

	10	20	30	40	50	60	70	80	90
NC013590.2 (C-27)-Reference	DSHVSILXGX	EXMEPM*NXT	SXILQTDENK	SRDTIQ*TWI	RDYNWGHQFL	XNFLETPHVT	VAWXXWTPKS	GXGMYLSQME	GNR*NATR*X
OL410296.1 Marial vaccine		*		*					*
KR296657.1 Virbac vaccine		*		*					*
KR381803.1 Intervet vaccine		*		*					*
MH070348.1 (KANS-02)		*		*					*
OR504663.1 This study		*		*					*
OR504664.1 This study		*		*					*
OR504665.1 This study		*	I	.....*	.....	.....	.....	.....	.....*
OR504666.1 This study		*		*					*
OR504667.1 This study		*		*					*
OR504668.1 This study		*		*					*
OR504669.1 This study		*		*					*
OR504670.1 This study		*		*					*
OR504671.1 This study		*		*					*
OR504672.1 This study		*		*					*
OR504673.1 This study		*		*					*

	10	20	30	40	50	60	70	80	90
NC013590.2 (C-27)-Reference	DSHVSILXGX	EXMEPM*NXT	SXILQTDENK	SRDTIQ*TWI	RDYNWGHQFL	XNFLETPHVT	VAWXXWTPKS	GXGMYLSQME	GNR*NATR*X
OL410296.1 Marial vaccine		*		*					*
KR296657.1 Virbac vaccine		*		*					*
KR381803.1 Intervet vaccine		*		*					*
MH070348.1 (KANS-02)		*		*					*
OR504673.1 This study		*		*					*
OR504674.1 This study		*		*					*
OR504675.1 This study		*		*					*
OR504676.1 This study		*		*					*
OR504677.1 This study		*	F	.....*	.....	.....	.....	.....	.....*
OR504678.1 This study		*		*					*
OR504679.1 This study		*		*					*
OR504680.1 This study		*		*					*
OR504681.1 This study		*		*					*
OR504682.1 This study		*		*					*
OR504683.1 This study		*	F	.....*	.....	.....	.....	.....	.....*

	10	20	30	40	50	60	70	80	90
NC013590.2 (C-27)-Reference	DSHVSILXGX	EXMEPM*NXT	SXILQTDENK	SRDTIQ*TWI	RDYNWGHQFL	XNFLETPHVT	VAWXXWTPKS	GXGMYLSQME	GNR*NATR*X
OL410296.1 Marial vaccine		*		*					*
KR296657.1 Virbac vaccine		*		*					*
KR381803.1 Intervet vaccine		*		*					*
MH070348.1 (KANS-02)		*		*					*
OR504684.1 This study		*		*					*
OR504685.1 This study		*		*					*
OR504686.1 This study		*		*					*
OR504687.1 This study		*		*					*
OR504688.1 This study		*		*					*
OR504689.1 This study		*		*					*
OR504690.1 This study		*		*					*
OR504691.1 This study		*		*					*
OR504692.1 This study		*		*					*
OR504693.1 This study		*		*					*
OR504694.1 This study		*		*					*

	10	20	30	40	50	60	70	80	90
NC013590.2 (C-27)-Reference	DSHVSILXGX	EXMEPM*NXT	SXILQTDENK	SRDTIQ*TWI	RDYNWGHQFL	XNFLETPHVT	VAWXXWTPKS	GXGMYLSQME	GNR*NATR*X
OL410296.1 Marial vaccine		*		*					*
KR296657.1 Virbac vaccine		*		*					*
KR381803.1 Intervet vaccine		*		*					*
MH070348.1 (KANS-02)		*		*					*
OR504695.1 This study		*		*					*
OR504696.1 This study		*		*					*
OR504697.1 This study		*		*					*
OR504698.1 This study		*	F	.....*	.....	.....	.....	.....	.....*
OR504699.1 This study		*		*					*
OR504700.1 This study		*		*					*
OR504701.1 This study		*		*					*
OR504702.1 This study		*		*					*
OR504703.1 This study		*		*					*
OR504704.1 This study		*		*					*
OR504705.1 This study		*		*					*

