The following supplement accompanies the article

Mitogenome analysis reveals a complex phylogeographic relationship within the wild tiger population of Thailand

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Supplementary Files:

Table S1 The full details of the primers used in this study.

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Table S3 The components of the WEFCOM and Ti2 (*P. t. jacksoni*) mitochondrial genome.

Table S4 The variable sites between WEFCOM and Ti2.

Fig. S1 Sites of sample collection

Fig. S2 The alignment of the control region of the WEFCOM and Malayan tigers reported in this study with previous reports. These sequences contain different lengths of the control region resulting in different sizes of the complete mitochondrial genome. The different lengths of the control region are a result of the variable number of tandem repeats in the repetitive sequence box 3 (RS-3). HVS = hypervariable site, RS = repetitive sequence, CCR = central conserved region, CSB = conserved sequence box.

Fig. S3 The mitogenome map of the tiger (*P. tigris*) including F2 *numt* (red curve). Fragment 9 of this study contained two distinct sequences; 9.1 (blue line) and 9.2 (blue dashed line), where the *numt* sequence was found (red box). The grey curve indicates the region containing two highly distinct sequences when compared with other reported complete mitogenomes.

Fig. S4 The alignment of confounding sequences near the 5' end of F2 *numt* (red arrow). The sequences of the WEFCOM tiger (fragment numbers 8, 9.1, 9.2 and 10) were aligned to HM569215 P27 of Zhang et al. (2011), JF357971 CORBETTI1 of Kitpipit et al. (2012), *cymt* DQ151550 and F2 *numt* (DQ151551) reported by Kim et al. (2006). The sequences resembling F2 *numt* are labeled in red. Two distinct sequences contaminated with *numt* were found in fragment 9. The start point of the ambiguous sequences is at the last domain of the *COX1* gene. The alignment shows that the amplicon 9.1 was initially similar to *numt* and could not be aligned with the adjacent fragment (red dashed boxes). There is a turning point at the middle of *COX2* (red arrow head) where the amplicon 9.2 which was initially identical to *cymt* turned to the *numt* sequence and amplicon 9.1 turned to the *cymt* sequence. After the end of F2 *numt* at the *ATP6* gene, the 9.1 and 9.2 amplicons remain different (labeled cyan).

Table S1. The full details of the primers used in this study.

No.	Primer names	Primer sequences (5'-3')	Gene	Size of PCR product	T_a	Ref.
1	wTG3021F	CTTATCCATCTTAATCTTAGCCAC	CR	951	58	This study
	Dloopre	CCTGAAGAAAGAACCAGATGC				(Ward et al. 1999)
2	TGDL1F	GATTTAGAGCAGTTCTTTCATGGAT	CR	1,137	58	This study
	wTG4940R	TATATTTAAGCTACATTAACCAAGGC				This study
3	wTG4753F	AGACTAAACCCGTATCTAGGCAC	CR - 12S rRNA	1,563	60	This study
	wTG6290R	TTCATCCTGTAATAGATTGTTTATCGG				This study
4	TG6031F	CTTGAGCTAGAGCTAGCCCAACTA	16S rRNA	1,271	60	This study
	TG7276R	GGGTAACTTGTTCCGTTGATCACGC				This study
5	H2513	GCCTGTTTACCAAAAACATCAC	16S rRNA - ND1	2,027	56	(Kitano et al. 2007)
	wTG8870R	ACGGTTGATATAATGATGGTGAGG				This study
6	wTG8191F	GAATACATCTGGCTCATCATCGCT	ND1 - ND2	1,729	60	This study
	wTG9920R	GCTCTTGGTCTAGTTTGACCCT				This study
7	TG9711F	TAGCCATAACAGCACTACTTAACGTA	ND2 - COX1	1,618	60	This study
	TG11294R	CCCAAAGCCCATAGTATAGCGCGA				This study
8	wTG11001F	CCAGAAGTCTATATCTTAATCCTG	COX1 - COX2	1,049	60	This study
	wTG12044R	AATGTATGATCATGGAAGTGTGAA				This study
9.1	mtDNA6H	GCTCATTTATTTCACTAACAGCAGT	COX2 - ATP6	1,856	58	(Delisle & Strobeck 2002)
	mtDNA6L	GGGCTACAGCAAATTCAAGGAT				(Delisle & Strobeck 2002)
9.2	TG6H	ACAACTAATCTCGAATGACTTGAC	COX2 - ATP6	1,667	58	This study
	TG6L	TCCTCCGATTAGGTGTATTAATTAA				This study
10	mtDNA7H	TTGGCTCACTTTCTACCTCAAGG	ATP6 – ND4L	1,890	60	(Delisle & Strobeck 2002)
	mtDNA7L	GTGGGGATGATGATTTTTAGCATTGTA				(Delisle & Strobeck 2002)
11	mtDNA8H	CCAAAACAAATGATTTCGACTCA	ND4L – ND4	1,889	60	(Delisle & Strobeck 2002)
	mtDNA8L	GGTTCCTAAGACCAATGGATTACTTCT				(Delisle & Strobeck 2002)
12	mtDNA9H	AAACCATCATTCACACGAGAAAAC	ND4- ND6	2,270	58	(Delisle & Strobeck 2002)
	wTG1680R	GGTGCGGGTGATTGAGTGGTC				This study
13	TND6-1	CTATCCTTCCATAATCACCCTG	ND5 – CYT B	1,693	58	This study
	wTG3170R	GCCGATGGCAATAAAGGGGTGT				This study

