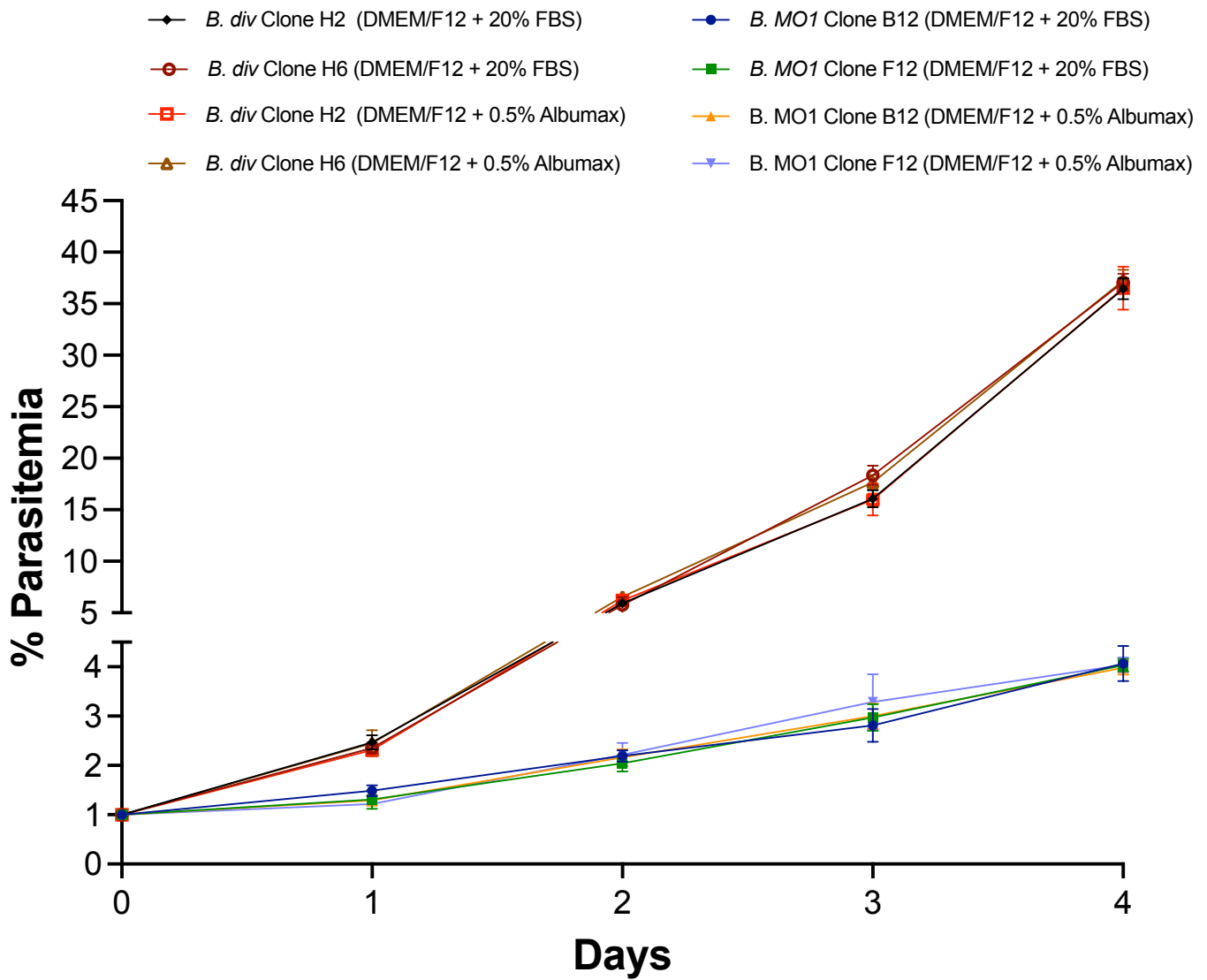
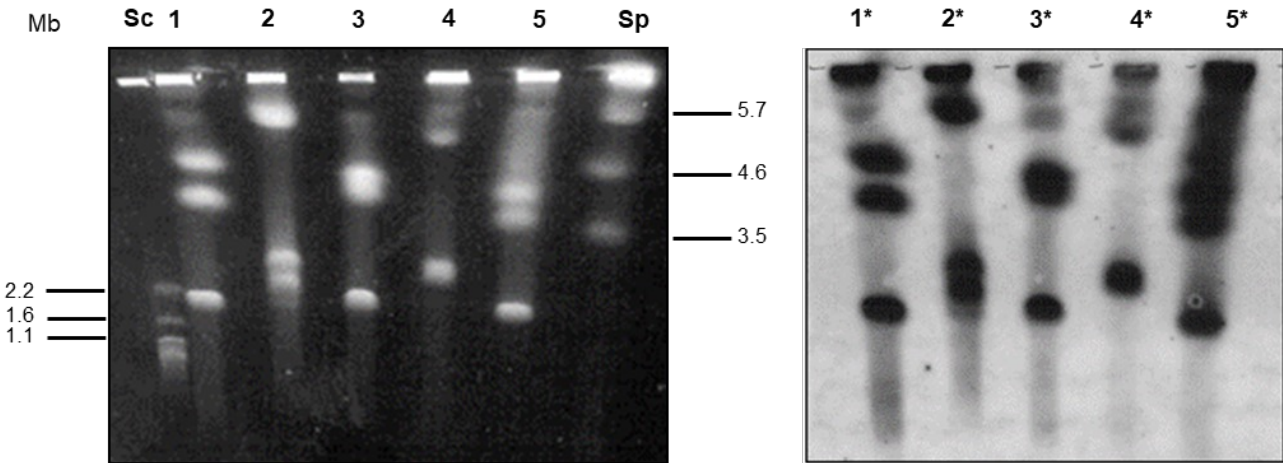


**Figure S1**

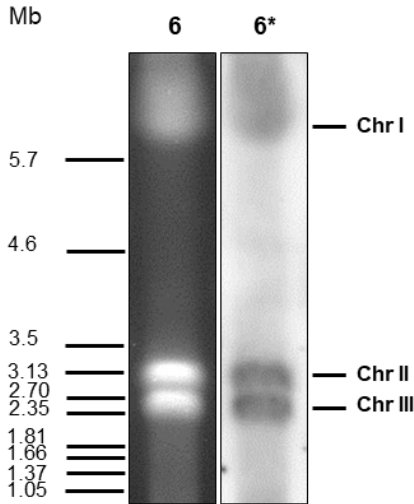


# Figure S2

**A**



**B**



SAMPLE	1	2	3	4	5	6
HOST	Bovine	Bovine	Human	Bovine	Bovine	Human
ISOLATE	5008B Manche (Fr)	6303E Puy de Dome (Fr)	Rouen87 Seine- Maritime (Fr)	Y5 Ireland	W8843 Scotland	Asturias Spain
ORIGIN						
Chr I (Mb)	4.8	5.7	4.7	5.0	4.6	5.7
Chr II (Mb)	4.5	2.8	4.1	2.9	3.7	3.13
Chr III (Mb)	2.2	2.3	2.2	2.9	2.2	2.7
GENOME SIZE	10.5	10.8	11.0	10.8	10.5	11.55

