

| Sequence | 34 | 93 | 100 | 107 | 120 | 122 | 127 | 138 | 154 | 180 | 185 | 189 | 318 | 473 | 490 | 508 | 552 |
|---------------------------------------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Sc-ES/1990_AJ608288 | V | D | H | L | I | G | C | S | A | K | T | H | S | R | P | F | Q |
| Sc-ES/1990 16A | L | D | H | L | I | R | C | G | A | K | T | R | S | R | P | F | K |
| Sc-ES/1990 muc | L | D | H | L | I | K | C | G | A | K | T | R | S | K | P | F | K |
| Bp-DK/2016 | L | D | H | L | I | K | C | G | A | K | T | R | G | R | P | F | K |
| Sc-IT/2008 IZSPLV_MF589987 | L | D | H | L | I | R | C | G | A | Q | T | R | S | R | P | F | K |
| Sc-IT/2010 156 | L | D | H | L | I | K | C | G | A | K | T | R | S | R | P | F | K |
| Bp-IT/2013 Bph | L | D | H | L | I | K | C | G | A | K | T | R | S | R | P | F | K |
| Sl-US/2010 GW2010007A_KU720623 | L | D | H | L | I | K | C | G | A | K | T | R | S | R | P | L | K |
| Tt-US/2011 631MMS031711_KU720625 | L | D | H | L | I | K | C | G | A | K | T | R | S | R | L | F | K |
| Tt-US/2011 BCF20110815-LA001_KU720624 | L | D | H | L | I | K | C | G | A | K | T | R | S | R | P | F | K |
| La-DE/2007 | L | A | H | S | I | K | C | G | V | K | I | R | S | R | P | F | K |
| La-NL/2011 11.2 | L | A | Q | L | S | K | G | G | V | K | I | R | S | R | P | F | K |

| Sequence | 639 | 720 | 791 | 811 | 841 | 873 | 1006 | 1016 | 1036 | 1037 | 1039 | 1041 | 1056 | 1069 | 1070 | 1075 | 1111 |
|---------------------------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|
| Sc-ES/1990_AJ608288 | G | M | L | L | M | T | V | I | A | D | H | V | R | A | V | L | S |
| Sc-ES/1990 16A | G | M | L | L | M | I | V | I | D | E | Q | E | I | T | G | I | F |
| Sc-ES/1990 muc | G | M | L | L | M | T | V | I | D | E | Q | E | I | T | G | I | F |
| Bp-DK/2016 | G | I | L | L | M | T | V | I | D | E | Q | E | I | T | G | I | F |
| Sc-IT/2008 IZSPLV_MF589987 | G | M | L | L | M | T | V | I | D | E | Q | E | I | T | G | I | F |
| Sc-IT/2010 156 | G | M | L | L | M | T | V | I | D | E | Q | E | I | T | G | I | F |
| Bp-IT/2013 Bph | G | M | L | L | M | T | V | I | D | E | Q | E | I | T | G | I | F |
| Sl-US/2010 GW2010007A_KU720623 | G | M | L | L | T | T | V | I | D | E | Q | E | I | T | G | I | F |
| Tt-US/2011 631MMS031711_KU720625 | G | M | L | L | T | T | V | I | D | E | Q | E | I | T | G | I | F |
| Tt-US/2011 BCF20110815-LA001_KU720624 | G | M | L | L | T | T | V | I | D | E | Q | E | I | T | G | I | F |
| La-DE/2007 | S | M | L | L | M | T | L | V | D | E | Q | E | I | T | G | I | F |
| La-NL/2011 11.2 | S | M | I | V | M | I | L | V | D | E | Q | E | I | K | G | I | F |