	100	110	120	130	140	150	160	170	180
NC013590.2 (C-27)-Reference	XSGLXIDLQP	RXISATFISN	XFTIXKSIVS	VWGTVPPIRQ	PXADRIYKS	KYSKXSYSDW	XTLETYLARG	GXF**LSXPM	IXXQXELAKL
OL410296.1 Marial vaccine								**.....	
KR296657.1 Virbac vaccine								**.....	
KR381803.1 Intervet vaccine								**.....	
MH070348.1 (KANS-02)								**.....	
OR504663.1 This study								**.....	
OR504664.1 This study								**.....	
OR504665.1 This study								**.....	
OR504666.1 This study								**.....	
OR504667.1 This study								**.....	
OR504668.1 This study								**.....	
OR504669.1 This study								**.....	
OR504670.1 This study								**.....	
OR504671.1 This study								**.....	
OR504672.1 This study								**.....	
OR504673.1 This study								**.....	

	100	110	120	130	140	150	160	170	180
NC013590.2 (C-27)-Reference	XSGLXIDLQP	RXISATFISN	XFTIXKSIVS	VWGTVPPIRQ	PXADRIYKS	KYSKXSYSDW	XTLETYLARG	GXF**LSXPM	IXXQXELAKL
OL410296.1 Marial vaccine								**.....	
KR296657.1 Virbac vaccine								**.....	
KR381803.1 Intervet vaccine								**.....	
MH070348.1 (KANS-02)								**.....	
OR504673.1 This study								**.....	
OR504674.1 This study								**.....	
OR504675.1 This study								**.....	
OR504676.1 This study								**.....	
OR504677.1 This study								**.....	
OR504678.1 This study								**.....	
OR504679.1 This study								**.....	
OR504680.1 This study								**.....	
OR504681.1 This study								**.....	
OR504682.1 This study								**.....	
OR504683.1 This study								**.....	

	100	110	120	130	140	150	160	170	180				
NC013590.2 (C-27)-Reference	XSG	LXID	LQP	RXIS	ATFISN	XFTIXKSIVS	VWGTVP	PPRRQ	PXAIDRIYKS	KYSKXSYSDW	XTLETYLARG	GXF**LSXPM	IXXQXELAKL
OL410296.1 Marial vaccine												**.....	
KR296657.1 Virbac vaccine												**.....	
KR381803.1 Intervet vaccine												**.....	
MH070348.1 (KANS-02)												**.....	
OR504684.1 This study												**.....	
OR504685.1 This study												**.....	
OR504686.1 This study												**.....	
OR504687.1 This study												**.....	
OR504688.1 This study												**.....	
OR504689.1 This study												**.....	
OR504690.1 This study												**.....	
OR504691.1 This study												**.....	
OR504692.1 This study												**.....	
OR504693.1 This study												**.....	
OR504694.1 This study												**.....	

	100	110	120	130	140	150	160	170	180				
NC013590.2 (C-27)-Reference	XSG	LXID	LQP	RXIS	ATFISN	XFTIXKSIVS	VWGTVP	PPRRQ	PXAIDRIYKS	KYSKXSYSDW	XTLETYLARG	GXF**LSXPM	IXXQXELAKL
OL410296.1 Marial vaccine												**.....	
KR296657.1 Virbac vaccine												**.....	
KR381803.1 Intervet vaccine												**.....	
MH070348.1 (KANS-02)												**.....	
OR504695.1 This study												**.....	
OR504696.1 This study												**.....	
OR504697.1 This study												**.....	
OR504698.1 This study												**.....	
OR504699.1 This study												**.....	
OR504700.1 This study												**.....	
OR504701.1 This study												**.....	
OR504702.1 This study												**.....	
OR504703.1 This study												**.....	
OR504704.1 This study												**.....	
OR504705.1 This study												**.....	