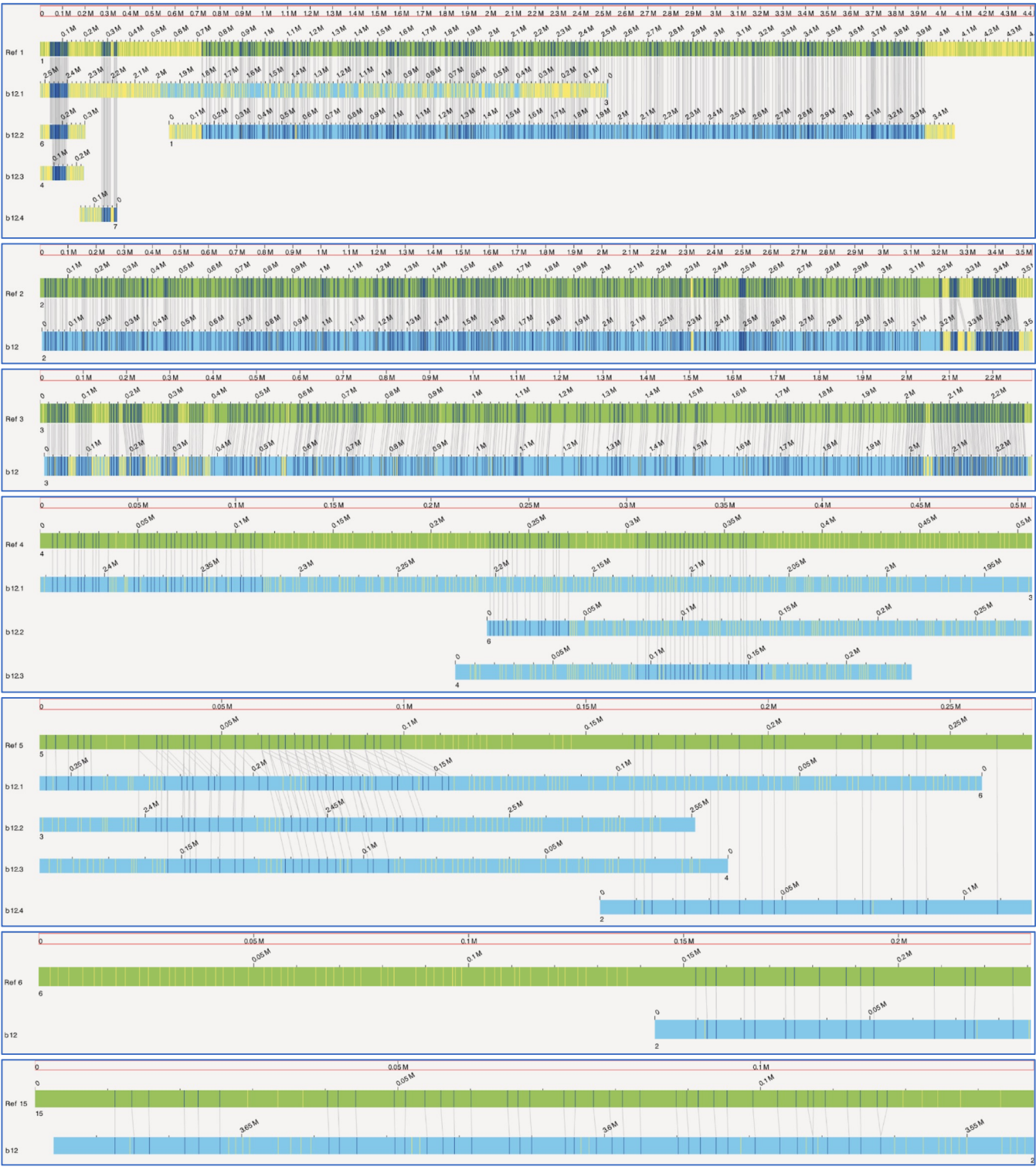
# Figure S3 A

## B. MO1 clone F12 assembly vs. optical map



# Figure S3 B

## B. MO1 clone B12 assembly vs. optical map



# Figure S4

## Syntenic plot (clone