Table S2. The list of reference sequences used in this study.

Accession No.	Species/subspecies	Haplotye/ individual	Length (bp)	Reference
NC_010638	*P. uncia*	-	16,773	Wei et al. 2010
EF551002	*P. pardus*	-	16,964	Wei et al. 2011
DQ257669	*N. nebulosa*	-	16,884	Wu et al. 2007
KF297576	*P. t. altaica*	-	16,996	Sun et al. 2014
DQ151550	*P. tigris*	-	12,912	Kim et al. 2006
DQ151551	*P. tigris*	F2 nuclear copy	12,559	Kim et al. 2006
HM589214	*P. t. amoyensis*	P25	16,957	Zhang et al. 2011
HM589215	*P. t. amoyensis*	P27	17,001	Zhang et al. 2011
JF357967	*P. t . tigris*	TIGRIS1	16,637	Kitpipit et al. 2012
JF357968	*P. t. tigris*	TIGRIS2	16,976	Kitpipit et al. 2012
JF357969	*P. t. sumatrae*	SUMATRA1	16,998	Kitpipit et al. 2012
JF357970	*P. t. sumatrae*	SUMATRA2	17,001	Kitpipit et al. 2012
JF357971	*P. t . corbetti*	CORBETTI1	16,602	Kitpipit et al. 2012
JF357972	*P. t. corbetti*	CORBETTI2	14,174	Kitpipit et al. 2012
JF357973	*P. t. altaica*	ALTAICA4	16,980	Kitpipit et al. 2012
JF357974	*P. t. altaica*	ALTAICA1	17,015	Kitpipit et al. 2012
AY736559–AY736808	*All subspecies of extant Panthera tigris*	ALT, AMO1-3, COR1-8, SUM1-8, TIG1-6	250 - 593	Luo et al. 2004
JN786601- JN786684	*P. tigris*	NHM	199 - 482	Mondol et al. 2013
KJ686500-KJ686533	*P. t. sondaica, P. t. balica*	SON, BAL	67 - 223	Xue et al. 2015

Table S3. The components of the WEFCOM and Ti2 (*P. t. jacksoni*) tiger mitochondrial genome.