	190	200	210	220	230	240	250	260	270
NC013590.2 (C-27)-Reference	YXQ*ISTFQS	HX*ISVHSSX	PSGETXXQRT	RRSVPSNQHH	XGXAXXQXQ*	RGXIETVNXX	CIXLLXDHLI	XVEFAMXTIC	LXTXXTSPCK
OL410296.1 Marial vaccine	...*	...*	.....	.....	.....*	.....	.....	.....	.....
KR296657.1 Virbac vaccine	...*	...*	.....	.....	.....*	.....	.....	.....	.....
KR381803.1 Intervet vaccine	...*	...*	.....	.....	.....*	.....	.....	.....	.....
MH070348.1 (KANS-02)	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504663.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504664.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504665.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504666.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504667.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504668.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504669.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504670.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504671.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504672.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504673.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....

	190	200	210	220	230	240	250	260	270
NC013590.2 (C-27)-Reference	YXQ*ISTFQS	HX*ISVHSSX	PSGETXXQRT	RRSVPSNQHH	XGXAXXQXQ*	RGXIETVNXX	CIXLLXDHLI	XVEFAMXTIC	LXTXXTSPCK
OL410296.1 Marial vaccine	...*	...*	.....	.....	.....*	.....	.....	.....	.....
KR296657.1 Virbac vaccine	...*	...*	.....	.....	.....*	.....	.....	.....	.....
KR381803.1 Intervet vaccine	...*	...*	.....	.....	.....*	.....	.....	.....	.....
MH070348.1 (KANS-02)	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504673.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504674.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504675.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504676.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504677.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504678.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504679.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504680.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504681.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504682.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....
OR504683.1 This study	...*	...*	.....	.....	.....*	.....	.....	.....	.....

	190	200	210	220	230	240	250	260	270
NC013590.2 (C-27)-Reference	YXQ*ISTFQS	HX*ISVHSSX	PSGETXXQRT	RRSVPSNQHH	XGXAXXQXQ*	RGXIETVNXX	CIXLLXDHLI	XVEFAMXTIC	LXTXXTSPCK
OL410296.1 Marial vaccine	...*	...*	...	...	...*	...	...	...	...
KR296657.1 Virbac vaccine	...*	...*	...	...	...*	...	...	...	...
KR381803.1 Intervet vaccine	...*	...*	...	...	...*	...	...	...	...
MH070348.1 (KANS-02)	...*	...*	...	...	...*	...	...	...	...
OR504684.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504685.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504686.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504687.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504688.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504689.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504690.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504691.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504692.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504693.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504694.1 This study	...*	...*	...	...	...*	...	...	...	...

	190	200	210	220	230	240	250	260	270
NC013590.2 (C-27)-Reference	YXQ*ISTFQS	HX*ISVHSSX	PSGETXXQRT	RRSVPSNQHH	XGXAXXQXQ*	RGXIETVNXX	CIXLLXDHLI	XVEFAMXTIC	LXTXXTSPCK
OL410296.1 Marial vaccine	...*	...*	...	...	...*	...	...	...	...
KR296657.1 Virbac vaccine	...*	...*	...	...	...*	...	...	...	...
KR381803.1 Intervet vaccine	...*	...*	...	...	...*	...	...	...	...
MH070348.1 (KANS-02)	...*	...*	...	...	...*	...	...	...	...
OR504695.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504696.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504697.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504698.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504699.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504700.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504701.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504702.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504703.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504704.1 This study	...*	...*	...	...	...*	...	...	...	...
OR504705.1 This study	...*	...*	...	...	...*	...	...	...	...

	280	290	300	310	320	330	340	350
NC013590.2 (C-27)-Reference	*NVEDSHCL	VYTSEXXANM	CCGQRP*NSI	PVXXGLDGPR	TSCIXXRAYL	EMPSXXNTMC	*XFX*RTCLY	XKILCG*RVH QRX
OL410296.1 Marial vaccine	*	.....	.....*	.....	.....	.....	*..*	.....*
KR296657.1 Virbac vaccine	*	.....	.....*	.....	.....	.....	*..*	.....*
KR381803.1 Intervet vaccine	*	.....	.....*	.....	.....	.....	*..*	.....*
MH070348.1 (KANS-02)	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504663.1 This study	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504664.1 This study	*	.....	.....*	.....	.....	.....	*..*P..	*
OR504665.1 This study	*	.....	.....*	.....	.....	.....	*..*P.F.	*
OR504666.1 This study	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504667.1 This study	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504668.1 This study	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504669.1 This study	*	.....	.....*	.....	.....	.....	*..*P..	*
OR504670.1 This study	*	.....	.....*	.....	.....	.....	*..*P.F.	*
OR504671.1 This study	*	.....	.....*	.....	.....	.....	*..*P..	*
OR504672.1 This study	*	.....	.....*	.....	.....	.....	*..*P.F.	*
OR504673.1 This study	*	.....	.....*	.....	.....	.....	*..*P..	*