F12, clone B12, parental *B. MO1*)

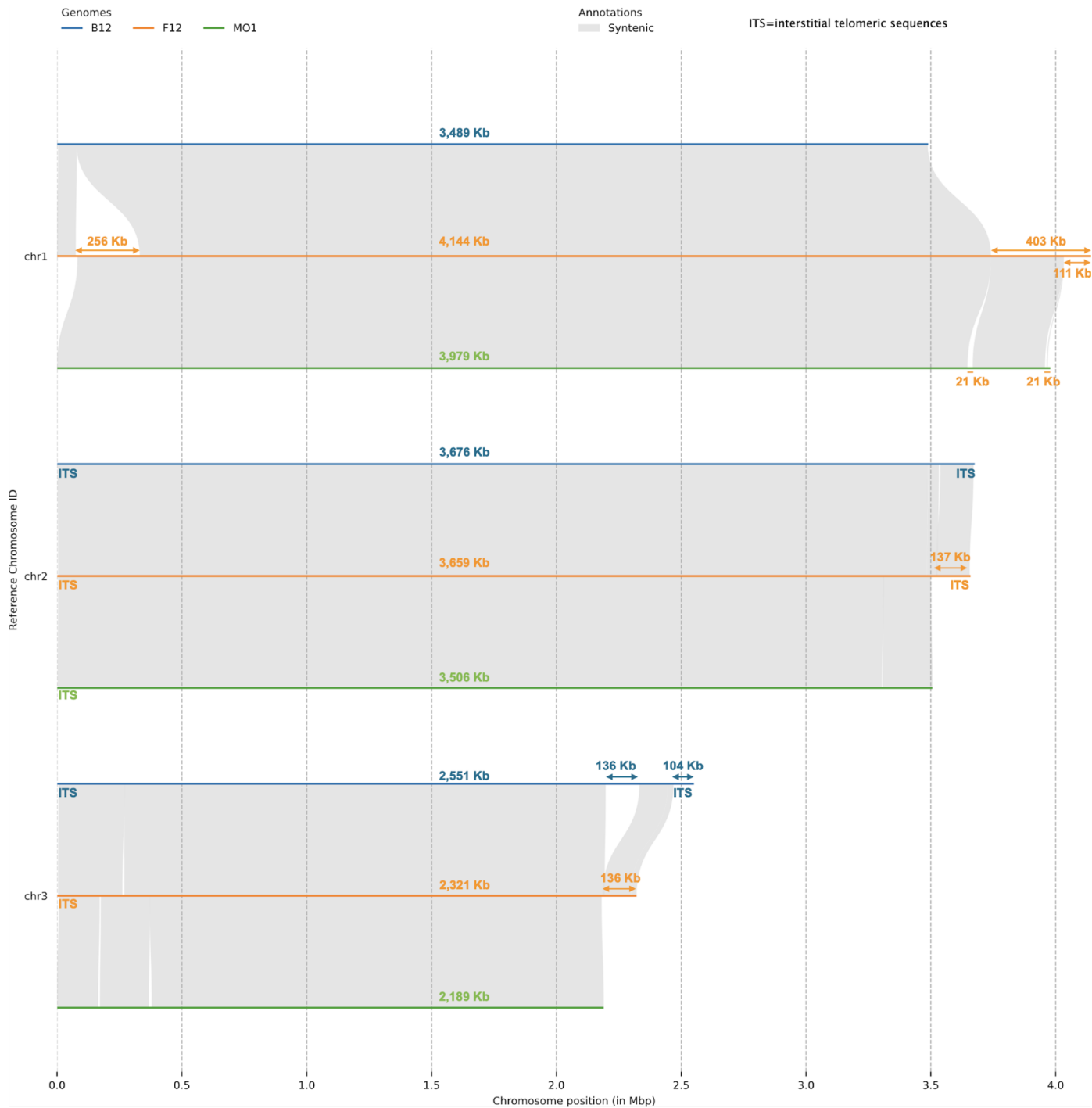


Figure S5 A

**B. MO1 clone F12 vs clone B12**

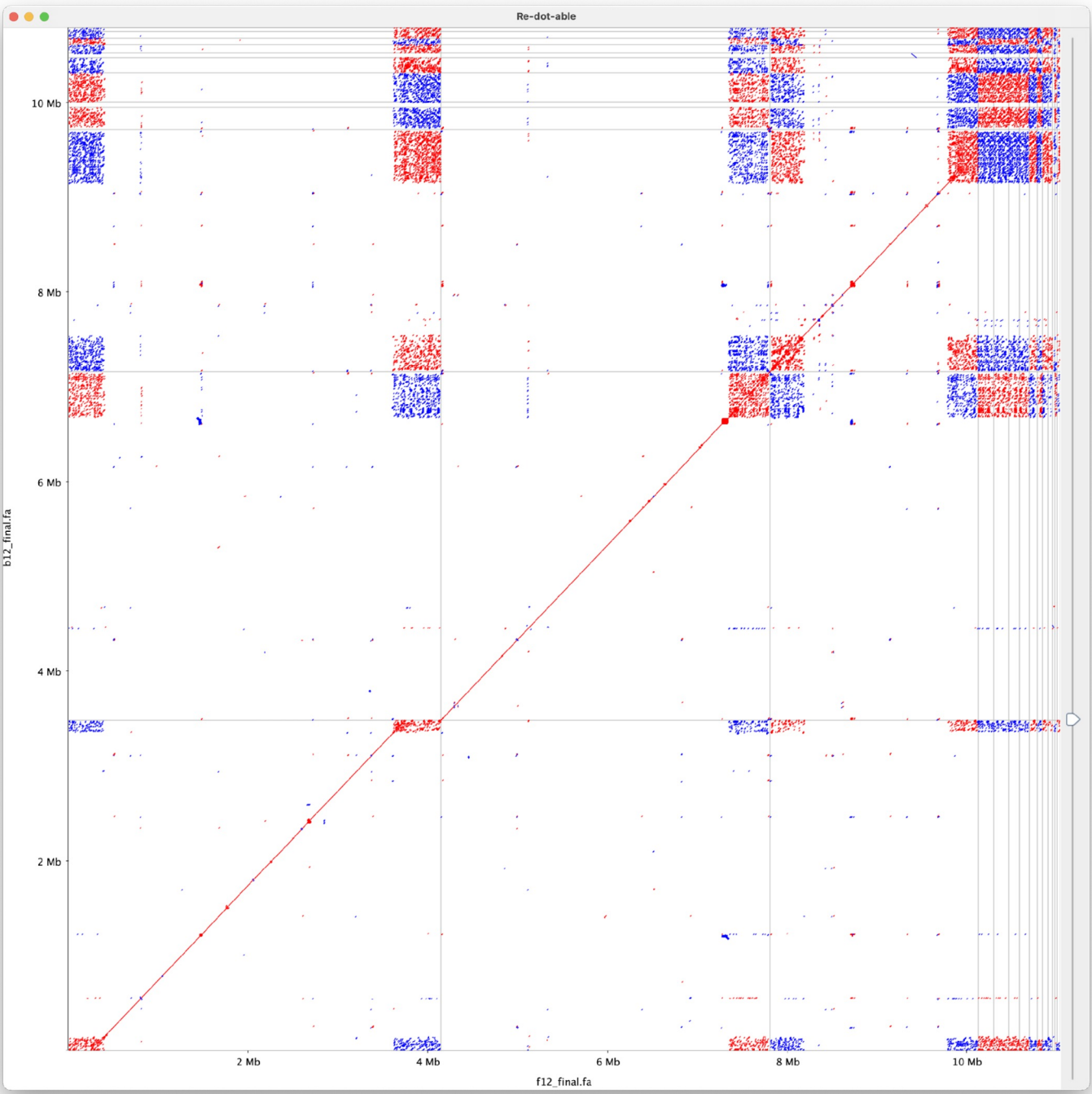
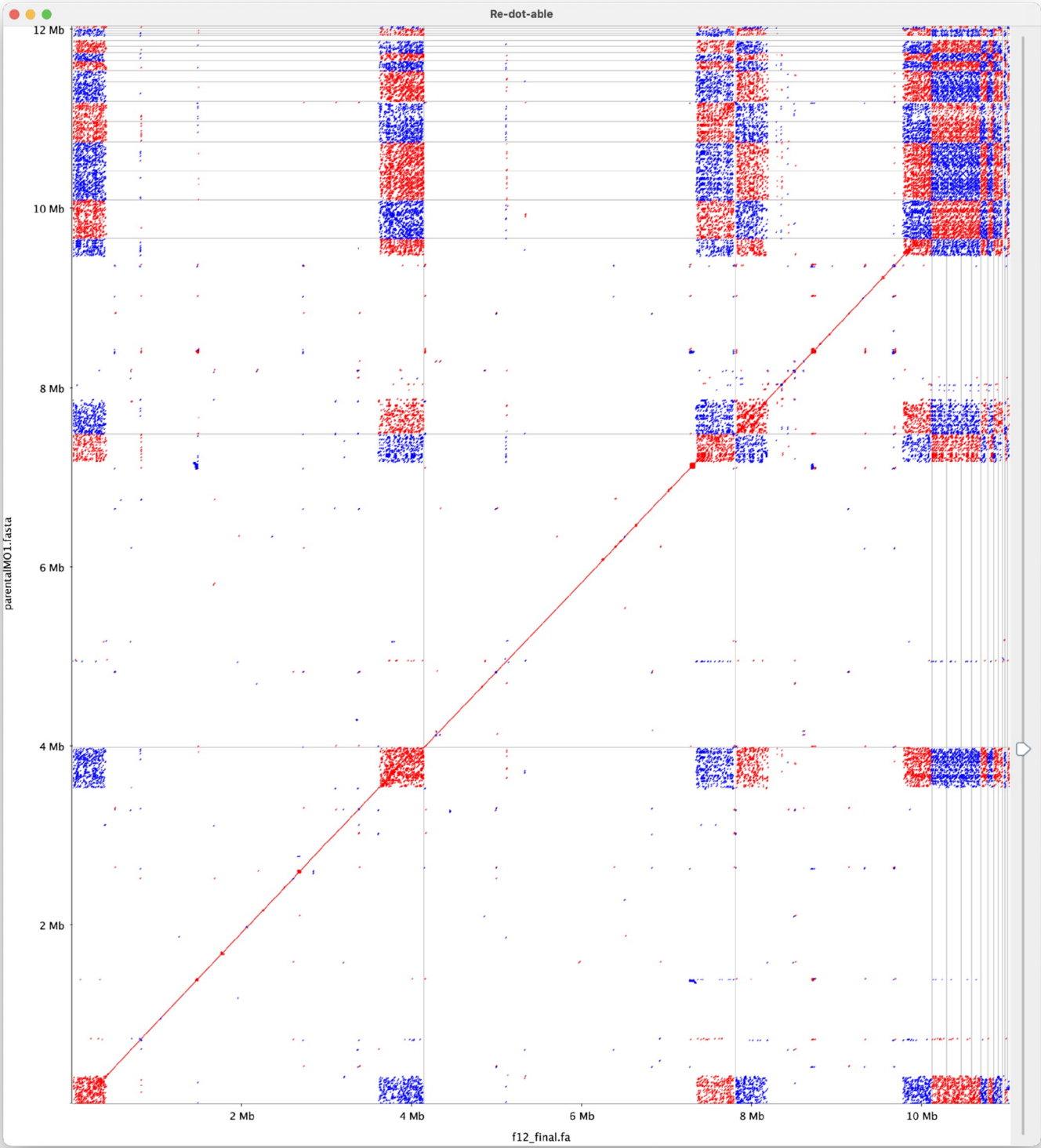