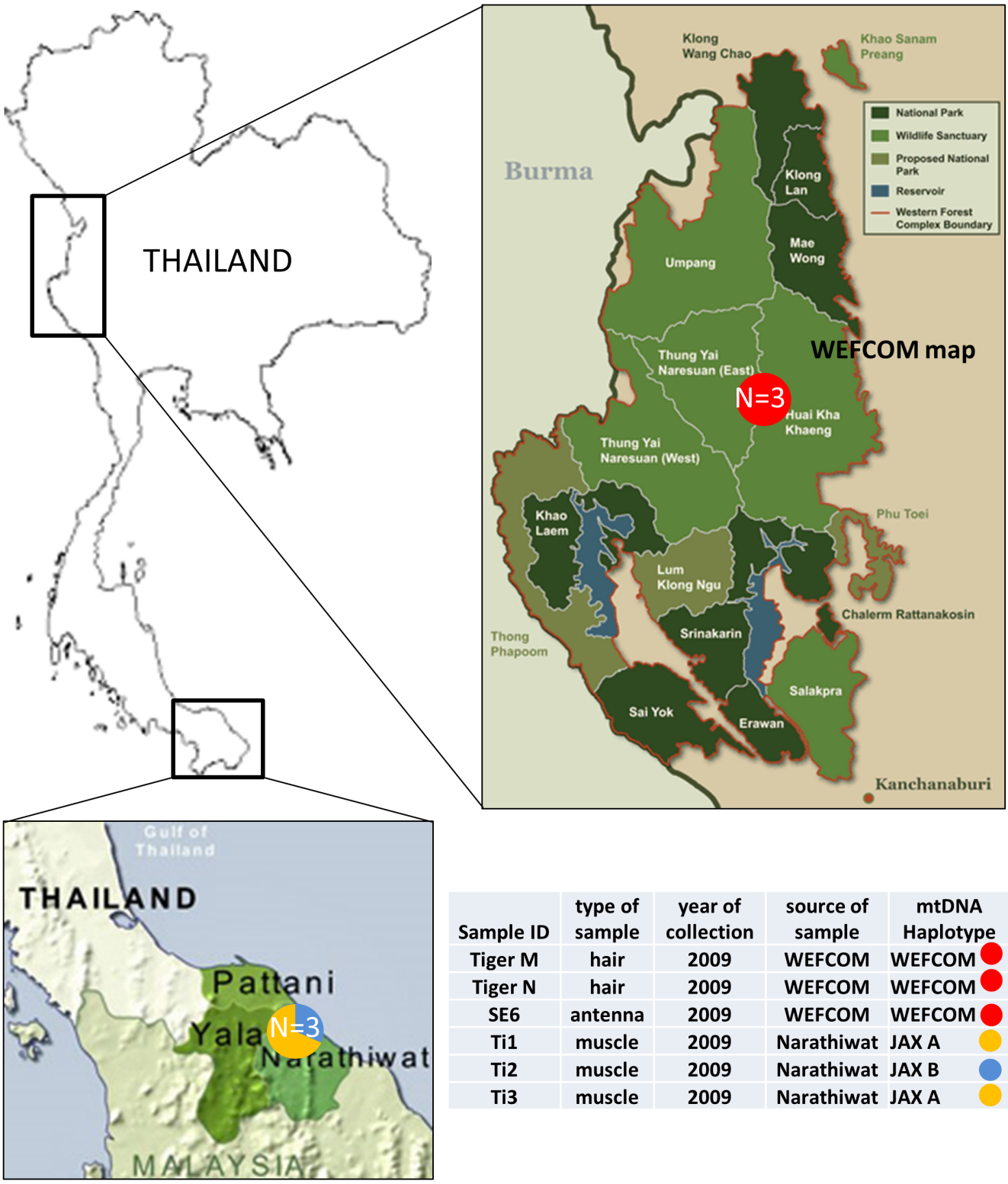
Gene	Position				ORF		Strand
	WEFCOM		Ti2 (*P. t. jacksoni*)				
	start	stop	start	stop	start	stop	
tRNA-^{Phe}	1	71	1	71			H
12S rRNA	72	1,031	72	1,031			H
tRNA^{-Val}	1,032	1,099	1,032	1,099			H
16S rRNA	1,100	2,674	1,100	2,674			H
tRNA^{-Leu}	2,675	2,749	2,675	2,749			H
ND1	2,752	3,707	2,752	3,707	ATG	TAA	H
tRNA^{-Ile}	3,708	3,776	3,708	3,776			H
tRNA^{-Gln}	3,774	3,847	3,774	3,847			L
tRNA^{-Met}	3,848	3,916	3,848	3,916			H
ND2	3,917	4,958	3,917	4,958	ATC	TAA	H
tRNA^{-Trp}	4,959	5,026	4,959	5,026			H
tRNA^{-Ala}	5,042	5,110	5,042	5,110			L
tNRA^{-Asn}	5,112	5,184	5,112	5,184			L
tNRA^{-Cys}	5,218	5,282	5,217	5,281			L
tNRA^{-Tyr}	5,283	5,349	5,282	5,348			L
COX1	5,351	6,895	5,350	6,894	ATG	TAA	H
tRNA^{-Ser}	6,893	6,961	6,892	6,960			L
tRNA^{-Asp}	6,968	7,036	6,967	7,035			H
COX2	7,037	7,720	7,036	7,719	ATG	TAA	H
tRNA^{-Lys}	7,724	7,791	7,723	7,790			H
ATP8	7,793	7,996	7,792	7,995	ATG	TAA	H
ATP6	7,954	8,634	7,953	8,633	ATG	TAA	H
COX3	8,634	9,417	8,633	9,416	ATG	TAA	H
tRNA^{-Gly}	9,418	9,486	9,417	9,485			H
ND3	9,487	9,833	9,486	9,832	ATA	TAA	H
tRNA^{-Arg}	9,834	9,902	9,833	9,901			H
ND4L	9,903	10,199	9,902	10,198	ATG	TAA	H
ND4	10,193	11,570	10,192	11,569	ATG	TAA	H
tRNA^{-His}	11,571	11,638	11,570	11,637			H
tRNA^{-Ser}	11,640	11,698	11,639	11,697			H
tNRA^{-Leu}	11,699	11,768	11,698	11,767			H

