Table S1. *B. pseudofirmus* OF4 mobile element related gene content[a]

Chromosome			pBpOF4-1			pBpOF4-2		
Locus Tag	Type	IS (family/group)	Locus Tag	Type	IS (family/group)	Locus Tag	Type	IS (family/group)
00230	R,Ig		19959	T	IS116/IS110/IS902	21449	T,Ig	IS116/IS110/IS902
00875	T		20034	T	IS200 family	21554	T	
00880	T		20039	T	IS605 family	21579	Ig	IS650-01
01380	T		20049	T,Ig		21604	T	IS4/IS641-02
01385	T		20054	T,Ig		21729	R,Ig	
01465	T		20059	T		21794	R	
01470	T		20139	R,Ig		21799	R,Ig	
01760	En		20144	R,Ig		21819	T	
02705	T	IS653-01	20174	T		21824	R,Iv,Res	
03680	T,Ig		20179	T	IS204/IS1001/IS1096/IS1165	21974	En	
03690	T,Ig	IS116/IS110/IS902	20209	T	IS4/IS641-02	21989	R,Iv	
03730	En		20219	In,RT	group II intron	22024	R,Iv	
03755	T	IS4/IS641-02	20224	RT,Ret	Bh.Int-03 (group II intron)			
03770	R,Ig		20229	RT,Ret	Bh.Int-03 (group II intron)			
03775	R,Ig		20244	T,Ig	IS116/IS110/IS902			
04275	Res		20274	T				
04310	En,Res		20524	T	IS643-02			
04420	R,Iv,Res		20529	T	IS643-02			
04550	R		20539	R,Ig				
04620	T	IS4/IS641-02	20659	RT,Ret	group II intron			
05240	En		20684	RT,M,In,Ret	Bh.Int-03 (group II intron)			
06065	T		20709	T	IS643-02			
06070	T		20714	T	IS643-02			
06175	En		20849	RT,Ret	group II intron			
06390	Res		20889	T				
06405	T		20949	T	IS605 family			
06430	T,R,Iv		20954	T	IS200 family			
06455	T		20989	T	IS116/IS110/IS902			
06485	T		20994	T	IS116/IS110/IS902			
06495	T		21004	T	IS116/IS110/IS902			
06500	T		21164	T				
07430	En	IS66	21339	R,Ig				

07525	T		21424	T	IS116/IS110/IS902
07530	T				
08130	En				
08855	T				
08860	T				
09820	T	IS653-01			
09825	T	IS653-01			
10075	T	IS4/IS641-02			
10640	T				
10805	Ig	ISBma2			
11875	En,Res				
11935	T				
11940	T				
12295	Ig				
13035	T	IS4/IS641-02			
13535	T	IS653-01			
14295	T				
14300	T				
14750	R,Ig				
15680	T	IS653-01			
16060	R,Ig				
16155	En				
16590	RT	group II intron			
17130	T,Ig	IS116/IS110/IS902			
17245	T				
19435	R,Iv				
19490	Ig				

a. Annotations from PGAAP were searched for Transposons (T), Recombinases (R), Reverse Transcriptases (RT), Maturases (M), Endonucleases (En), Invertases (Iv), Integrases (Ig), Introns (In), Retrons (Ret) and Resolvases (Res). For the chromosome, there were 59 total, representing 1.5% of the total ORFS; for pBpOF4-1, there were 33 total, or 11.3% of total ORFS; and for pBpOF4-2, there were 12 total, or 9.8% of total ORFS.

Table S2. Sigma factors in the *Bacillus pseudofirmus* OF4 chromosome[a]

A. Growth, motility, general stress	Accession #	Locus Tag
1. Sig70	YP_003426643	BpOF4_08465
2. Sig70 (rpoS/rpoD domains)	YP_003428371	BpOF4_17190
3. SigD	YP_003424974	BpOF4_00065
4. SigD2	YP_003426183	BpOF4_06145
5. SigD3	YP_003427689	BpOF4_09205
6. SigB	YP_003426789	BpOF4_09205
B. ECF		
7. SigC	YP_003427382	BpOF4_12185
8. SigC2	YP_003428211	BpOF4_16370
9. SigL	YP_003426015	BpOF4_05305
10. SigM	YP_003428452	BpOF4_17595
11. Sig V	YP_003428217	BpOF4_16400
12. SigW	YP_003426710	BpOF4_08800
13. SigX	YP_003427643	BpOF4_13500
14. SigY	YP_003427988	BpOF4_15235
15. SigZ	YP_003427375	BpOF4_12150
16. Sig54 (Fis)	YP_003426988	BpOF4_10215
17. Sig54 (Fis)	YP_003426213	BpOF4_06305
C. Sporulation		
18. SigE	YP_003425086	BpOF4_00625
19. SigF	YP_003427908	BpOF4_14835
20. SigG	YP_003425085	BpOF4_00620
21. SigK	YP_003427542	BpOF4_12995

a. Assignments are based on BLASTP analyses; the first listed Sig70 is the closest homologue of Sig70 from *B. subtilis*

Table S3. Two-component signaling systems of *B. pseudofirmus* OF4

	Accession # [YP_00342..]	Locus tag [BpOF4_..]	Protein	Predicted Function
Chromosome				
1. HK[a]	5408	02245	LytS	Cell autolysis
RR	5407	02240	LytR	
2. HK	5442	02415	AtoS	Acetolactate metabolism
RR	5441	02410	AtoC	
3. HK	5464	02525	CheA	Chemotaxis
RR	5462	02515	CheY	
4. HK	5628	03350	PhoP	Phosphate regulon
RR	5627	03345	PhoR	
5. HK	5817	04305	YhcZ	Nitrate respiration
RR	5816	04300	YhcY	
6. HK	6057	05515	DcuS	Dicarboxylate metabolism
RR	6058	05520	DcuR	
7. HK	6094	05700	DegS	Degradative enzyme reg.
RR	6093	05695	DegU	
8. HK[b]	6490	07700	KinE	Entry into stationary phase
9. HK	6515	07825	WalK	Peptidoglycan formation
RR	6516	07830	WalR	
10. HK	6828	09405	CitS	Citrate metabolism
RR	6827	09400	CitT	
11. HK	6943	09980	BceS	Cell wall antibiotic sensing
RR	6944	09985	BceR	
12. HK	6953	10030	DesK	Phospholipid desaturation
RR	6954	10035	DesR	
13. HK	6961	10070	---	----
RR	6960	10065	---	
14. HK[b]	7140	10975	KinE	Entry into stationary phase
15. HK	7193	11240	YkoH	----
RR	7192	11235	YkoG	
16. HK	7230	11425	CesS	Secretion stress
RR	7229	11420	CesR	
17. HK	7257	11560	LiaS	Cell wall stress
RR	7258	11565	LiaR	
18. HK[b]	7306	11805	KinA	Sporulation
19. HK[b]	7363	12090	---	GGDEF domain
20. HK	7410	12325	---	---
RR	7409	12320	---	
21. HK	7441	12490	YufL	Citrate/Malate metabolism
RR	7440	12485	YufM	
22. HK	7537	12970	YycF	Cell wall stress
RR	7538	12975	YvrG	
23. HK[b]	7549	13030	---	---
24. HK	7551	13040	---	Autolysin regulation
RR	7552	13045	---	
25. HK[b]	7700	13785	---	---
26. HK	7781	14190	YclJ	---
RR	7782	14195	YclK	---
27. HK[b]	7788	14235	---	
28. HK	7848	14535	---	---
RR	7847	14530	---	
29. HK	7954	15065	ResE	Respiration
RR	7953	15060	ResD	
30. HK[b]	8549	18080	NtrB	Nitrogen metabolism
31. HK[b]	8550	18085	KinA	Sporulation
32. HK	8558	18125	DcuS	Citrate/malate
RR	8557	18120	DcuR	
33. HK	8629	18480	---	---
RR	8630	18485	---	
Plasmid pBpOF4-01				
34. HK	8949	20299	----	---
RR	8950	20304	---	

35.	HK	8982	20474	ResE	Respiration
	RR	8983	20479	ResD	

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a. HK=sensor histidine kinase; RR=response regulator; **b.** No RR identified, **c.** --- indicates no proposed protein and/or functional designation.

