar-R | TCG TGC GAC CAT CTT TGG T |
| Tenacibaculum sp. (TB-tuf) | TB-tuf- Probe | TTT CAA TAC ATA CAC CTC AGC | (Småge et al., 2017) |
| TB-tuf-F | AGT GTG ACG TCC ACC TT |
| TB-tuf-R | CTG TAA GCC AGG TTC TGT |
| Candidatus Clavichlamydia salmonicola (Ach) | Ach-Probe | CGT GAC AGC GAT AGA G | (Steigen et al., 2013) |
| Ach-F | AGA ACC TTA CCC AGA TTT GAC ATG T |
| Ach-R | CCT GTC CTT TCG GAA GAC GAT |
| Candidatus Branchiomonas cysticola (Epit) | Epit-Probe | ACT TAG CGA AAG TTA AGC | (Nylund et al., 2018a) |
| Epit-F | GAG TAA TAC ATC GGA ACG TGTCTA GTG |
| Epit-R | CTT TCC TCT CCC AAG CTT ATG C |
| CandidatusPiscichlamydiasalmonis (Pch) | Pch-Probe | CAA AAC TGC TAG ACT AGA GT | (Nylund et al., 2008) |
| Pch-F | TCA CCC CCA GGC TGC TT |
| Pch-R | GAA TTC CAT TTC CCC CTC TTG |
| Candidatus Syngnamydia salmonis (Sch) | Sch-Probe | TCC TTC GGG ACC TTA C | (Nylund et al., 2015) |
| Sch-F | GGG TAG CCC GAT ATC TTC AAA GT |
| Sch-R | CCC ATG AGC CGC TCT CTC T |
| Yersinia ruckeri | Yersinia-Probe | TAA TAG CAC TGA ACA TTG AC | (Kvåle, 2020) |
| Yersinia-F | GCG AGG AGG AAG GGT TAA GTG |
| Yersinia-R | CGG TGC TTC TTC TGC GAG TAA |
| Ichthyobodo sp. (Costia) | Costia-Probe | TCC ACG ACT GCA AAC GAT GAC G | (Isaksen et al., 2012) |
| Costia-F | ACG AAC TTA TGC GAA GGC A |
| Costia-R | TGA GTA TTC ACT YCC GAT CCA T |
| Paranucleospora theridion(Nuc) | Nuc-Probe | TTG GCG AAG AAT GAA A | (Nylund et al., 2010) |
| Nuc-F | CGG ACA GGG AGC ATG GTA TAG |
| Nuc-R | GGT CCA GGT TGG GTC TTG AG |
| Paramoeba perurans(Pperu) | Pperu-Probe | CTG GTT CTT TCG RGA GC | (Nylund et al., 2018b) |
| Pperu-F | GAT AAC CGT GGT AAA TCT AGA GCT AAT A |
| Pperu-R | TGG CAT TGG CTT TTG AAT CT |
| Parvicapsulapseudobranchicola (Parvi) | Parvi-Probe | CCG TAT TGC TGT CTT TGA | (Nylund et al., 2011) |
| Parvi-F | TCG TAG TCG GAT GAC AAG AAC GT |
| Parvi-R | AAA CAC CCC GCA CTG CAT |
| Tetracapsuloidessalmoniarum (PKD) | Probe | Probe: TGT TGT TAG GAT ATT TTC C | (Kvåle, 2020) |
| Forward | Forward: CAA GAT CGC GCC CTA TCA AT |
| Revers | Revers: CGT CAC CCG TTA CAA CCT TGT |

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