

Supplementary Table 11. Oligonucleotide primers used for cloning *N. helminthoeca* outer membrane proteins

Target genes	Primer Sequence (5' → 3') ¹	Amplicon size
<i>p51</i> (NHE_RS00965)	F: ATAGG <u>CCATGG</u> CTTCTGTAGAGAACCCATCAA R: CTAGAG <u>AATTC</u> GTATATGATACTTTGAGACCTGAAG	1,422 bp
<i>nsp1</i> (NHE_RS03715)	F: ATAGG <u>CCATGG</u> CGCTTTTCGGAATAAACGC R: CTAGAG <u>AATTC</u> AATATTCCAAGCTGGATCTTGATTCC	703 bp
<i>nsp2</i> (NHE_RS03720)	F: ATAGG <u>CCATGG</u> CCAAAGTAGAAGAAGCGGCGAATGC R: CTAGAG <u>CGGCCGC</u> GCGTCAAGTGAAAAAGTAAC	870 bp
<i>nsp3</i> (NHE_RS03725)	F: ATAGG <u>CCATGG</u> CGCAAGATGCCCTAGAGGATG R: CTAGAG <u>CGGCCGC</u> ATTCATAGGTAGCATTAG	624 bp
<i>ssa</i> (NHE_RS03855)	F: ATAGG <u>CCATGG</u> ATCTGCTTAAGCATGATACCTCAAG R: CTAGAG <u>CGGCCGC</u> TTTTTGGGGATAGTTATCTCTTTAAGTC	1,002 bp

¹ Underlined sequences indicate restriction enzymes' recognition sites: F, Forward (*Nco*I); R, Reverse complement (*Eco*RI for *p51* and *nsp1*, *Not*I for *nsp2/3* and *ssa*). Stop codons and approximate 80 bp from 5'-end of these genes that encodes signal peptides were excluded in the amplicon.