| Sequence | 1120 | 1129 | 1161 | 1170 | 1192 | 1194 | 1196 | 1228 | 1237 | 1253 | 1254 | 1275 | 1343 | 1388 | 1611 | 1627 | 1696 |
|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Sc-ES/1990_AJ608288 | V | R | V | I | G | A | C | A | S | D | Q | R | I | S | Y | S | I |
| Sc-ES/1990 16A | G | S | D | M | V | S | C | V | A | E | Q | R | I | R | H | S | I |
| Sc-ES/1990 muc | G | S | D | M | V | S | C | V | A | E | Q | R | I | R | H | S | I |
| Bp-DK/2016 | G | S | D | M | V | S | C | V | A | E | Q | R | I | R | H | S | I |
| Sc-IT/2008 IZSPLV_MF589987 | G | S | D | M | G | A | F | V | A | E | Q | R | I | R | H | S | I |
| Sc-IT/2010 156 | G | S | D | M | V | S | C | V | A | E | Q | R | I | R | H | S | I |
| Bp-IT/2013 Bph | G | S | D | M | V | S | C | V | A | E | Q | R | I | R | H | S | I |
| Sl-US/2010 GW2010007A_KU720623 | G | S | D | M | V | S | C | V | A | E | Q | R | I | R | H | S | I |
| Tt-US/2011 631MMS031711_KU720625 | G | S | D | M | V | S | C | V | A | E | Q | R | I | R | H | S | I |
| Tt-US/2011 BCF20110815-LA001_KU720624 | G | S | D | M | V | S | C | V | A | E | Q | R | I | R | H | S | I |
| La-DE/2007 | G | S | D | M | V | S | C | V | A | E | R | R | V | R | H | P | T |
| La-NL/2011 11.2 | G | S | D | M | V | S | C | V | A | E | Q | K | V | R | H | P | T |

| Sequence | 1698 | 1745 | 1748 | 1811 | 1867 | 1969 | 1972 | 1977 | 2000 | 2001 | 2005 | 2016 | 2072 | 2088 | 2107 | 2147 | 2155 |
|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Sc-ES/1990_AJ608288 | A | R | N | R | I | N | G | L | Y | L | I | R | E | A | I | R | P |
| Sc-ES/1990 16A | A | R | S | S | I | N | G | I | C | I | V | R | E | A | I | K | Q |
| Sc-ES/1990 muc | A | R | S | S | I | N | G | I | C | I | V | R | E | A | I | K | Q |
| Bp-DK/2016 | A | R | S | S | I | N | G | I | C | I | V | R | E | A | I | K | Q |
| Sc-IT/2008 IZSPLV_MF589987 | A | R | S | S | I | N | G | I | C | I | V | R | E | A | I | K | Q |
| Sc-IT/2010 156 | A | R | S | S | I | N | G | I | C | I | V | R | E | A | I | K | Q |
| Bp-IT/2013 Bph | A | R | S | S | I | N | G | I | C | I | V | R | E | A | I | K | Q |
| Sl-US/2010 GW2010007A_KU720623 | A | R | S | S | I | N | V | I | C | I | V | I | D | V | I | K | Q |
| Tt-US/2011 631MMS031711_KU720625 | A | R | S | S | I | N | V | I | C | I | V | I | E | V | I | K | Q |
| Tt-US/2011 BCF20110815-LA001_KU720624 | A | R | S | S | I | N | V | I | C | I | V | I | E | V | I | K | Q |
| La-DE/2007 | S | R | S | R | V | N | G | I | C | I | V | R | E | A | N | K | Q |
| La-NL/2011 11.2 | A | K | S | R | V | D | G | I | C | I | V | R | E | A | N | K | Q |

Supplementary Fig. 3 Amino acid changes in DMV Large protein. 28/68 changes (green) were accounted for by Sc-ES/1990 (GenBank accession no. AJ608288). Taxon names are presented as host_country/year of collection|variant_GenBank Accession No. Abbreviations: Bp, *Balaenoptera physalus*; Sc, *Stenella coeruleoalba*; Tt, *Tursiops truncatus*; Sl, *Stenella longirostris*; La, *Lagenorhynchus albirostris*; DMV, dolphin morbillivirus; ES, Spain; IT, Italy; US, United States of America; DK, Denmark; DE, Germany; NL, the Netherlands.