Table S4. Chemotaxis signaling sensors of *B. pseudofirmus* OF4[a]

	Protein Name	Uniprot #	Tag	Amino acid (aa)	TMs	Motif	Homologue of *B. halodurans* C-125
A. Mcp and TarH							
1.	TarH1	D3G0X0	BpOF4_19984	660	2	Cache_1, marine_sort_HK, HAMP, MA	Q9K617(BH3915), Identity 33.0% Q9KFC0 (BH0565), Identity 36% (271aa)
2.	TarH2	D3FZJ3	BpOF4_05865	659	2	Cache_2, marine_ HAMP, MA	Q9KFC0 (BH0565), Identity 31% (385aa)
3.	TarH3	D3FZ89	BpOF4_14545	493	5	MA, TarH	Q9KCR0 (BH1509), Identity 47.0%
4.	TarH4	D3G0G8	BpOF4_06925	431	2	HAMP, MA, TarH	Q9K6G1 (*mcpA*, BH3768), Identity 56.0%
5.	TarH5	D3FQ85	BpOF4_07495	579	2	Cache_1, HAMP, Tar, MA	Q9KAL2 (BH2275), Identity 38.0% Q9KBU7 (*mcpC*, BH1827), Identity 34.0%
6.	TarH6	D3FW63	BpOF4_02640	580	2-3	MA, TarH	Q9KEH6 (BH0876), Identity 29.0%(367aa)
7.	TarH7	D3FYY8	BpOF4_04785	556	2	HAMP, MA, TarH	no hit
8.	TarH8	D3FUJ9	BpOF4_10580	565	2	CHASE3, Ma, Tar, NtrY, NarQ, COG5278	Q9KEH6 (BH0876), Identity 47.0% Q9K632 (BH3900), Identity 33.0% Q9K669 (BH3863), Identity 31.0%
9.	TarH9	D3FXE5	BpOF4_13025	424	2	HAMP, MA, TarH	Q9K669 (BH3863), Identity 39.0% (381aa)
10.	TarH10	D3G0H7	BpOF4_06970	583	2	Cache_2, MA, TarH	no hit
11.	TarH11	D3FXF1	BpOF4_13055	536	2	MAMP, Tar	no hit
12.	TarH12	D3FTM6	BpOF4_10230	278	0	Tar, MA	Q9KE52 (BH1006), Identity 29.0%
B. HemAT							
13.	HemAT1	D3FSA7	BpOF4_18505	434	0	sensor_globin, heme-binding site, TarH	Q9KFH4 (BH0505), Identity 45.0% (403aa)
14.	HemAT2	D3FW31	BpOF4_12050	439	0	sensor_globin, heme-binding site, TarH	Q9KFH4 (BH0505), Identity 33.0%
15.	HemAT3	D3FWD3	BpOF4_02990	434	0	sensor_globin, heme-binding site, TarH	Q9KFH4 (BH0505), Identity 25.0%

a. Assignments are based on BLASTp analyses; MCP: Methyl-accepting chemotaxis protein, TarH: Taxis toward Aspartate and Related amino acids and Homologs, HeamAT: heme-based aerotactic transducer. *Bacillus halodurans* C-125 has 11 Mcp-type and one HemAT-type proteins.

Legends Supplementary Figures

Fig. S1. Predicted secondary structures of the tmRNA and associated group I intron in the chromosome of *B. pseudofirmus* OF4. The structures were predicted by alignment with the homologous sequences in *Clostridium botulinum* (Williams, 2002)) followed by manual rearrangements. Nucleotides that are conserved in both sequence and structural position in *B. pseudofirmus* and *C. botulinum* are colored in red. The various subdomains of the tmRNA (P1-P12) and group I intron (P1-P9) are indicated. In addition, for the tmRNA, the regions forming pseudoknots are labeled (Ψ1 and Ψ4) the nucleotides encoding the proteolysis tag are underlined; for the intron, flanking exon sequences are in lower case letters.

Fig. S2. Schematic representation of the 4.5-kb group II twintron in the pBpOF4-01 plasmid of *B. pseudofirmus* OF4. The twintron consists of two nested group II intron retroelements, where the innermost intron (in grey) encoding the reverse-transcriptase (RT) BpOF4_20224 is inserted at the catalytic site of the RT (BpOF4_20229+BpOF4_20219) encoded by the outermost intron (in black). The catalytic site corresponds to the RYADD motif at the amino-acid level. The introns are delimited by arrows. Genes are drawn as boxes containing the gene names, with genes flanking the twintron drawn as open boxes.

Fig. S3. Multiple sequence alignment of the *bcr3* repeat elements from the chromosome of *B. pseudofirmus* OF4. *bcr3* is flanked by a 25-nucleotide direct repeat (DR) motif which is boxed. In addition, *bcr3* copies form two groups of sequences, *bcr3a* and *bcr3b*, that are homologous to the *bcr3* elements originally identified in bacteria from the *Bacillus cereu*s group (Kristoffersen *et al.*, 2011). A *bcr3a* and a *bcr3b* copy from the *B. cereus* group (bcr3a_NC_009674_5F-II and bcr3b_NZ_ABDK02000047_1R, respectively) are included in the alignment for comparison. A plot of the conservation of each site was generated by CLUSTALX (Larkin *et al.*, 2007) and is shown below the alignment. Asterisks above the alignment indicate sites where all sequences have an identical nucleotide.

Fig. S4. Multiple sequence alignment of the *bpr1* repeat elements from the chromosome of *B. pseudofirmus* OF4. *bpr1* is made up of a CGCAATAA/CGCATAAA/CGCAATTA motif, which is boxed, and that is repeated seven times. A plot of the conservation of each site was generated by CLUSTALX (Larkin et al., 2007) and is shown below the alignment.

Fig. S5. Multiple sequence alignment of the *bpr2* repeat elements from the chromosome of *B. pseudofirmus* OF4. *bpr2* is made up of two complementary regions, the left and right end, respectively, which are boxed. Partial copies corresponding either to the left or to the right end are also included in the alignment and their names start with the letter P. A plot of the conservation of each site was generated by CLUSTALX (Larkin et al., 2007) and is shown below the alignment.