Figure S5 B

**B. MO1 clone F12 vs parental B. MO1**

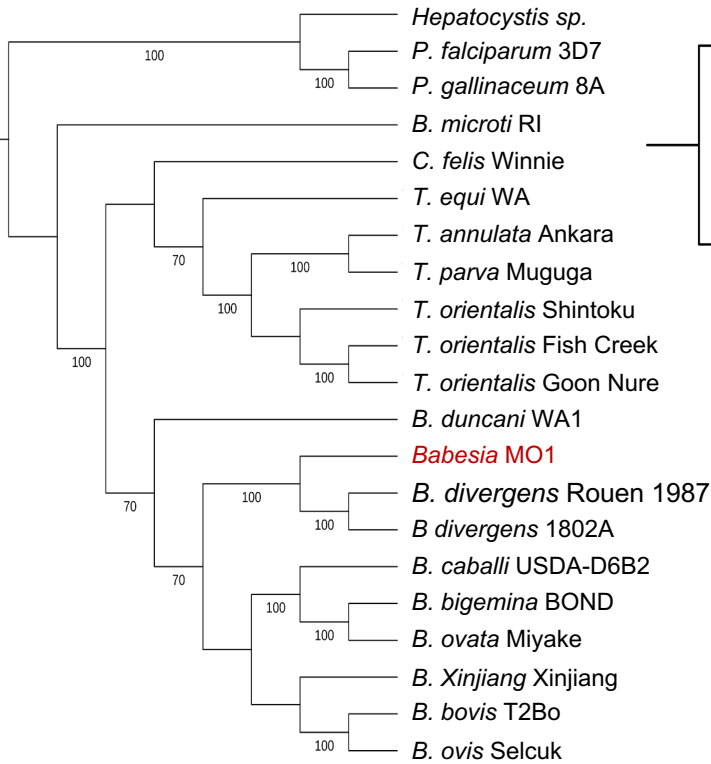


**Figure S6**

Supertree phylogenomic

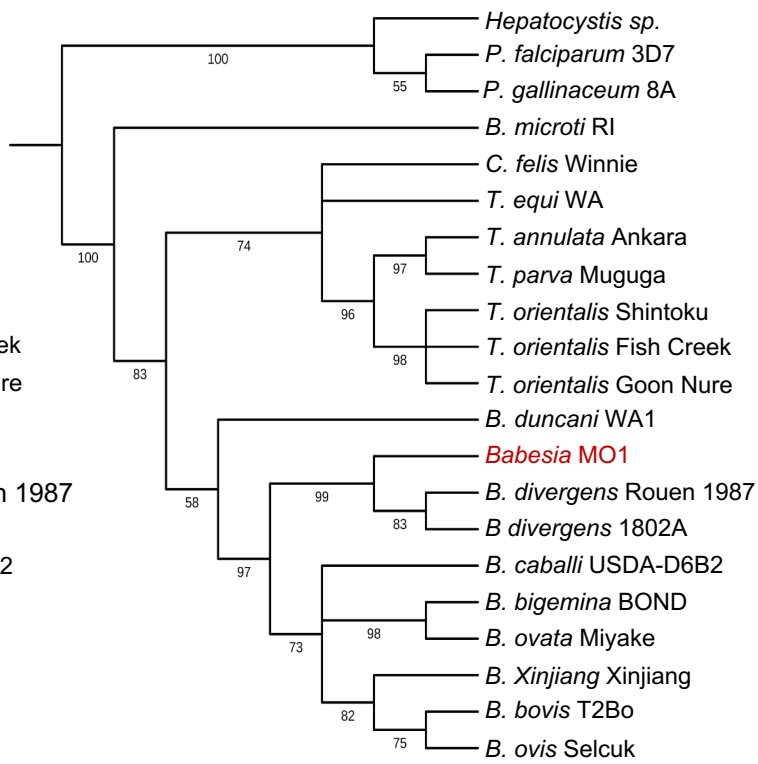
**A.**

MRP



**B.**

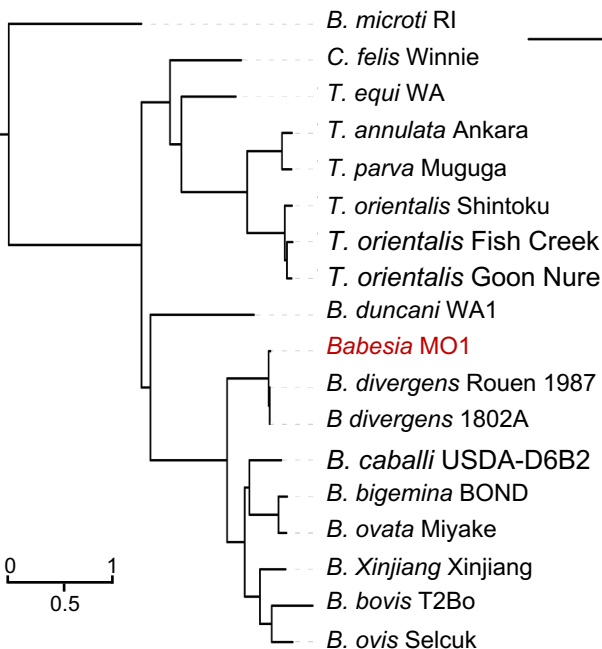