	280	290	300	310	320	330	340	350
NC013590.2 (C-27)-Reference	*NVEDSHCL	VYTSEXXANM	CCGQRP*NSI	PVXXGLDGPR	TSCIXXRAYL	EMPSXXNTMC	*XFX*RTCLY	XKILCG*RVH QRX
OL410296.1 Marial vaccine	*	.....	.....*	.....	.....	.....	*..*	.....*
KR296657.1 Virbac vaccine	*	.....	.....*	.....	.....	.....	*..*	.....*
KR381803.1 Intervet vaccine	*	.....	.....*	.....	.....	.....	*..*	.....*
MH070348.1 (KANS-02)	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504673.1 This study	*	.....	.....*	.....	.....	.....	*..*P..	*
OR504674.1 This study	*	.....	.....*	.....	.....	.....	*..*P.F.	*
OR504675.1 This study	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504676.1 This study	*	.....	.....*	.....	.....	.....	*..*P..	*
OR504677.1 This study	*	.....	.....*	.....	.....	.....	*..*P.F.	*
OR504678.1 This study	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504679.1 This study	*	.....	.....*	.....	.....	.....	*..*P..	*
OR504680.1 This study	*	.....	.....*	.....	.....	.....	*..*P.F.	*
OR504681.1 This study	*	.....	.....*	.....	.....	.....	*..*	.....*
OR504682.1 This study	*	.....	.....*	.....	.....	.....	*..*P..	*
OR504683.1 This study	*	.....	.....*	.....	.....	.....	*..*P.F.	*

	280	290	300	310	320	330	340	350
NC013590.2 (C-27)-Reference	*NVEDSHCL	VYTSEXXANM	CCGQRP*NSI	PVXXGLDGPR	TSCIXXRAYL	EMPSXXNTMC	*XFX*RTCLY	XXILCG*RVH QRX
OL410296.1 Marial vaccine	*		*				*	*
KR296657.1 Virbac vaccine	*		*				*	*
KR381803.1 Intervet vaccine	*		*				*	*
MH070348.1 (KANS-02)	*		*				*	*
OR504684.1 This study	*		*				*	*
OR504685.1 This study	*		*				*	P.
OR504686.1 This study	*		*				*	P.F.
OR504687.1 This study	*		*				*	P.
OR504688.1 This study	*		*				*	P.F.
OR504689.1 This study	*		*				*	P.
OR504690.1 This study	*		*				*	P.F.
OR504691.1 This study	*		*				*	*
OR504692.1 This study	*		*				*	*
OR504693.1 This study	*		*				*	*
OR504694.1 This study	*		*				*	P.

	280	290	300	310	320	330	340	350
NC013590.2 (C-27)-Reference	*NVEDSHCL	VYTSEXXANM	CCGQRP*NSI	PVXXGLDGPR	TSCIXXRAYL	EMPSXXNTMC	*XFX*RTCLY	XXILCG*RVH QRX
OL410296.1 Marial vaccine	*		*				*	*
KR296657.1 Virbac vaccine	*		*				*	*
KR381803.1 Intervet vaccine	*		*				*	*
MH070348.1 (KANS-02)	*		*				*	*
OR504695.1 This study	*		*				*	P.F.
OR504696.1 This study	*		*				*	*
OR504697.1 This study	*		*				*	P.
OR504698.1 This study	*		*				*	P.F.
OR504699.1 This study	*		*				*	*
OR504700.1 This study	*		*				*	P.
OR504701.1 This study	*		*				*	P.F.
OR504702.1 This study	*		*				*	*
OR504703.1 This study	*		*				*	P.
OR504704.1 This study	*		*				*	P.F.
OR504705.1 This study	*		*				*	*