**S3 Table. Primer sequences.**

|  |  |  |
| --- | --- | --- |
| Target | Primer sequence | Reference |
|   | Forward  | Reverse |  |
| Abaecin | CAGCATTCGCATACGTACCA | GACCAGGAAACGTTGGAAAC | 1 |
| Hymenoptaecin | CTCTTCTGTGCCGTGCATA | GCGTCTCCTGTCATTCCATT | 1 |
| Defensin-1 | TGCGCTGCTAACTGTCTCAG | AATGGCACTTAACCGAAACG | 1 |
| Prophenoloxidase | AGATGGCATGCATTTGTTGA | TTGCGTTGTTGATTGGTTGT | 1 |
| ABPV | GCCCAGACAAGCGCAGTACT | AGCACGGAAAACGCGTCTT | 2\* |
| BQCV | CCAGGTTTGTTTGCCGACTTAC | CGTACGGGCCTCGGATAA | 3\* |
| CBPV | CGTTGGTGTTAGCAGGTTTGG | TCACCTGAGCAACGAGTACCAT | 4\* |
| DWV | TTAATCAGCGCTTAGTGGAGGAA | CGCACCTACGCGATGTAAATC | 3\* |
| IAPV | TGCGGCGTTCCGAAATA | TCACTAGTGGACGAAGCGTAGTTC | 5\* |
| KBV | GCATCGAGCGCATTCCA | TACACCTCCTACAATATCAGCAAACC | 3\* |
| SBV | ACCGTTATACGCGTGCTGAAT | TGGCCCCCCGGATATT | 3\* |
| *Paenibacillus larvae* | CGGGAGACGCCAGGTTAG | TTCTTCCTTGGCAACAGAGC | 6 |
| *Nosema apis* | GCCCTCCATAATAAGAGTGTCCAC | ATCTCTCATCCCAAGAGCATTGC | 7 |
| *Nosema ceranae* | AAGAGTGAGACCTATCAGCTAGTTG | CCGTCTCTCAGGCTCCTTCTC | 7 |
| β-actin | CGTTGTCCCGAGGCTCTTT | TGAATACCGCAAGCTTCCATT | 8\* |
|  |  |  |  |
| \*Modified from original report to optimize reaction conditions on ABI 7900 |  |

**References for S4**

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