SuperTriplets



Supermatrix Phylogenomic Analysis

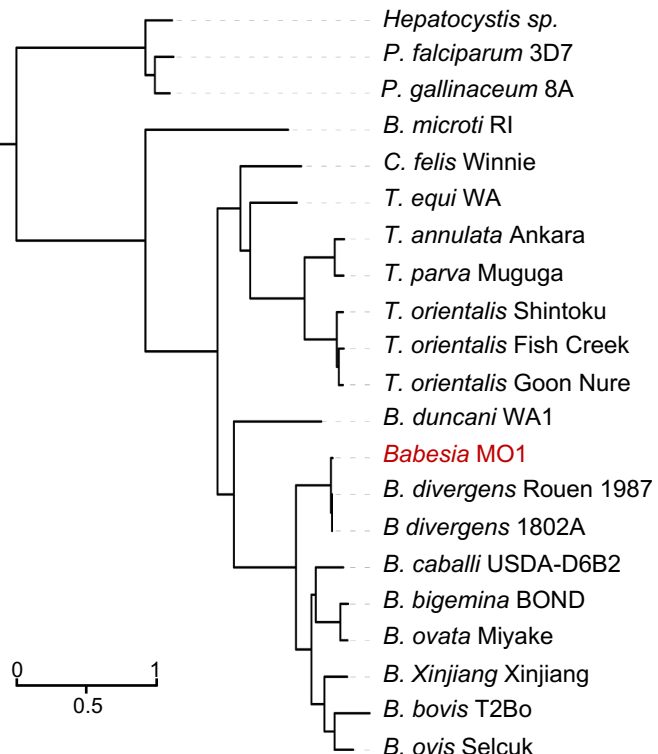
**C.**

Dataset #1



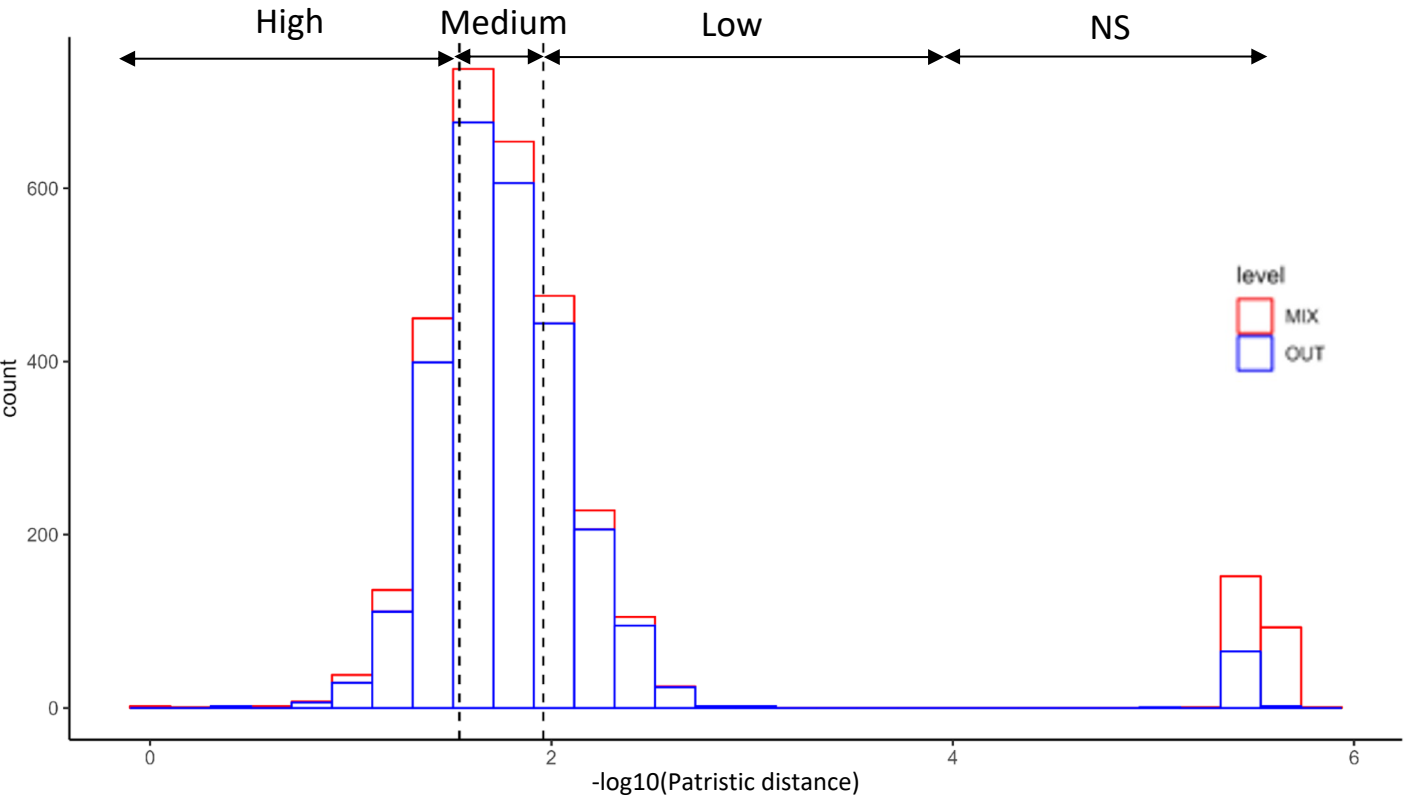
**D.**

Dataset #2

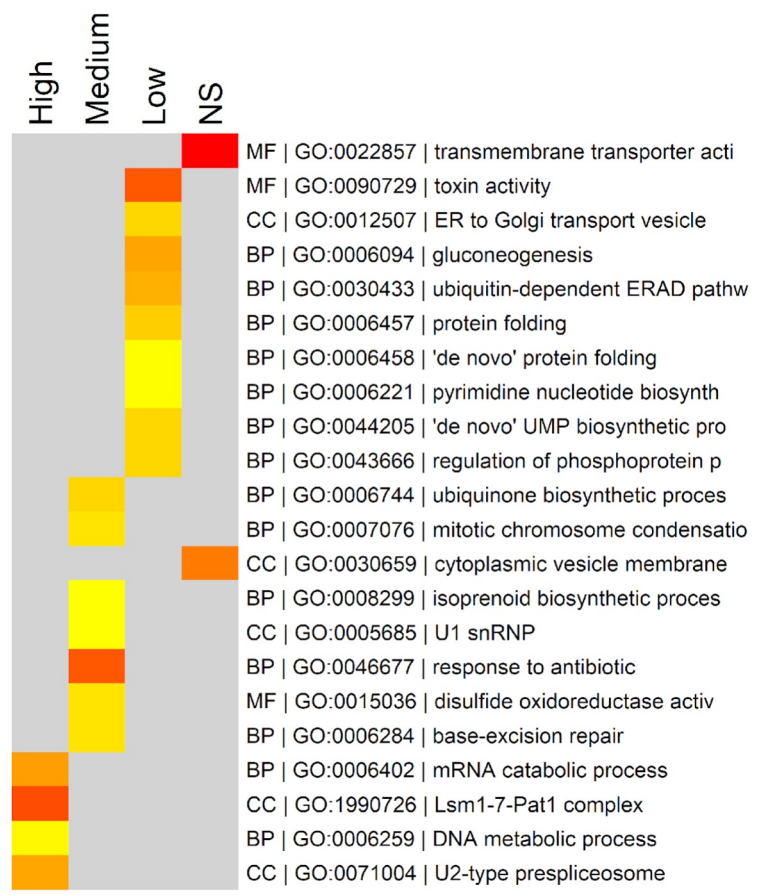