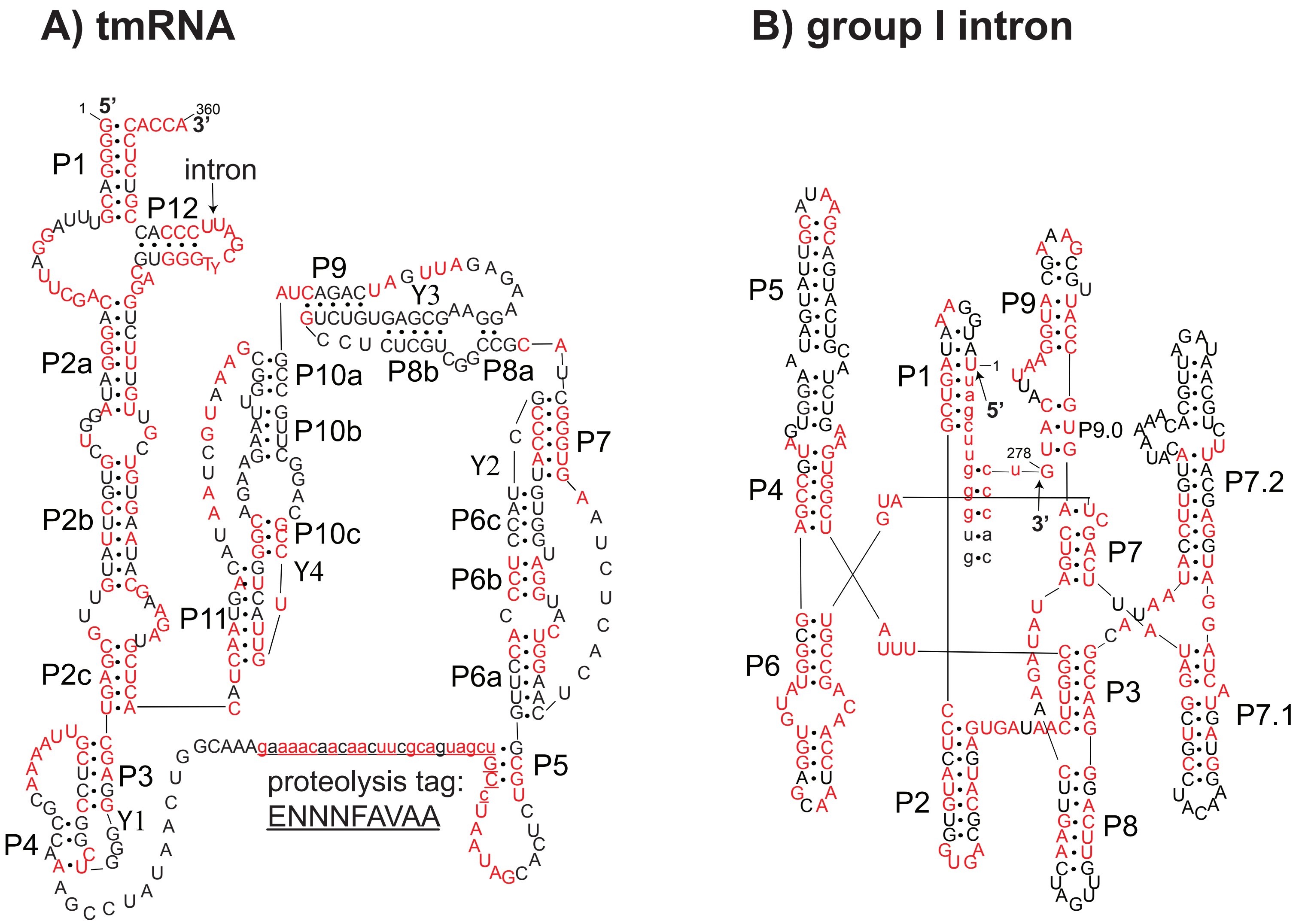
Fig. S6. Top: Filled arrows indicate the location of perfect match dnaA boxes (TTATCCACA). Open arrows indicate dnaA boxes with a maximum of 1 mismatch. Bottom: nucleotide-level comparison of the AT-rich region in *B. subtilis* 168, *B. halodurans* C-125 and *B. pseudofirmus* OF4 that is unwound by DnaA during initiation of replication.

Fig. S7. Comparison of the *B. pseudofirmus* OF4 chromosome with *B. halodurans* C-125 at the gene level. Each dot represents predicted protein homology with a *B. halodurans* C-125 gene that has greater than 50% identity (the top hit). Dots lying on the X-axis represent <50% identity or no match.

Kristoffersen, S. M., N. J. Tourasse, A. B. Kolstø & O. A. Økstad, (2011) Interspersed DNA repeats bcr1-bcr18 of *Bacillus cereus* group bacteria form three distinct groups with different evolutionary and functional patterns. *Mol. Biol. Evol.* **28**: 963-983.

Larkin, M. A., G. Blackshields, N. P. Brown, R. Chenna, P. A. McGettingan, H. McWilliam, P. Valentin, I. M. Wallace, A. Wilm, R. Lopez, J. D. Thompson, T. J. Gibson & O. G. Higgins, (2007) Clustal W and Clustal X version 2.0. *Bioinformatics* **23**: 2947-2948.

Williams, K. P., (2002) The tmRNA website: invasion by an intron. *Nucleic Acids Res,* **30**: 179-182.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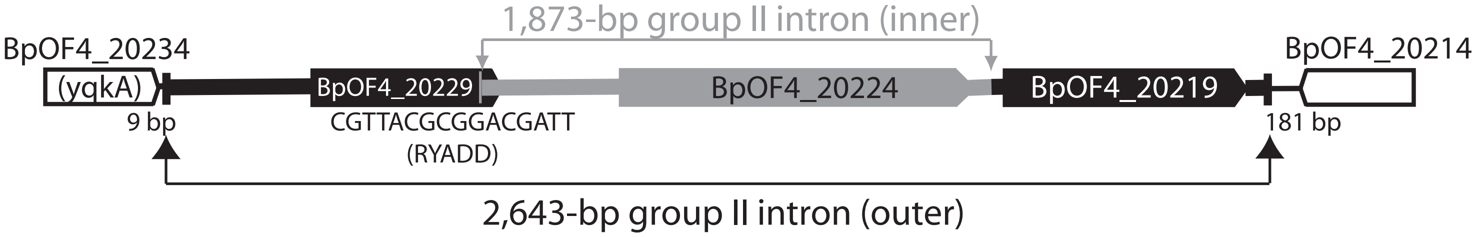
B) group I intron
1
5'
360
3'
GCACCA
P1
intron
P12
P9
Y3
P10a
P8b
P8a
P2a
P10b
P7
Y2
P2b
P6c
P10c
Y4
P6b
P11
P2c
P6a
GCAAAgaaaacaacaacuucgcaguagcu
P5
P3
proteolysis tag:
ENNNFAVAA
Y1
P4
P5
P9
P1
-1
5'
278
3'
P9.0
P4
P7.2
P7
P6
P3
P7.1
P2
P8