Gene	Position				ORF		Strand
	WEFCOM		Ti2 (*P. t. jacksoni*)				
	start	stop	start	stop	start	stop	
ND5	11,769	13,589	11,768	13,588	ATA	TAA	H
ND6	13,573	14,100	13,572	14,099	ATG	TAA	L
tRNA^{-Glu}	14,101	14,169	14,100	14,168			L
CYT B	14,173	15,312	14,172	15,311	ATG	AGA	H
tNRA^{-Thr}	15,313	15,382	15,312	15,381			H
tRNA^{-Pro}	15,383	15,449	15,382	15,448			L
CR	15,450	16,954	15,449	17,008			H

Table S4. The variable sites between the WEFCOM and Malayan (Ti2) haplotype. The variations between HVS-I of CR to first base of *tRNA*$^{-Phe}$ were excluded. The new mutation sites comparing to previous reports (Luo et al. 2004, Driscoll et al. 2009, Zhang et al. 2011, Kitppipit et al. 2012, Mondol et al. 2013, Sun et al. 2014, Xue et al. 2015) are indicated by the red marks. The red box indicates the position that was excluded from phylogenetic analysis as it may contain additional *numt*.

Gene	12S		16S			ND2		COI		COII		ATP6					COX III	ND3	ND4		ND5		ND6	Q	Cytb						CR
																			1	1	1	1	1	1	1	1	1	1	1	1	1
Position			1	1	2	3	4	5	6	7	7	8	8	8	8	8	9	9	0	0	2	2	3	4	4	4	4	4	4	5	5
on	2	8	3	4	3	9	8	6	0	0	3	2	3	3	4	5	1	5	5	9	3	7	8	1	4	4	6	7	8	1	5
WEFCOM	4	0	3	8	4	2	2	0	9	4	1	7	2	7	1	1	4	3	4	7	0	8	4	3	0	6	9	3	9	7	3
sequence	0	6	3	0	3	8	5	2	7	9	7	7	6	0	2	1	4	8	9	2	8	3	6	6	0	3	4	7	1	1	4
																	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Position	1	1	2	2	3	4	5	6	6	7	8	9	9	9	9	9	0	0	1	1	3	3	4	5	5	5	5	5	5	6	6
on	1	6	1	3	2	7	6	4	9	9	1	1	1	2	2	3	0	4	4	8	1	6	7	0	2	3	5	6	7	0	4
Felis catus	0	7	9	4	0	9	8	6	6	1	8	4	9	3	7	7	0	0	1	3	7	4	1	0	6	2	5	0	5	3	0
(NC_001700)	4	1	8	5	7	2	9	7	2	4	2	2	1	5	7	6	9	3	4	7	3	8	1	1	5	8	9	2	6	6	0
WEFCOM	C	T	C	G	**C**	T	**C**	G	**T**	**C**	C	G	**T**	**C**	C	C	**A**	G	**T**	**T**	A	T	A	T	C	**T**	**T**	G	C	A	C
Ti2 (*P.t.jacksoni*)	T	C	**T**	A	T	C	T	**A**	C	T	**T**	A	C	T	**T**	**T**	G	**A**	C	C	G	**C**	G	**C**	**T**	C	C	A	T	G	**T**
Luo et al. 2004 (AY736559-808)	-	T/C	-	-	-	-	T	-	C	-	-	-	-	-	-	-	-	-	-	-	G/A	-	A/G	-	-	-	C	A/G	C/T	-	-
Driscoll et al. 2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-	-	-	G	C	-	-
Mondol et al. 2013 (JN786601 –84)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A/G	-	-	-	-	-	C	G	C/T	-	-
Xue et al. 2015	-	-	-	-	-	-	T	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	G	-	-	-	-	G	T	-	
Zhang et al. 2011 (HM589214-15)	T/C	C/T	C	G/A	T	C/T	T	G	C	T	C	A	C	T	C	C	G	G	C	C	G/A	T	G	T	C	C	C	G	T/C	G/A	C
Kitpipit et al. 2012 (JF357967-74)	T/C	C/T	C	G	T	T	T	G	C	T	C	G	C	T	C	C	G	G	C	C	G/A	T	G/A	T	C	C	C	G	T/C	G/A	C
Sun et al. 2014 (KF297576)	C	T	C	A	T	T	T	G	C	T	C	G	C	T	C	C	G	G	C	C	A	T	A	T	C	C	C	G	C	A	C

