Sequence	34	93	100	107	120	122	127	138	154	180	185	189	318	473	490	508	552
Sc-ES/1990 AJ608288	v	D	Н	L	1	G	C	S	A	K	T	Н	S	R	P	F	Q
Sc-ES/1990 16A	L	D	н	L	1	R	C	G	Α	K	T	R	S	R	P	F	K
Sc-ES/1990 muc	L	D	н	L	1	K	C	G	Α	K	T	R	S	К	P	F	K
Bp-DK/2016	L	D	н	L	1	K	C	G	A	K	T	R	G	R	P	F	K
Sc-IT/2008 IZSPLV MF589987	L	D	н	L	1	R	C	G	A	Q	T	R	S	R	P	F	K
Sc-IT/2010 156	L	D	н	L	i	К	c	G	A	К	т	R	S	R	P	F	K
Bp-IT/2013 Bph	L	D	н	L	i	К	c	G	A	К	т	R	S	R	P	F	K
Sl-US/2010 GW2010007A KU720623	I.	D	н	I.	-i-	K	c	G	Α.	K	т т	R	S	R	Р.	-i-	K
Tt-US/2011 631MMS031711 KU720625	L	D	н	L	- 1	К	c	G	A	K	T	R	S	R	i	F	K
Tt-US/2011 BCF20110815-LA001 KU720624	I.	D	н	i.	- ;	K	c	G	A	K	÷	R	5	R	p		K
La-DE/2007	L	A	н	- S	-	K	c	G	v	K	-	R		R	P		K
La-NL/2011 11.2	L	Ā	9	L	s	K	G	G	v	K	- 1	R	s	R	P	F	K
La-NL/2011 11:2	L		4					-	•				3			-	i.
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	м	Т	V V	1010	A	D	Н	v	R	Α.	v	1075	s
Sc-ES/1990/16A	G	M	L	L	M	- 1	·	- 1	D	E	Q	E	- 1	T	G	ī	F
Sc-ES/1990 16A Sc-ES/1990 muc	G	M	L	L	M	T	v	- 1	D	E	Q	E	- 1	T	G		F
Sc-ES/1990 muc Bp-DK/2016		M			M											-	F
	G		L.	L	M M	T			D	E	Q	E		T	G		
Sc-IT/2008 IZSPLV_MF589987	G	М	L	L		Т		1	D	E	Q	E	1	т	G	1	F
Sc-IT/2010 156	G	М	L	L	М	Т	v		D	E	Q	Е	1	T	G	1	F
Bp-IT/2013 Bph	G	М	L	L	М	T	v		D	Е	Q	E	1	T	G	- 1	F
Sl-US/2010 GW2010007A_KU720623	G	М	L	L	т		v	1	D	E	Q	E	1	т	G	I	F
Tt-US/2011 631MMS031711_KU720625	G	M	L	L	т	T	v	1	D	E	Q	E	1	т	G	I	F
Tt-US/2011 BCF20110815-LA001_KU720624	G	М	L	L	т	Т	v	1	D	E	Q	E	I	т	G	I	F
La-DE/2007	S	M	L	L	M	T	L	v	D	E	Q	E	1	т	G	I	F
La-NL/2011 11.2	S	М		v	М	- 1	L	v	D	Е	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	1	G	A	С	A	S	D	Q	R	1	S	Y	S	1
Sc-ES/1990_AJ608288 Sc-ES/1990 16A	V G	R	V D	I M	G V	A S	C C	A V	S A	D E	Q Q	R R	1	S R	Y H	S S	1
Sc-ES/1990 AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc	V G G	R S S	V D D	I M M	G V V	A S S	с с с	A V V	S A A	D E E	Q Q Q	R R R	1 1 1	S R R	Y H H	s s s	I I I
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016	G G	R S S	D D	H M M	v v v	A S S	C C C	V V	A A A	D E E	Q Q Q	R R R	1 1 1	R R R	H H H	S S S	1 1 1
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987	G G G	S S S	D D D	M M M	V V V	A S S S	C C C	V V V	A A A	E E E	Q Q Q Q	R R R R	1 1 1 1	R R R	H H H	S S S	1 1 1
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156	G G G G	R S S S	D D D D	M M M M	v v v G	A S S S	C C C	v v v v	A A A A	E E E	Q Q Q Q Q	R R R R	1 1 1 1	R R R R	H H H H	S S S S	I I I I
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph	G G G G	R S S S S	D D D D D D	M M M M M	V V V G V	A S S S S	C C F C C	v v v v	S A A A A	E E E E	Q Q Q Q Q	R R R R R	1 1 1 1 1	R R R R R	H H H H	S S S S	I I I I I
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623	G G G G G	R S S S S S	D D D D D D D D	M M M M M	V V V G V V	A S S S A S S	C C C C C	v v v v v	A A A A A	E E E E E	Q Q Q Q Q Q	R R R R R	I I I I I I	R R R R R	¥ Н Н Н Н	S S S S S	I I I I I
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph	V G G G G G	R S S S S S	D D D D D D D D D D	M M M M M M	G V V G V V V	A S S S A S S S	C C C C C C	v v v v v v	A A A A A	E E E E E	Q Q Q Q Q Q	R R R R R R	I I I I I I	R R R R R R	¥ Н Н Н Н	s s s s s	I I I I I I