Fig. S1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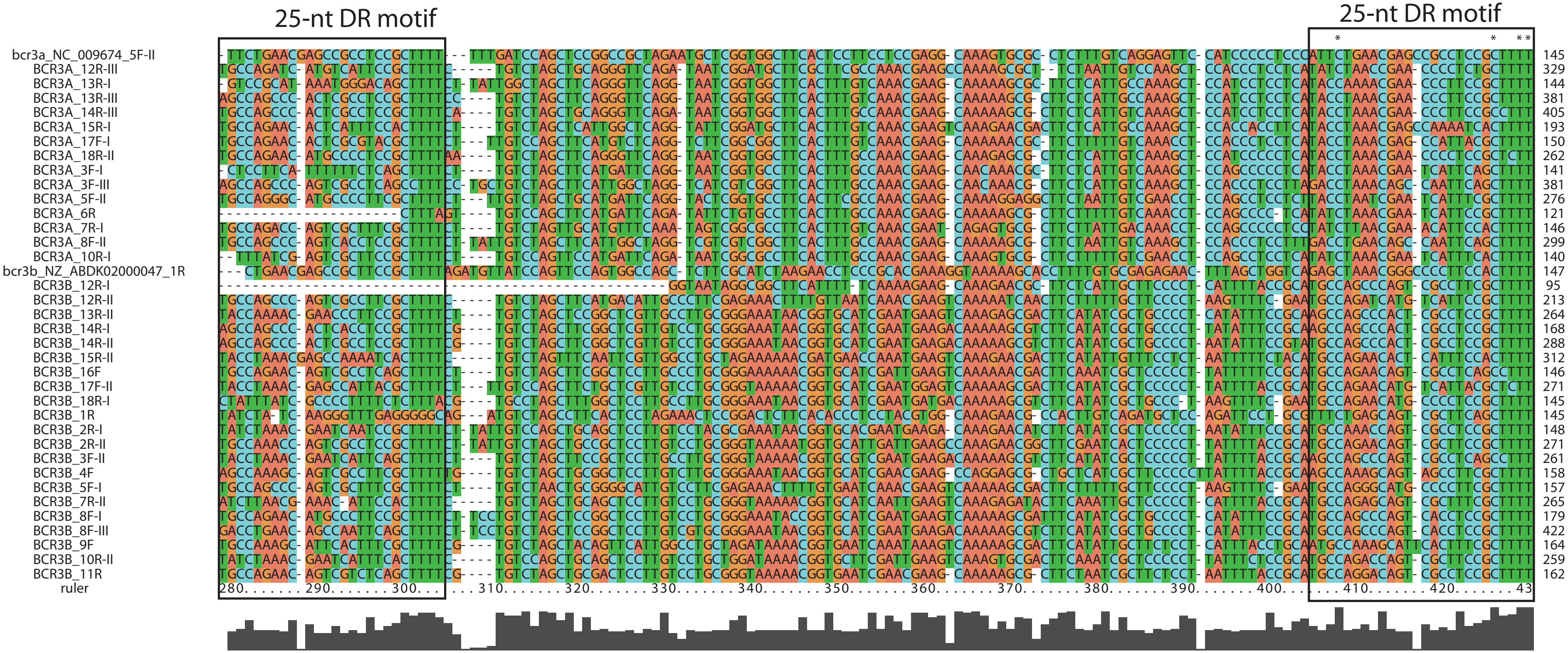
(yqkA)
BpOF4_20229
BpOF4_20224
BpOF4_20219
BpOF4_20214
9 bp
CGTTACGCGGACGATT
(RYADD)
181 bp
2,643-bp group II intron (outer)

Fig. S2


25-nt DR motif
25-nt DR motif
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BCR3A_12R-III 329
BCR3A_13R-I 144
BCR3A_13R-III 381
BCR3A_14R-III 405
BCR3A_15R-I 193
BCR3A_17F-I 150
BCR3A_18R-II 262
BCR3A_3F-I 141
BCR3A_3F-III 381
BCR3A_5F-II 276
BCR3A_6R 121
BCR3A_7R-I 146
BCR3A_8F-II 299
BCR3A_10R-I 140
bcr3b_NZ_ABDK02000047_1R 147
BCR3B_12R-I 95
BCR3B_12R-II 213
BCR3B_13R-II 264
BCR3B_14R-I 168
BCR3B_14R-II 288
BCR3B_15R-II 312
BCR3B_16F 146
BCR3B_17F-II 271
BCR3B_18R-I 145
BCR3B_1R 145
BCR3B_2R-I 148
BCR3B_2R-II 271
BCR3B_3F-II 261
BCR3B_4F 158
BCR3B_5F-I 157
BCR3B_7R-II 265
BCR3B_8F-I 179
BCR3B_8F-III 422
BCR3B_9F 164
BCR3B_10R-II 259
BCR3B_11R 162
ruler
280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 43

Fig. S3

bpr1_1F
bpr1_2F
bpr1_3R
bpr1_4F
bpr1_5F
bpr1_6R
bpr1_7R
bpr1_8F
bpr1_9R
bpr1_10F
bpr1_11R
bpr1_12F
bpr1_13R
bpr1_14F
bpr1_15F
bpr1_16F
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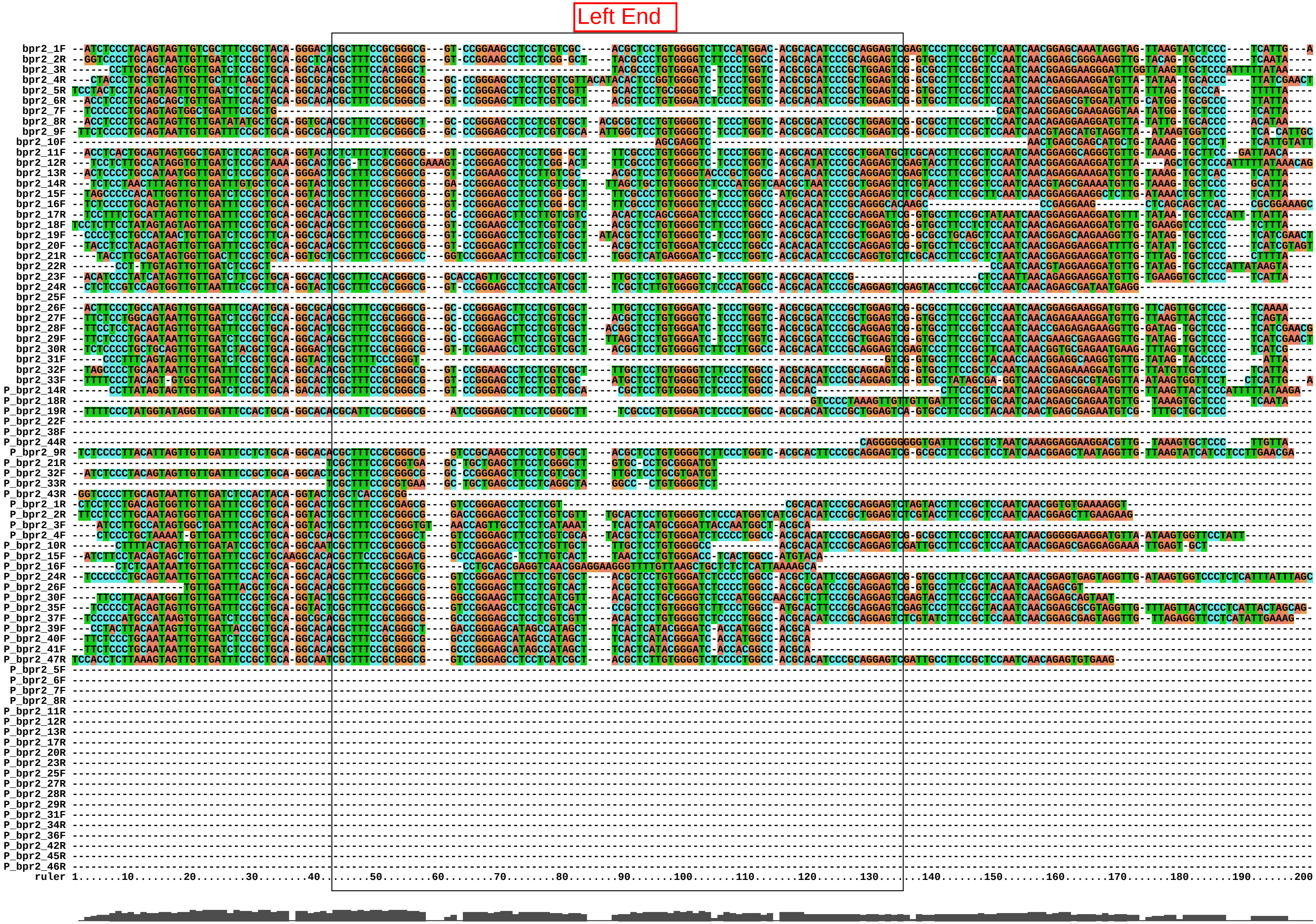
Fig. S4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bpr2_6R
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bpr2_9F
bpr2_10F
bpr2_11F
bpr2_12R
bpr2_13R
bpr2_14R
bpr2_15F
bpr2_16F
bpr2_17R
bpr2_18F
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bpr2_29F
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P_bpr2_22F
P_bpr2_38F
P_bpr2_44R
P_bpr2_9R
P_bpr2_21R
P_bpr2_32F
P_bpr2_33R
P_bpr2_43R
P_bpr2_1R
P_bpr2_2R
P_bpr2_3F
P_bpr2_4F
P_bpr2_10R
P_bpr2_15F
P_bpr2_16F
P_bpr2_24R
P_bpr2_26F
P_bpr2_30F
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P_bpr2_37F
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P_bpr2_40F
P_bpr2_41F
P_bpr2_47R
P_bpr2_5F
P_bpr2_6F
P_bpr2_7F
P_bpr2_8R
P_bpr2_11R
P_bpr2_12R
P_bpr2_13R
P_bpr2_17R
P_bpr2_20R
P_bpr2_23R
P_bpr2_25F
P_bpr2_27R
P_bpr2_28R
P_bpr2_29R
P_bpr2_31F
P_bpr2_34R
P_bpr2_36F
P_bpr2_42R
P_bpr2_45R
P_bpr2_46R
ruler 1.......10........20........30........40........50........60........70........80........90.......100.......110.......120.......130.......140.......150.......160.......170.......180.......190.......200