Fig. S1. Sites of sample collection.



Sample ID	type of sample	year of collection	source of sample	mtDNA Haplotype
Tiger M	hair	2009	WEFCOM	WEFCOM
Tiger N	hair	2009	WEFCOM	WEFCOM
SE6	antenna	2009	WEFCOM	WEFCOM
Ti1	muscle	2009	Narathiwat	JAX A
Ti2	muscle	2009	Narathiwat	JAX B
Ti3	muscle	2009	Narathiwat	JAX A

Fig. S2. The alignment of the control region of the WEFCOM and Malayan tigers reported in this study with previous reports. These sequences contain different lengths of the control region resulting in different sizes of the complete mitochondrial genome. The different lengths of control region are a result of the variable number of tandem repeats in the repetitive sequence box 3 (RS-3). HVS = hypervariable site, RS = repetitive sequence, CCR = central conserved region, CSB = conserved sequence box.

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WEFCOM                  CCAATACCAAAAAACAACCCCATGACTTTCATAATTCATATATTGCATATACCCGTACTGTGCTTGCCCAGTATGTCCTCATCC-CCACAAAAAATAAGT 99
Ti2                     ...........................................................................................-T............. 99
JF357971 CORBETTI1      T..........................................................................................-............. 99
JF357973 ALTAICA4       ..........................................................................................-............. 99
JF357974 ALTAICA1       ....C.....................................................................................-............. 99
JF357969 SUMATRA1       ..........................................................................................-............. 99
JF357970 SUMATRA2       ..........................................................................................-............. 99
JF357967 TIGRIS1        ..........................................................................................-.........-..... 98
JF357968 TIGRIS2        ..........................................................................................-.........-..... 98
HM589215 amoyensis P27  ..........................................................................................-............. 99
HM589214 amoyensis P25  T.........................................................................................-............. 99
DQ151550 P.tigris       ..........................................................................................-............. 99
DQ151551 F2 Numt        ..........................................................................................TTT.....AGCAA 100

                                                                                                                HVS-I   RS-2

WEFCOM                  GAAAAAATCCTCAATCCCCGTTAATACAGAACACACAACACGAAAT-AACCTGTTAACTACCGGACCCCCCCCCCTCCCCCCGTTAATACATTACGTAGG 198
Ti2                     ..............................................-...........................-.......................... 197
JF357971 CORBETTI1      ..............................................-...........................-.......................... 197
JF357973 ALTAICA4       ..............................................-...........................-............C............ 197
JF357974 ALTAICA1       ..............................................-...........................-.......................... 197
JF357969 SUMATRA1       ..............................................-...........................-.......................... 197
JF357970 SUMATRA2       ..............................................-...........................-.......................... 197
JF357967 TIGRIS1        ..............................................-..........T................-.........-.............A. 195
JF357968 TIGRIS2        ..............................................-..........T................-.........-.............A. 195
HM589215 amoyensis P27  ..............................................-.......C...................................... 198
HM589214 amoyensis P25  ..............................................-.......C...................................... 198
DQ151550 P.tigris       ..............................................-.......C...................................... 198
DQ151551 F2 Numt        .TG...........T...A.-..C...-...G.....TGTA...CC.....A...G.....AATA...G.....-----------------------A. 175