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph Sl-US/2010 GW2010007A_KU720623 Tr-US/2011 631MMS031711_KU720625 Tr-US/2011 BCF20110815-LA001_KU720624	V G G G G G G	R S S S S S S	D D D D D D D D D D D D D D D D D D D	M M M M M M M	G V V V G V V V	A S S S S S S S	C C C C C C	v v v v v v	\$ A A A A A A A	D E E E E E E	Q Q Q Q Q Q Q Q	R R R R R R R	1 1 1 1 1 1 1 1	R R R R R R R	у н н н н н	s s s s s s	I I I I I I I
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 631MMS031711_KU720625	G G G G G G G	R S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	I M M M M M M M M M M M M M M M M M M M	G V V G V V V V	A S S S S S S S S	C C C C C C C C	v v v v v v v	\$ A A A A A A	D E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R	1 1 1 1 1 1 1 1 1 V	R R R R R R R	Y H H H H H H	S S S S S S S S S S S S S S S S S S S	1 1 1 1 1 1 1 1
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph Sl-US/2010 GW2010007A_KU720623 Tr-US/2011 631MMS031711_KU720625 Tr-US/2011 BCF20110815-LA001_KU720624	V G G G G G G	R S S S S S S	D D D D D D D D D D D D D D D D D D D	M M M M M M M	G V V V G V V V	A S S S S S S S	C C C C C C	v v v v v v	\$ A A A A A A A	D E E E E E E	Q Q Q Q Q Q Q Q	R R R R R R R	1 1 1 1 1 1 1 1	R R R R R R R	у н н н н н	s s s s s s	1 1 1 1 1 1 1 1
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 BGT20110815-LA001_KU720624 La-DE/2007	G G G G G G G	R S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	I M M M M M M M M M M M M M M M M M M M	G V V G V V V V	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C	v v v v v v v	\$ A A A A A A A A	D E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R	1 1 1 1 1 1 1 1 1 V	R R R R R R R	Y H H H H H H	S S S S S S S S S S S S S S S S S S S	1 1 1 1 1 1 1 1 1
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 BGT20110815-LA001_KU720624 La-DE/2007	G G G G G G G	R S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	I M M M M M M M M M M M M M M M M M M M	G V V G V V V V	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C	v v v v v v v	\$ A A A A A A A A	D E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R	1 1 1 1 1 1 1 1 1 V	R R R R R R R	Y H H H H H H	S S S S S S S S S S S S S S S S S S S	1 1 1 1 1 1 1 1
Sc-ES/1990 AJ608288 Sc-ES/1990 InA Sc-ES/1990 InA Sc-ES/1990 InW Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 631MMS031711_KU720625 Tr-US/2011 BCF20110815-LA001_KU720624 La-DE/2007 La-NL/2011 11.2	G G G G G G G G	R S S S S S S S S S S S S S S S S S S S	D D D D D D D D D D D D D D D D D D D	M M M M M M M M M	G V V V G V V V V V	A S S S S S S S S S	C C C C C C C C C C C C C C C C C C C	v v v v v v v v	S A A A A A A A A A A A A A A A A A A A	E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R	1 1 1 1 1 1 1 1 1 1 1 1 1 V	R R R R R R R R	¥ н н н н н	S S S S S S S P P	1 1 1 1 1 1 1 1 1 1 1 1 7
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 BCF20110815-LA001_KU720624 La-DE/2007 La-NL/2011 11.2 Sequence	6 6 6 6 6 6 6 6 6 6	R S S S S S S S S S S	D D D D D D D D D D D D D D D D D D D	M M M M M M M M M M M M M M M M M M M	G V V V G V V V V V	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C C C C C C C C C C C C	v v v v v v v v v	\$ A A A A A A A A A A A A A A A A A A A	E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R R	1 1 1 1 1 1 1 1 1 1 V	R R R R R R R R R	¥ н н н н н	S S S S S S S P P	1 1 1 1 1 1 1 T T T T