Fig.S5


Right End
bpr2_1F
bpr2_2R
bpr2_3R
bpr2_4R
bpr2_5R
bpr2_6R
bpr2_7F
bpr2_8R
bpr2_9F
bpr2_10F
bpr2_11F
bpr2_12R
bpr2_13R
bpr2_14R
bpr2_15F
bpr2_16F
bpr2_17R
bpr2_18F
bpr2_19F
bpr2_20F
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bpr2_26F
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bpr2_28F
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bpr2_30R
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P_bpr2_22F
P_bpr2_38F
P_bpr2_44R
P_bpr2_9R
P_bpr2_21R
P_bpr2_32F
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P_bpr2_3F
P_bpr2_4F
P_bpr2_10R
P_bpr2_15F
P_bpr2_16F
P_bpr2_24R
P_bpr2_26F
P_bpr2_30F
P_bpr2_35F
P_bpr2_37F
P_bpr2_39F
P_bpr2_40F
P_bpr2_41F
P_bpr2_47R
P_bpr2_5F
P_bpr2_6F
P_bpr2_7F
P_bpr2_8R
P_bpr2_11R
P_bpr2_12R
P_bpr2_13R
P_bpr2_17R
P_bpr2_20R
P_bpr2_23R
P_bpr2_25F
P_bpr2_27R
P_bpr2_28R
P_bpr2_29R
P_bpr2_31F
P_bpr2_34R
P_bpr2_36F
P_bpr2_42R
P_bpr2_45R
P_bpr2_46R
ruler
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
360
370
380
390
400