# Figure S7

**A.**

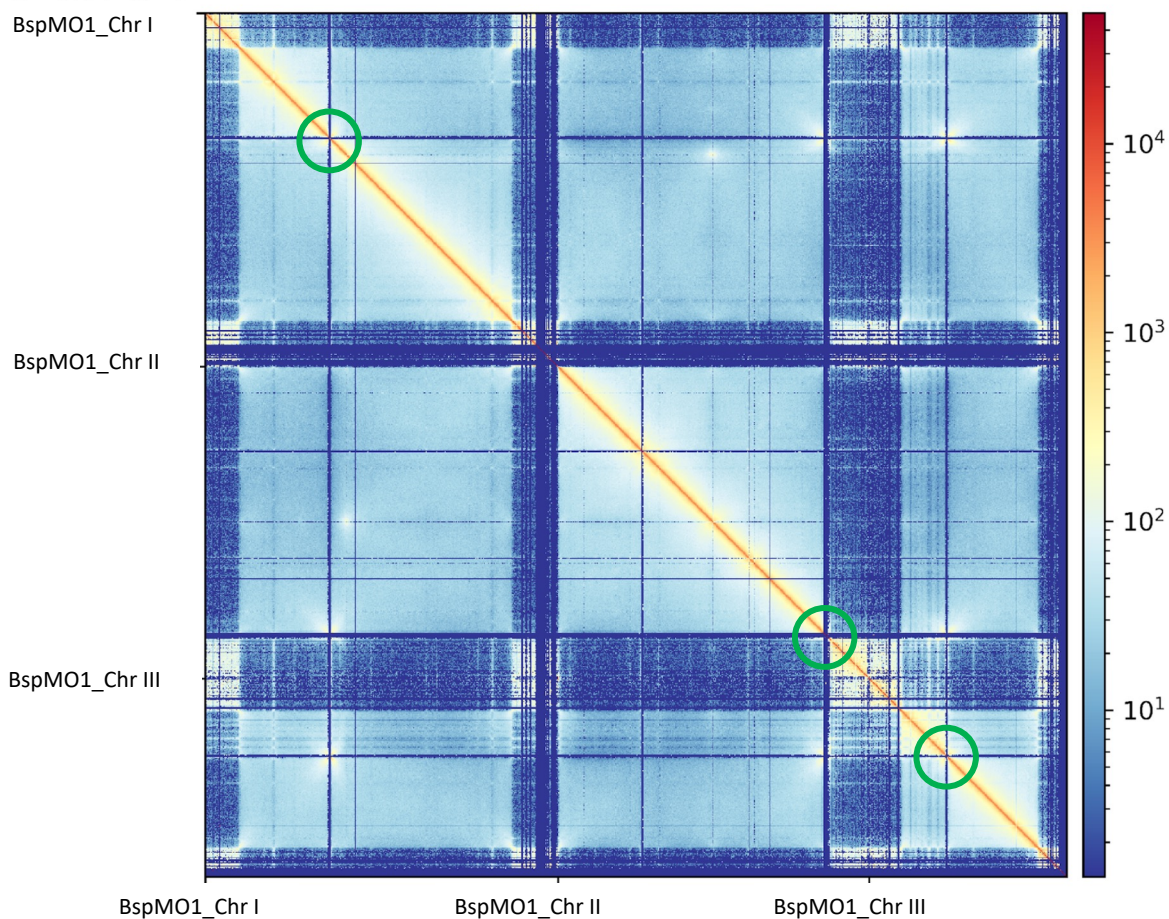


**B.**

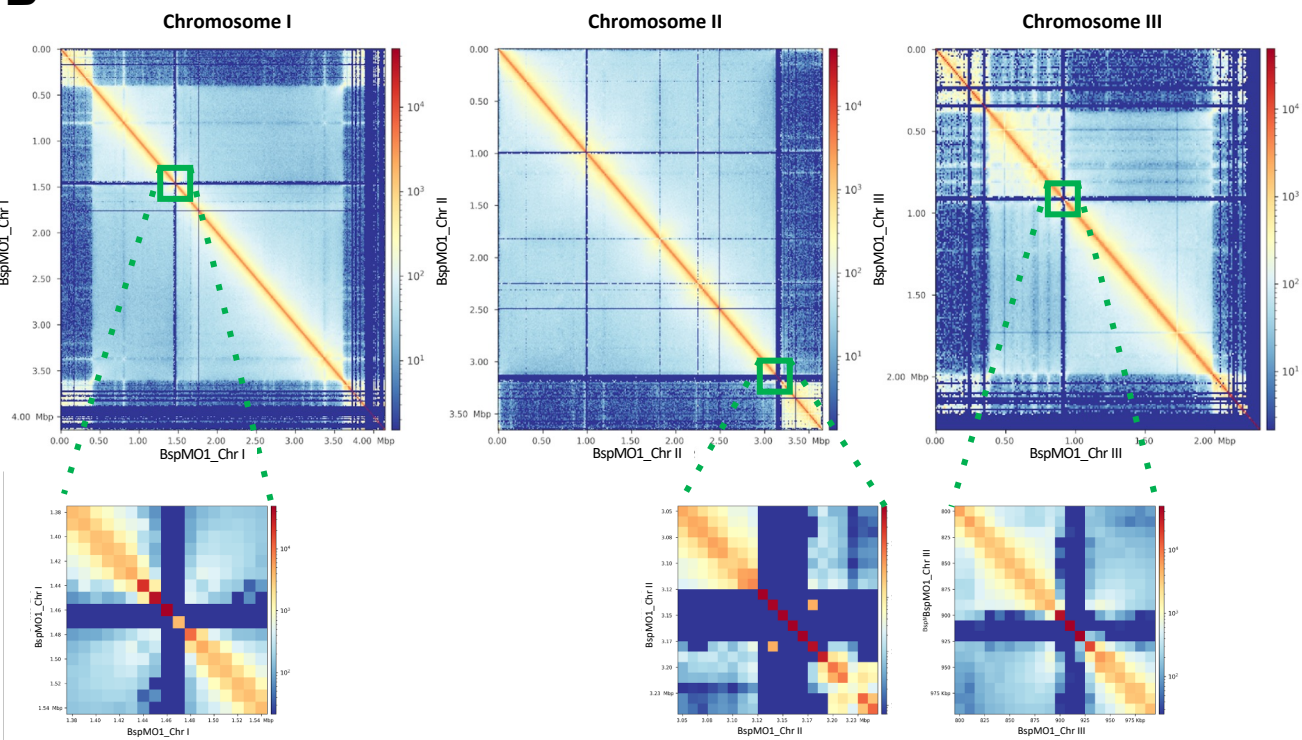


**Figure S8**

**A** **B. MO1 clone F12 contact map**

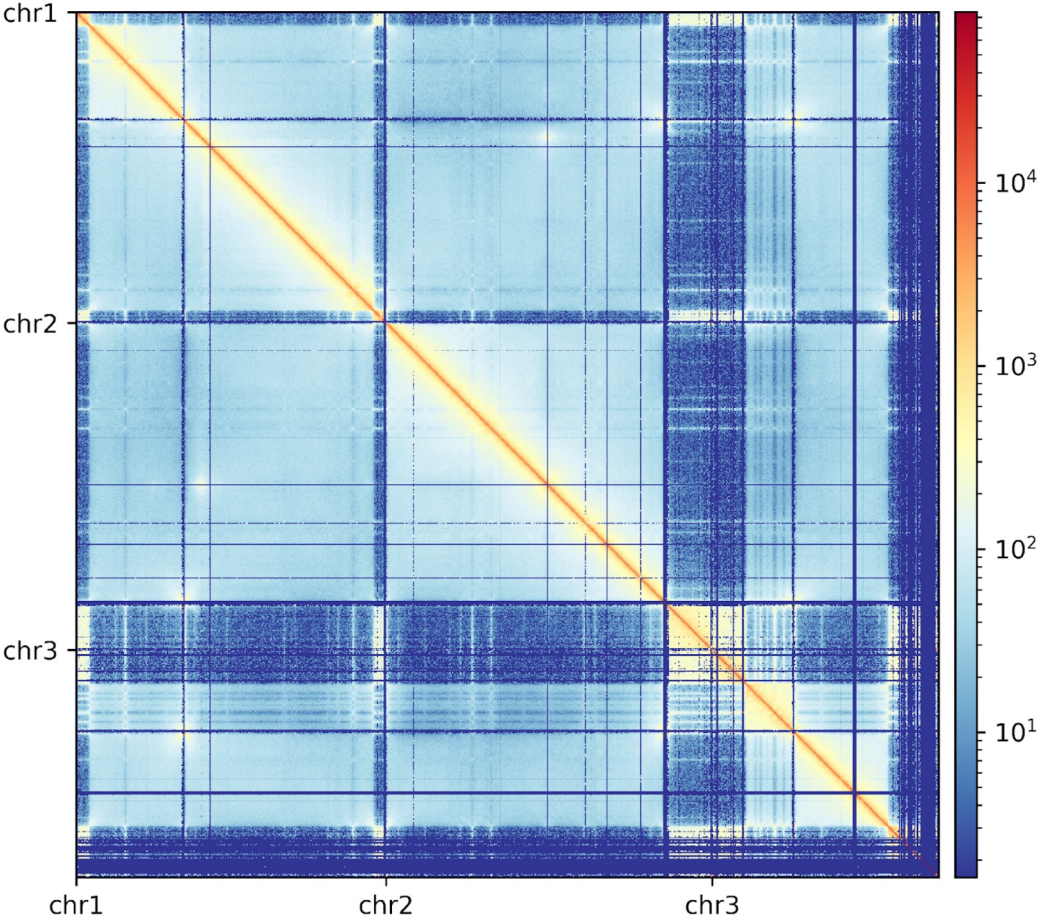


**B**

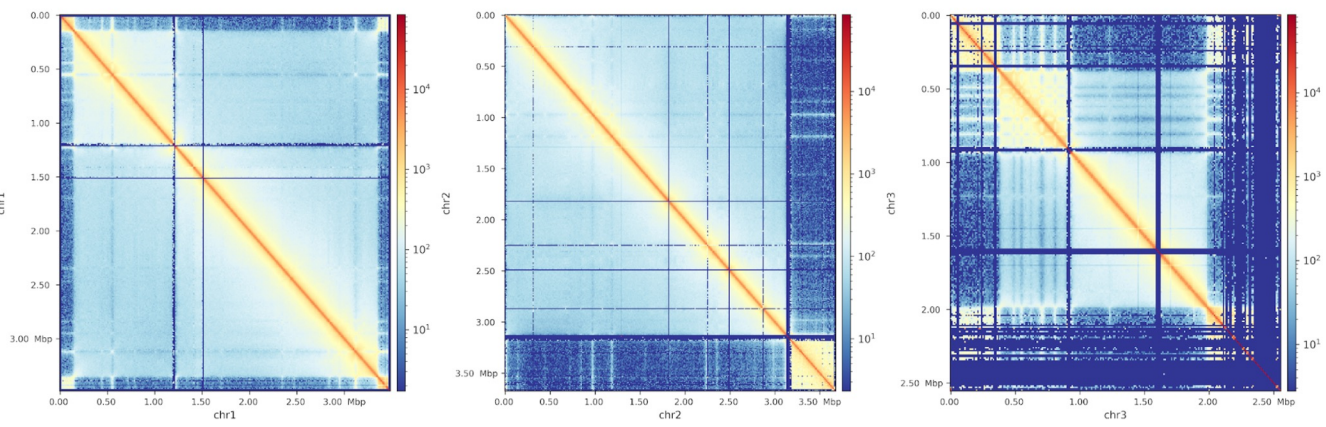