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph Sl-US/2010 GW2010007A_KU720623 Tr-US/2011 631MMS031711_KU720625 Tr-US/2011 BCF20110815-LA001_KU720624 La-DE/2007 La-NL/2011 11.2 Sequence Sc-ES/1990_AJ608288	V G G G G G G G G G G G G G G A G G G G	s s s s s s s s s s s s s s s s s s s	V D D D D D D D D D D D D D D D D D D D	M M M M M M M M M M M M M M M M M M M	V V V V V V V V V V V V V V V V V V V	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C C C C C C C C C C C C	v v v v v v v v v	S A A A A A A A A A A A A A A A A A A A	E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R R R	1 1 1 1 1 1 1 1 1 1 1 1 1 V V V	R R R R R R R R R	тине на	s s s s s s s s s s s s s s s s s s s	1 1 1 1 1 1 1 T T T T 2155
Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 BCF20110815-LA001 KU720624 La-DE/2007 La-NL/2011 I1.2 Sequence Sc-ES/1990_AJ608288 Sc-ES/1990 16A Sc-ES/1990 muc	V G G G G G G G G G G G G A A	8 S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	M M M M M M M M M M M M M M M M M M M	V V V V V V V V V V V V V V V V V V V	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C C C C C C C C C C C C	v v v v v v v v v v	S A A A A A A A A A A A A A A A A A A A	E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R K	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R R R R R R R R R R R R R R R R R R R	ти н н н н н н н н н н н н н	S S S S S S S S S S S S S S S S S S S	1 1 1 1 1 1 1 1 1 1 1 T T T T T
Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 IMC Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 I56 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 TR-US/2011 BCF20110815-LA001 KU720624 La-DE/2007 La-NL/2011 I1.2 Sequence Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 muc Bp-DK/2016	V G G G G G G G G G G G A A	8 S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	M M M M M M M M M M M M M M M M M M M	V V V V V V V V V V V V V V V V V V V	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C C C C C C C C C C C C	** ** ** ** ** ** ** ** ** **	\$ A A A A A A A C C C C	E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R R R R R R R	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R R R R R R R R R R R R R R R R R R R	ти н н н н н н н н н н н н н	S S S S S S S S S S S S S S S S S S S	1
Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 Imuc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 631MMS031711_KU720625 Tr-US/2011 BCF20110815-LA001_KU720624 La-DE/2007 La-NL/2011 11.2 Sequence Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 Imuc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987	G G G G G G G A A A A A	8 S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	M M M M M M M M M M M M M M M M M M M	V V V V V V V V V V V V V V V V V V V	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C C C C C C C C C C C C	** ** ** ** ** ** ** ** ** **	\$ A A A A A A A A C C C C C C	E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R K	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R R R R R R R R R A A A A	ти н н н н н н н н н н н н н	S S S S S S P P P	1 1 1 1 1 1 1 1 T T T T T Q Q Q Q
Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 Imuc Bp-DK/2016 Sc-IT/2008 IZSFIV_MF589987 Sc-IT/2010 I56 Bp-IT/2013 Bph SI-US/2011 G31MMS031711_KU720623 Tr-US/2011 BCF20110815-LA001_KU720624 La-DE/2007 La-NL/2011 I1.2 Sequence Sc-ES/1990_AJ608288 Sc-ES/1990 AJ608288 Sc-ES/1990 Imuc Bp-DK/2016 Sc-IT/2008 IZSPIV_MF589987 Sc-IT/2010 I56	G G G G G G G A A A A A A A	R S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	M M M M M M M M M M M M M M M M M M M	G V V V V V V V V V T I I I I	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C C C C C C C C C C C C	** ** ** ** ** ** ** ** ** **	8 A A A A A A A A A C C C	E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R K	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R R R R R R R R A A A A A	ти н н н н н н н н н н н н н	S S S S S S S S S S S S S S S S S S S	1
Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 IMC Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 I56 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 BCT20110815-LA001 KU720624 La-DE/2007 La-NL/2011 I1.2 Sequence Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 Imc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 I56 Bp-IT/2013 Bph	V G G G G G G G G G A A A A A A A A	R S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	1 M M M M M M M M M M M M M M M M M M M	C V V V V V V V V V	A S S S S S S S S S S S S S S S S S S S	C C C C C C C C C C C C C C C C C C C	*** ** *** *** *** *** *** *** *** *** *** *** *** *** ** *** *** *** *** *** *** *** *** *** *** *** *** ** *** *** *** *** *** *** *** *** *** *** *** *** ** *** *** **	8 A A A A A A A A A C C C C C C C C C C	D E E E E E E E E E E E E E E E E E E E	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R R R R R R R R R R R R	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R R R R R R R R R R R A A A A A A A	Y H H H H H H H I I I I I I I	S S S S S S S S S S S S S S S S S S S	1
Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 Imuc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 156 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623 Tr-US/2011 BCF20110815-LA001_KU720625 Tr-US/2011 BCF20110815-LA001_KU720624 La-DE/2007 La-NL/2011 11.2 Sequence Sc-ES/1990_AJ608288 Sc-ES/1990 I6A Sc-ES/1990 Imuc Bp-DK/2016 Sc-IT/2008 IZSPLV_MF589987 Sc-IT/2010 I56 Bp-IT/2013 Bph SI-US/2010 GW2010007A_KU720623	G G G G G G G A A A A A A A A	R S S S S S S S S S S S S S S S S S S S	V D D D D D D D D D D D D D D D D D D D	I M M M M M M M M M M M M M M M M M M M	G V V V V V V V V V V V V V V	A S S S S S S S S S S N N N N N N N N N	C C C C C C C C C C C C C C C C C C C	*** ** *** *** *** *** *** *** *** *** *** *** *** *** ** *** *** *** *** *** *** *** *** *** *** *** *** ** *** *** *** *** *** *** *** *** *** *** *** *** ** *** *** **	8 A A A A A A A A A C C C C C C C C C C	D E E E E E E E E E I I I I I I I I I I	Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	R R R R R R R R R R R R R R R R	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R R R R R R R R A A A A A A	Y H H H H H H H I I I I I I I	S S S S S S S S S S S S S S S S S S S	1
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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.