Fig.S5

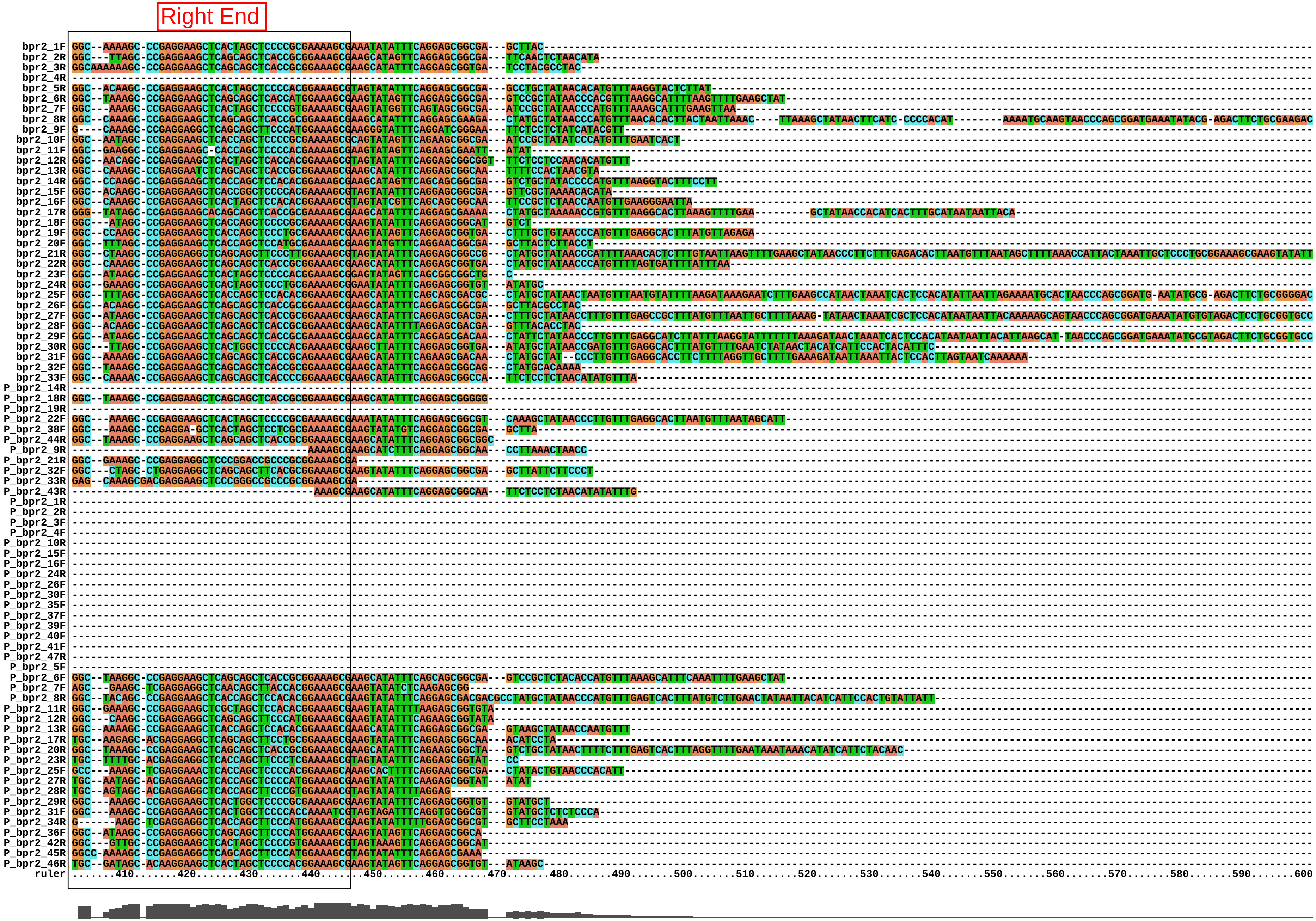
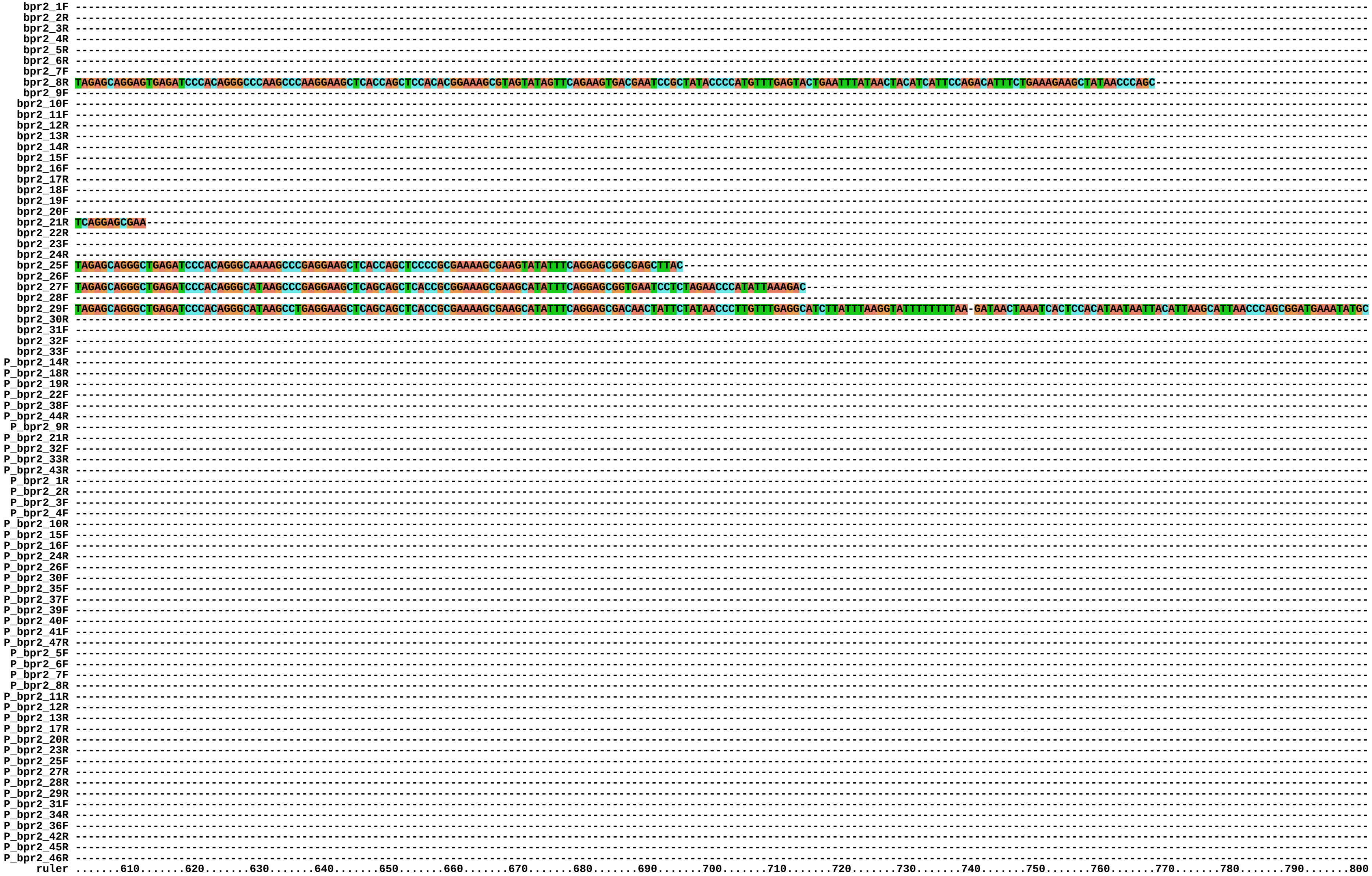

Right End
ruler
410
420
430
440
450
460
470
480
490
500
510
520
530
540
550
560
570
580
590
600