**Figure S9**

**A** **B. MO1 clone B12 contact map**

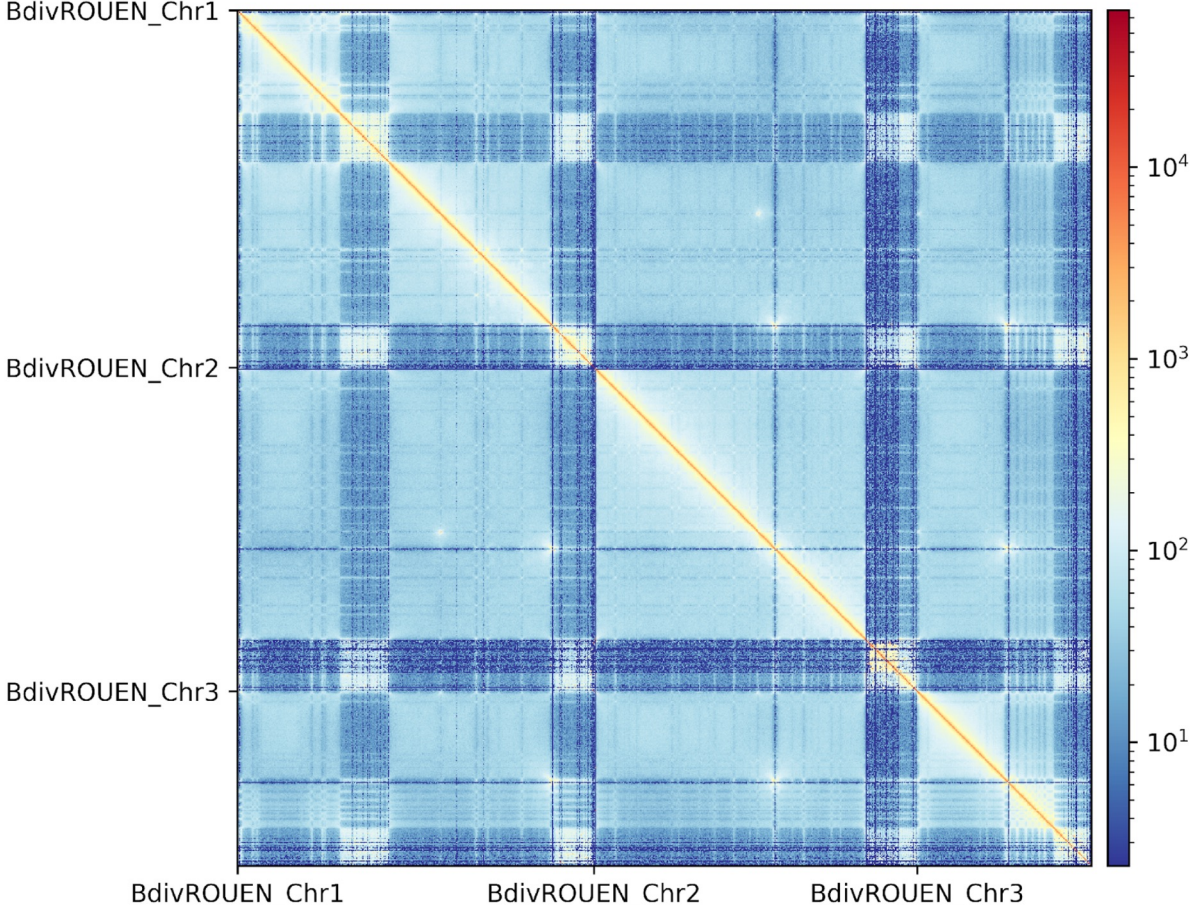


**B**

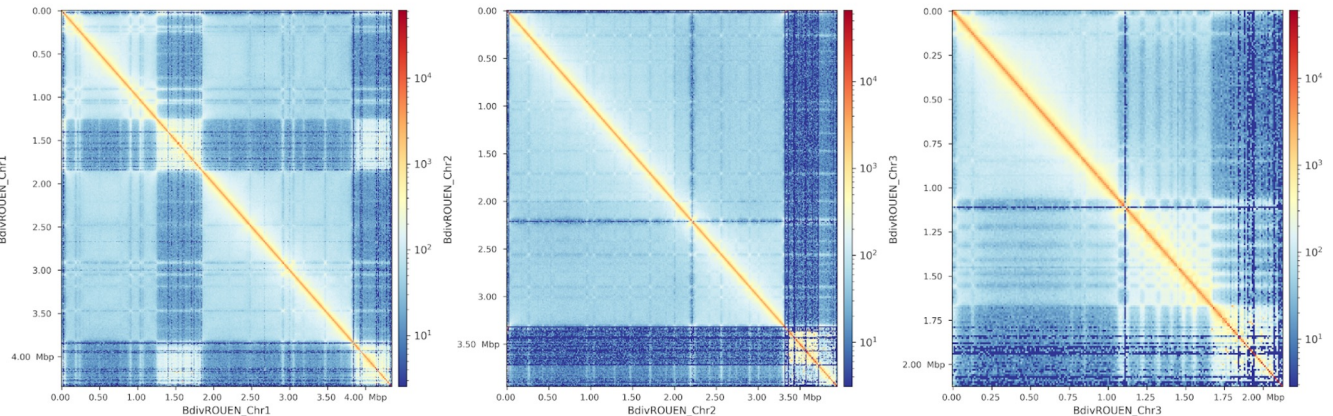


**Figure S10**

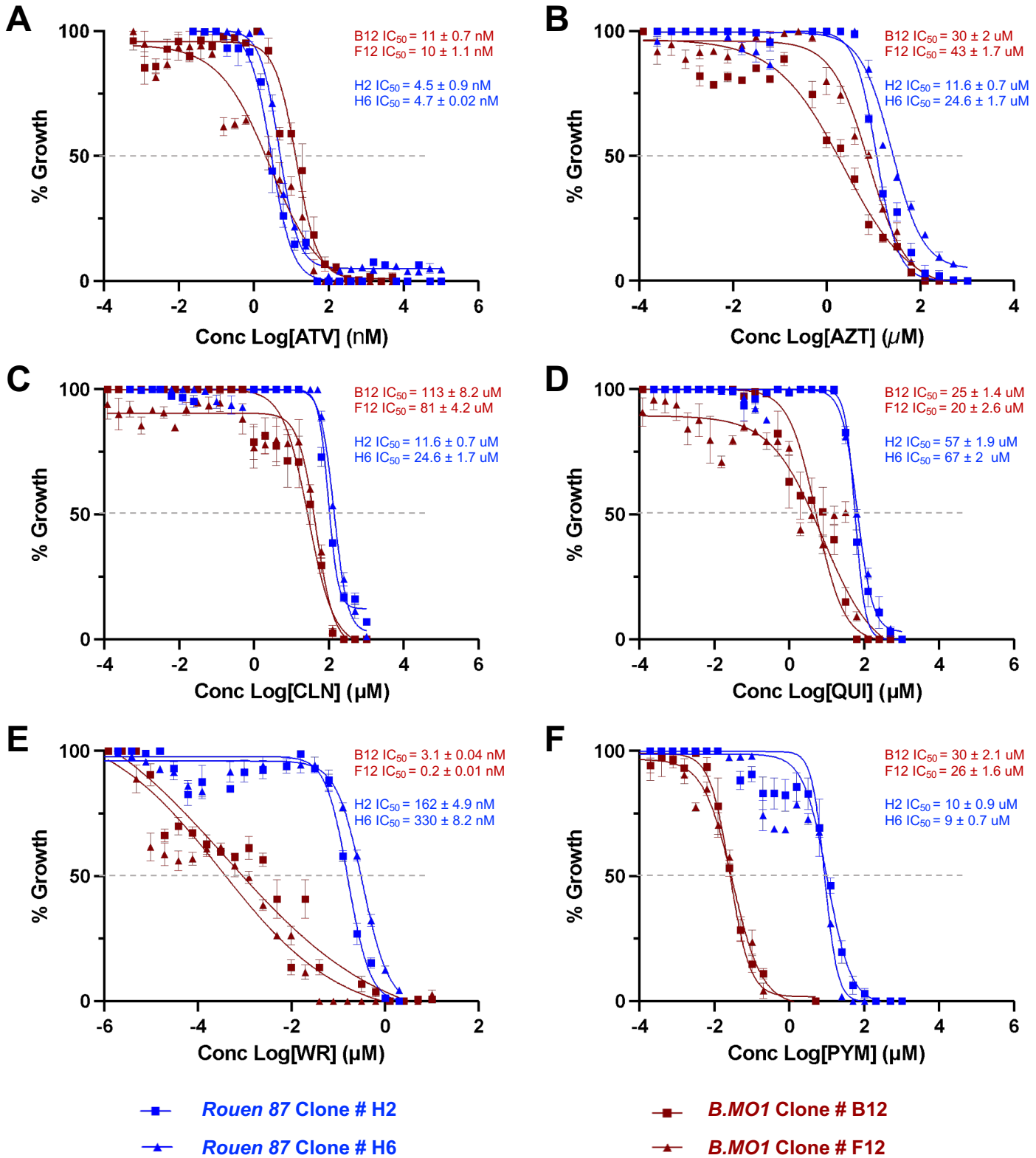
**A** *B. divergens* ROUEN 87 contact map