Fig.S5



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   bpr2_1F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   bpr2_2R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   bpr2_3R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   bpr2_4R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   bpr2_5R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   bpr2_6R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   bpr2_7F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   bpr2_8R TAGAGCAGGAGTGAGATCCCACAGGGCCCAAGCCCAAGGAAGCTCACCAGCTCCACACGGAAAGCGTAGTATAGTTCAGAAGTGACGAATCCGCTATACCCCATGTTTGAGTACTGAATTTATAACTACATCATTCCAGACATTTCTGAAAGAAGCTATAACCCAGC---------------------------------
   bpr2_9F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_10F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_11F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_12R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_13R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_14R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_15F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_16F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_17R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_18F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_19F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_20F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_21R TCAGGAGCGAA---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_22R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_23F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_24R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_25F TAGAGCAGGGCTGAGATCCCACAGGGCAAAAGCCCGAGGAAGCTCACCAGCTCCCCGCGAAAAGCGAAGTATATTTCAGGAGCGGCGAGCTTAC----------------------------------------------------------------------------------------------------------
  bpr2_26F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_27F TAGAGCAGGGCTGAGATCCCACAGGGCATAAGCCCGAGGAAGCTCAGCAGCTCACCGCGGAAAGCGAAGCATATTTCAGGAGCGGTGAATCCTCTAGAACCCATATTAAAGAC---------------------------------------------------------------------------------------
  bpr2_28F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_29F TAGAGCAGGGCTGAGATCCCACAGGGCATAAGCCTGAGGAAGCTCAGCAGCTCACCGCGAAAAGCGAAGCATATTTCAGGAGCGACAACTATTCTATAACCCTTGTTTGAGGCATCTTATTTAAGGTATTTTTTTTAA-GATAACTAAATCACTCCACATAATAATTACATTAAGCATTAACCCAGCGGATGAAATATGC
  bpr2_30R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_31F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_32F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  bpr2_33F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_14R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_18R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_19R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_22F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_38F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_44R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_9R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_21R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_32F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_33R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_43R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_1R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_2R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_3F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_4F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_10R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_15F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_16F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_24R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_26F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_30F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_35F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_37F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_39F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_40F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_41F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
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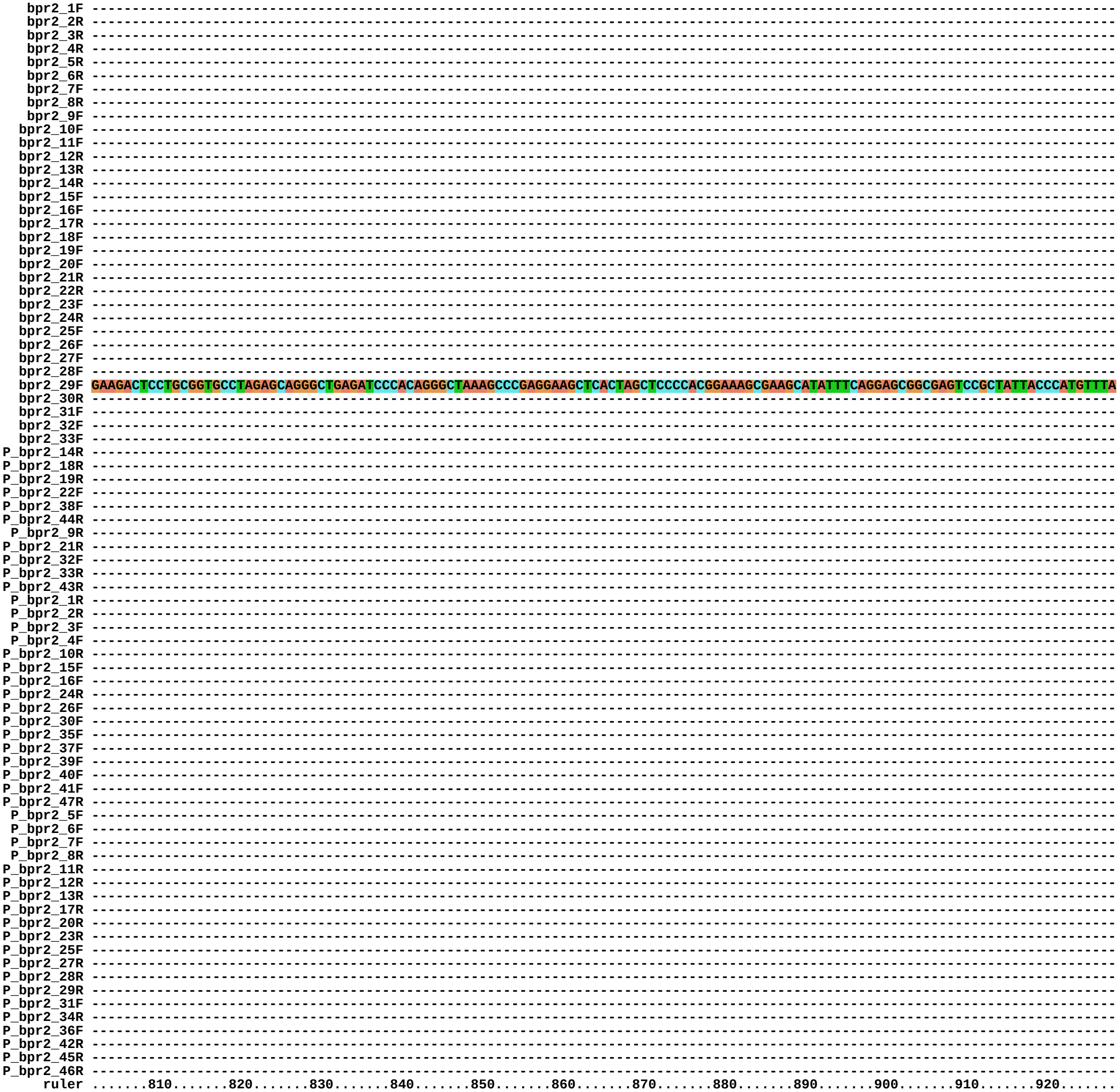
 P_bpr2_6F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_7F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_8R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_11R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_12R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_13R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_17R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_20R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_23R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_25F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_27R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_28R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_29R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_31F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_34R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_36F --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_42R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_45R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
P_bpr2_46R --------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
     ruler .......610.......620.......630.......640.......650.......660.......670.......680.......690.......700.......710.......720.......730.......740.......750.......760.......770.......780.......790.......800
```

Fig.S5



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  bpr2_1F -------------------------------------------------------------------------------------------------------------------------------
  bpr2_2R -------------------------------------------------------------------------------------------------------------------------------
  bpr2_3R -------------------------------------------------------------------------------------------------------------------------------
  bpr2_4R -------------------------------------------------------------------------------------------------------------------------------
  bpr2_5R -------------------------------------------------------------------------------------------------------------------------------
  bpr2_6R -------------------------------------------------------------------------------------------------------------------------------
  bpr2_7F -------------------------------------------------------------------------------------------------------------------------------
  bpr2_8R -------------------------------------------------------------------------------------------------------------------------------
  bpr2_9F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_10F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_11F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_12R -------------------------------------------------------------------------------------------------------------------------------
 bpr2_13R -------------------------------------------------------------------------------------------------------------------------------
 bpr2_14R -------------------------------------------------------------------------------------------------------------------------------
 bpr2_15F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_16F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_17R -------------------------------------------------------------------------------------------------------------------------------
 bpr2_18F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_19F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_20F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_21R -------------------------------------------------------------------------------------------------------------------------------
 bpr2_22R -------------------------------------------------------------------------------------------------------------------------------
 bpr2_23F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_24R -------------------------------------------------------------------------------------------------------------------------------
 bpr2_25F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_26F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_27F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_28F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_29F GAAGACTCCTGCGGTGCCTAGAGCAGGGCTGAGATCCCACAGGGCTAAAGCCCGAGGAAGCTCACTAGCTCCCCACGGAAAGCGAAGCATATTTCAGGAGCGGCGAGTCCGCTATTACCCATGTTTA
 bpr2_30R -------------------------------------------------------------------------------------------------------------------------------
 bpr2_31F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_32F -------------------------------------------------------------------------------------------------------------------------------
 bpr2_33F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_14R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_18R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_19R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_22F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_38F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_44R -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_9R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_21R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_32F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_33R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_43R -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_1R -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_2R -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_3F -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_4F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_10R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_15F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_16F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_24R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_26F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_30F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_35F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_37F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_39F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_40F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_41F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_47R -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_5F -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_6F -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_7F -------------------------------------------------------------------------------------------------------------------------------
 P_bpr2_8R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_11R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_12R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_13R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_17R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_20R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_23R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_25F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_27R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_28R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_29R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_31F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_34R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_36F -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_42R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_45R -------------------------------------------------------------------------------------------------------------------------------
P_bpr2_46R -------------------------------------------------------------------------------------------------------------------------------
     ruler .......810.......820.......830.......840.......850.......860.......870.......880.......890.......900.......910.......920.......
```