**B**



# Figure S11



# Figure S12

# DHFR-TS

<i>Babesia</i> M01	1	---MVANYEGCGGLEIYVATAWN	RAIGFKNDIPWPHIREDFRFLARGTSYVDPEVKAK	NPDLMNVVVMGRKT	69
<i>B. divergens</i> Rouen	87	1 ---MVANYEGCGGLEIYVATAWN	RAIGFKNDIPWPHIREDFRFLARGTSYVDPEVKAK	NPDLMNVVVMGRKT	69
<i>P. falciparum</i> 3D7	1	mMeQVCDVFDIYAICACCKVESK [14]	RGLGNKGVLPWKCNSLDMKYFCAVTTYVNESKYEK [22]	SKKLQNVVVMGRTS	108
<i>P. falciparum</i> HB3	1	mMeQVCDVFDIYAICACCKVESK [14]	RGLGNKGVLPWKCNSLDMKYFCAVTTYVNESKYEK [22]	SKKLQNVVVMGRTN	108
<i>B. duncani</i> WA1	1	-MdLSTKYEGFSPVIMFVATDVK	GGIGFEGKI PWPHPIMDFSFFFRGT CYVEPEILNR	YPEIQNVVIFGRKT	71
<i>B. microti</i>	1	-M-----GMYKVCISYASTPN	GGIGNEGKLPWKTLPRDLKHLQDITAYGPD----	-HSVQNVMVIMGRKT	59
<i>Babesia</i> bovis	1	---MSNSYEGCGDLTIFVAVALN	KVIGHKNQIPWPHITHDFRFLRNGTTYIIPPEVLSK	NPDIQNVVIFGRKT	69
<i>Babesia</i> M01	70	YESIPASSRPLKNRINNVLSRNVK--EI-PGCLVFPSSLTEAIRHVRSSVPHYKIFCLGGGEVYREVMENDLCDRIYLTRL			146
<i>B. divergens</i> Rouen	87	70 YESIPBSSRPLKNRINNVLSRNVK--DI-PGCLVFPSSLTEAIRHVRSSVPHKIFCLGGGEVYREVMENDLCDRIYLTRL			146
<i>P. falciparum</i> 3D7	109	WESIPKPKFKPLSNRINNVILSRTLKkeDFgEDVYIINKVEDLIVLL-GKLNYYKCFIIGGSSVVYQEFLEKLLIKKIYFTRI			187
<i>P. falciparum</i> HB3	109	WESIPKPKFKPLSNRINNVILSRTLKkeDFgEDVYIINKVEDLIVLL-GKLNYYKCFIIGGSSVVYQEFLEKLLIKKIYFTRI			187
<i>B. duncani</i> WA1	72	YESIPANVFPLKRRHNVIIISRTL--HV-PGASVFNNDLALRWVNESKRHFHTIIMGGVEIYKLALETGLVEKIYLTRI			148
<i>B. microti</i>	60	YISIPKSSRPLKDRINIVLSSVS--DFgDGVIAAKSMQDAFDKL-EKMKFNKIFIIGGSSVYKEAYDLGIVEKVYVTRV			136
<i>Babesia</i> bovis	70	YESIPKASLPLKNRINNVILSRTVK--EV-PGCLVYEDLSTAIRDLRANVPHNKIFILGGSSFLYKEVLNGLCDKIYLTRL			146
<i>Babesia</i> M01	147	TEEYEGDVFPEIPD-TFQITGISKTFSTDYVTFDFVVYKVG	AIK-EKRPPTFDELLLT	GGELTVPTPKYV	216
<i>B. divergens</i> Rouen	87	147 TEEYEGDVFPEIPD-TFQITGISKTFSTDYVTFDFVVYKVG	AIK-EKRPPTFDELLLT	GGELTVPTPKYV	216
<i>P. falciparum</i> 3D7	188	NSTYECDFVFPPEINEEYQIISVSDVYTSNNTLDFI IYKKTN [30]	MKKLTFEYKNVDYKYN [24]	KNKNSIHPNDFQ	313
<i>P. falciparum</i> HB3	188	NSTYECDFVFPPEINEEYQIISVSDVYTSNNTLDFI IYKKTN [30]	MKKLTFEYKNVDYKYN [24]	KNKNSIHPNDFQ	313
<i>B. duncani</i> WA1	149	GNEFKADRFPPDITK-DFEIVGISQTFGDFTFDFVIYEKKG	LNQLDHVTKSFDEMLLT	GKPLKTVAPLYK	219
<i>B. microti</i>	137	NKELPADTFVTSVPP-IFEIVGISRTFSYNDIPDFI IYMLKD	SRATSNVCVDIDDYLLT	EHEIRDFFKYQFK	207
<i>Babesia</i> bovis	147	NKEYPGDTYFPDIPD-TFEITAI SPTFSTDFVSYDFVIYERKD	CKT-VFPDPDFDQLLMT	GTDISVPKPKYV	216
<i>Babesia</i> M01	217	ACPSVKVRYHQEFQYLDIIADVLSTGTLKPNRTGVDGISKFGYQMHFDLSQSFP LLTTKKVALRSIIEELLWFIRGSTNG			296
<i>B. divergens</i> Rouen	87	217 ACPSVKVRYHQEFQYLDIIADVLSTGTLKPNRTGVDGISKFGYQMHFDLSQSFP LLTTKKVALRSIIEELLWFIRGSTNG			296
<i>P. falciparum</i> 3D7	314	IYNSLKYKYHPEYQYLNIIYDIMMGNKQSDRTGCVGLSKFGYIMKFDLSQYFP LLTTKKLFLRGIIEELLWFIRGTE			393
<i>P. falciparum</i> HB3	314	IYNSLKYKYHPEYQYLNIIYDIMMGNKQSDRTGCVGLSKFGYIMKFDLSQYFP LLTTKKLFLRGIIEELLWFIRGTE			393
<i>B. duncani</i> WA1	220	ACPNIIRIRYHQEFQYLDIIADVLSTGTLKENRTGIDALS KFGYQMRFDLSQSFP LLTTKKVFLRGIIEELLWFIRGSTNG			299
<i>B. microti</i>	208	ALPNIIRKHEEIQYLDIIADVLSSGENDRTGCVGLSKFGYKMEFNLDESFP LLTTKKVFFKGIIEELLWFIRGDTSG			287
<i>Babesia</i> bovis	217	ACPGVRIIRNHEEFQYLDIIADVLSSGVLKPNRTGTDAYS KFGYQMRFDLSRSFP LLTTKKVALRSIIEELLWFIRKGSTNG			296
<i>Babesia</i> M01	297	NELLDKNVRIWELNGARSFLDNLGFTDREEHDLGPVYGFQWRHFGAKYLDMHADYSGQGI DQLKVVINKIKTNPNDRRLI			376
<i>B. divergens</i> Rouen	87	297 NELLDKNVRIWELNGARSFLDNLGFTDREEHDLGPVYGFQWRHFGAKYLDMHADYSGQGI DQLKVVINKIKTNPNDRRLI			376
<i>P. falciparum</i> 3D7	394	NTLNKNVRIWEANGTREFLDNKRLFHREVNLDGPIYGFQWRHFGAEYTNM YDNENKGV DQLKNIINLIKNDPSTRRLI			473
<i>P. falciparum</i> HB3	394	NTLNKNVRIWEANGTREFLDNKRLFHREVNLDGPIYGFQWRHFGAEYTNM YDNENKGV DQLKNIINLIKNDPSTRRLI			473
<i>B. duncani</i> WA1	300	NDLLKKNVRIWELNGKRSFLDNLGFYNREEHDLGPVYGFQWRHFGATYTMHADYKGGI DQLVNVINSIKNDPNSRRLI			379
<i>B. microti</i>	288	KILLEKGVRIWEKNGTREFLDSVGLNERKEHDLGPIYGFQWRHFGAEYKCDTNYTGGI DQLMEADIKIKNDPNSRRII			367
<i>Babesia</i> bovis	297	NDLLAKNVRIWELNGRRFLDKNGFTDREEHDLGPIYGFQWRHFGAEYLDMHADYTGKGI DQLAEIINRIKTNPNDRRLI			376
<i>Babesia</i> M01	377	ICSWNVADLSKMALPPCHCLYQFYVRDGLKSLCMLHQQRCDLGLGV PFNIIASYSILTAMIAQVCGGLKGFVHNLADAHVY			456
<i>B. divergens</i> Rouen	87	377 ICSWNVADLSKMALPPCHCLYQFYVRDGLKSLCMLHQQRCDLGLGV PFNIIASYSILTAMIAQVCGGLKGFVHNLADAHVY			456
<i>P. falciparum</i> 3D7	474	LCAWNVDLDQMALPPCHILCQFYVFDGKLS C IMYQRS CDLGLGV PFNIIASYSIFTHMIAQV CNLQPAQFIHVLGNHAVY			553
<i>P. falciparum</i> HB3	474	LCAWNVDLDQMALPPCHILCQFYVFDGKLS C IMYQRS CDLGLGV PFNIIASYSIFTHMIAQV CNLQPAQFIHVLGNHAVY			553
<i>B. duncani</i> WA1	380	VCSWNVSDVPKMALPPCHLLFQFYVAQGLKSLCMLHQQRCDLGLGV PFNIIASYSILTAMIAQV CNLQVGFVHNLADAHY			459
<i>B. microti</i>	368	VCSWNVNDLSKMALPPCHCLFQFYVSDGRLSC IMYQRSADVGLGV PFNIIASYSILLTMIAQV CALRPGK FVHVLGNHAVY			447
<i>Babesia</i> bovis	377	VCSWNVSDLKKMALPPCHCFQFYVSDNGLKSLCMMHQQRCDLGLGV PFNIIASYSILTAMVAQVCGGLKGFVHNLADAHY			456
<i>Babesia</i> M01	457	IDHVDAMKLQMSRIYPYFPFQKLNPAINIEDFTIDDIIVQNYVSHPPIKMAMSA	511		
<i>B. divergens</i> Rouen	87	457 VDHVDAMKLQMSRIYPYFPFQKLNPAINIEDFTIDDIIVQNYVSHPPIKMAMSA	511		
<i>P. falciparum</i> 3D7	554	NNHIDSLKIQLNRIYPYFPFQKLNPDIKNIEDFTISDFTIQNYVHHEKISMDMAA	608		
<i>P. falciparum</i> HB3	554	NNHIDSLKIQLNRIYPYFPFQKLNPDIKNIEDFTISDFTIQNYVHHEKISMDMAA	608		
<i>B. duncani</i> WA1	460	VNHIDALKEQLTRVYYPFLLKLNKDITIDCFKLEDDVKEVGYSCHPTIKMEMAA	514		
<i>B. microti</i>	448	KTHITALTKQIQRIYPYFPFQKLNAQVKRIEDFVPSDINLLCYTCHPTIKMDMAA	502		
<i>Babesia</i> bovis	457	VDHVDAVTTQIARIYPYFPFRLRNPDIRNIEDFTIDDIIVVEDYVSHPPIMPAMSA	511		