Fig.S5

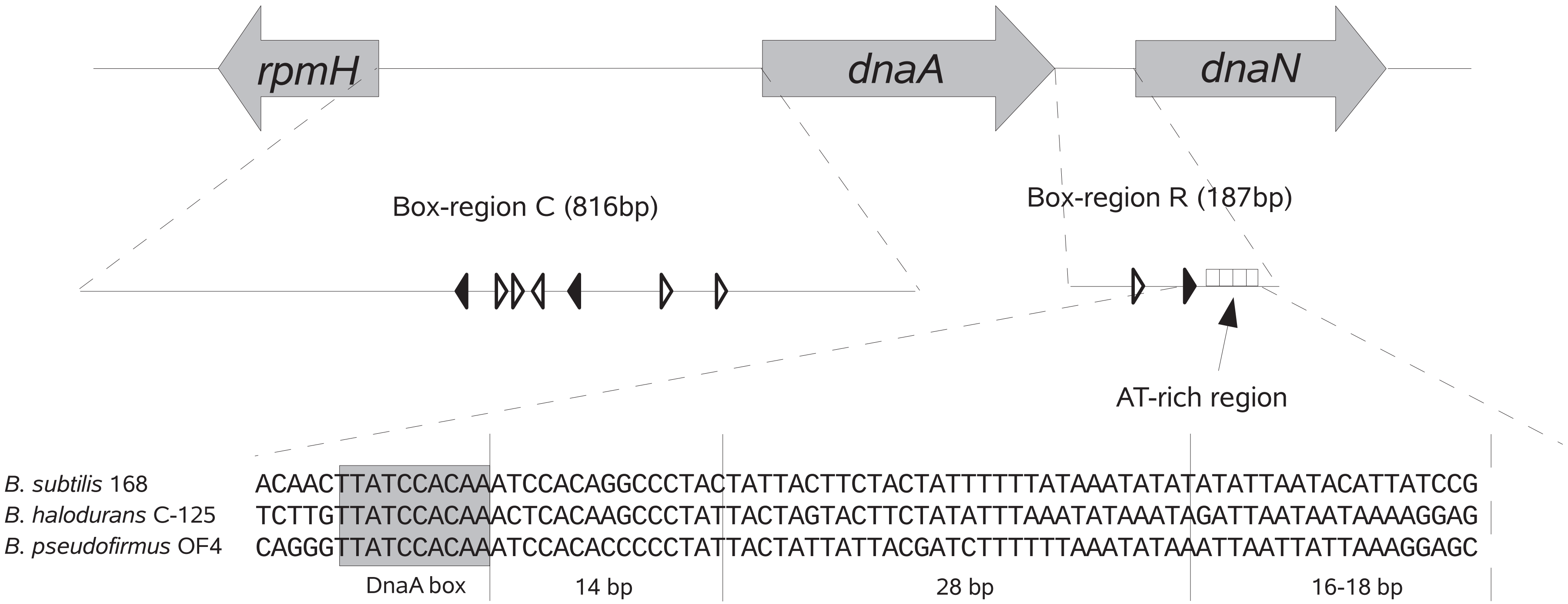
rpmH
dnaA
dnaN
Box-region C (816bp)
Box-region R (187bp)
AT-rich region
B. subtilis 168 ACAACTTATCCACAAATCCACAGGCCCTACTATTACTTCTACTATTTTTTATAAATATATATATTAATACATTATCCG
B. halodurans C-125 TCTTGTTATCCACAAACTCACAAGCCCTATTACTAGTACTTCTATATTTAAATATAAATAGATTAATAATAAAAGGAG
B. pseudofirmus OF4 CAGGGTTATCCACAAATCCACACCCCCTATTACTATTATTACGATCTTTTTTAAATATAAATTAATTATTAAAGGAGC
DnaA box
14 bp
28 bp
16-18 bp

Fig. S6

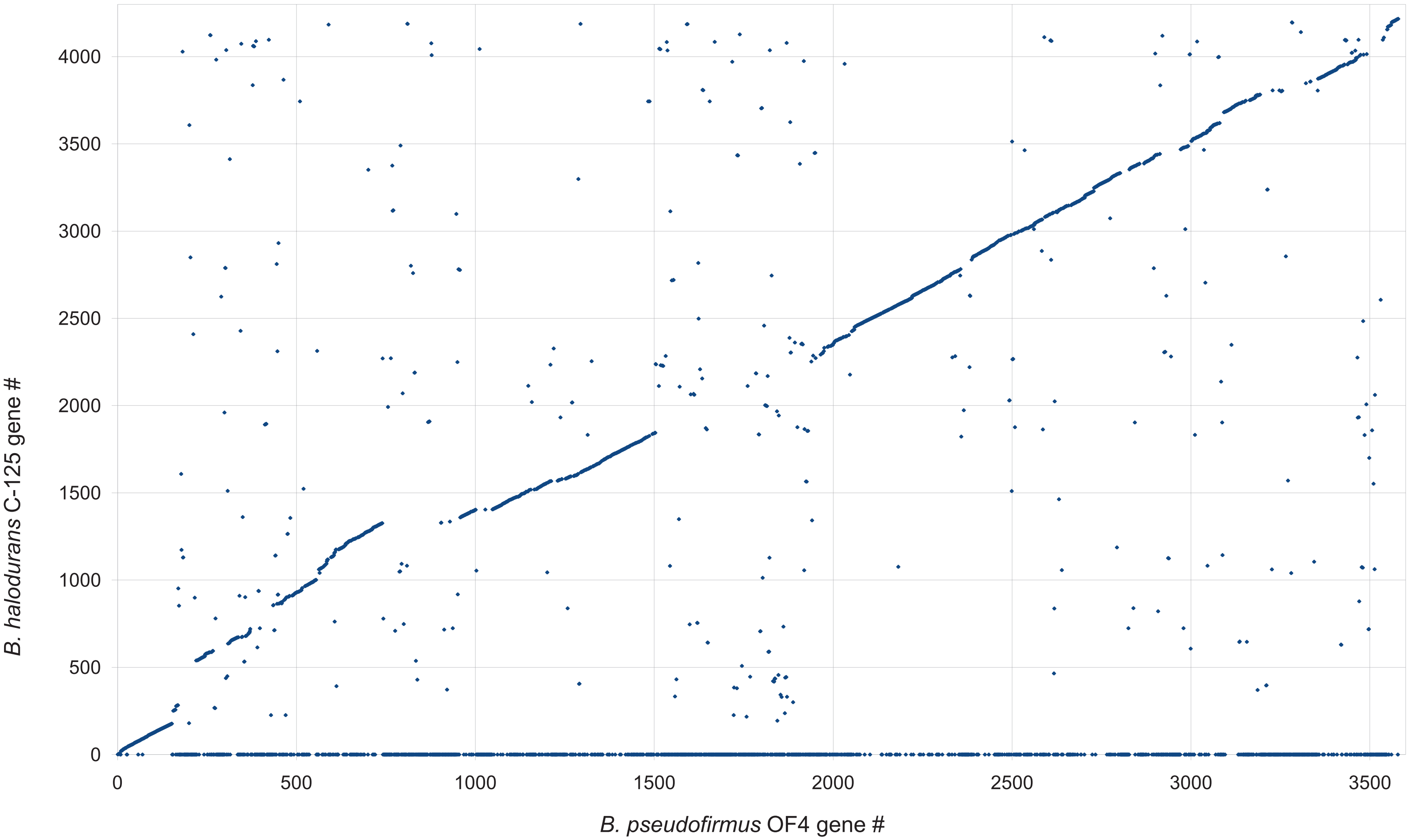
B. halodurans C-125 gene #
0
500
1000
1500
2000
2500
3000
3500
4000
B. pseudofirmus OF4 gene #
0
500
1000
1500
2000
2500
3000
3500

Fig. S7