WEFCOM                  GCATACTATGGATATCGTGCATTAATCGCCTGTCCCCATGAATATTAAGCATGTACAGTAGTTTATATATATTACATAAGGCATACTATGGATATCGTGC 298
Ti2                     ..........T............G.......................................................T......... 297
JF357971 CORBETTI1      ..........T......G.....................................A...............T......G.. 297
JF357973 ALTAICA4       ..........T......G.....................................................T......G.. 297
JF357974 ALTAICA1       ..........T.......................................................T......... 297
JF357969 SUMATRA1       ..........T......G.........T.....................................T......G.. 297
JF357970 SUMATRA2       ..........T.......................................................T......... 297
JF357967 TIGRIS1        ..........T.......................................................T......... 295
JF357968 TIGRIS2        ..........T.......................................................T......... 295
HM589215 amoyensis P27  ..........T.......................................................T......... 298
HM589214 amoyensis P25  ..........T.......................................................T......... 298
DQ151550 P.tigris       A.........T.......................................................T......... 298
DQ151551 F2 Numt        A.........T..............CT..T..........C................A.....................A..... 375
                                                                                                  RS-2      CCR

WEFCOM                  ATTAATCGCTTGTCCCCATGAATATTAAGCATGTACAGTAGTTCATATATATTACATAAGACATAATAGTGCTTAATCGTGCATATTCATGATTTAGAGC 398
Ti2                     ..........................................................................................A... 397
JF357971 CORBETTI1      ..........................................T.................................................A... 397
JF357973 ALTAICA4       ..........................................................................................A.A. 397
JF357974 ALTAICA1       ............................................................................................. 397
JF357969 SUMATRA1       ..........................................T.................................................... 397
JF357970 SUMATRA2       ..........................................T.................................................... 397
JF357967 TIGRIS1        ..........................................T.................................................... 395
JF357968 TIGRIS2        ..........................................T.................................................... 395
HM589215 amoyensis P27  ..........................................T.................................................... 398
HM589214 amoyensis P25  ..........................................................................C..... 398
DQ151550 P.tigris       ..........................................................................................A. 398
DQ151551 F2 Numt        ......T...................................T.....................................G.C......C..T.A. 375

WEFCOM                  AGTTCTTTCATGGATCTCAACTATCCGAAAGAGCTTAATCACCTGGCCTCGAGAAACCAACAACCCTTGCTCGAGCGTGTACCTCTT-CTCGCTCCGGGC 497
Ti2                     ..........................................................................-............ 496
JF357971 CORBETTI1      ..............................................A...................................-............ 496
JF357973 ALTAICA4       ........................C.......................................................T............ 497
JF357974 ALTAICA1       ..........................................................................-............ 496
JF357969 SUMATRA1       ......................G...A.....................................................-............ 496
JF357970 SUMATRA2       ......................G.......................................................-............ 496
JF357967 TIGRIS1        ..........................................................................-............ 494
JF357968 TIGRIS2        ..........................................................................-............ 494
HM589215 amoyensis P27  ......................G.......................................................-............ 497
HM589214 amoyensis P25  ........T.............................................................-............ 497
DQ151550 P.tigris       ..........................................................................-............ 497
DQ151551 F2 Numt        ...C..C.-.....C.......G.................................G..........CT...............-...........G 473
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WEFCOM                  CCATTTCAACGTGGGGGTGTCTATAGTGA-AACTATATCTGGCATCTGGTTCTTACTTCAGGGTCATGACATTCTTAAATCCAATCCTTCAACTTTCTCA 596
Ti2                     ............................-............................................................................ 595
JF357971 CORBETTI1      .........................AC..-............................................................................ 595
JF357973 ALTAICA4       .......................C.......-.......C.................................................................... 596
JF357974 ALTAICA1       ............................-.......C.................................................................... 595
JF357969 SUMATRA1       ............................-.-.......................................................................... 594
JF357970 SUMATRA2       ............................-.......................................................................... 595
JF357967 TIGRIS1        ............................-...-------------------------------------------------------------------- 526
JF357968 TIGRIS2        ............................-.......................................................................... 593
HM589215 amoyensis P27  ............................-.......C.................................................................... 596
HM589214 amoyensis P25  ............................-.......C.................................................................... 596
DQ151550 P.tigris       ............................-.......C.................................................................... 596
DQ151551 F2 Numt        .........................AC.GG.............................N..G..................................... 573

WEFCOM                  AATA-GGACATCTCGATGGGTTAATGACTAATCAGCCCATGATCACACATAACTGTGGTGTCATGCATTTGGTATTTTTAATTTTTAGGGGGTCGAACTT 695
Ti2                     ....-..........................................................................................................694
JF357971 CORBETTI1      ....-..........................................................................................................694
JF357973 ALTAICA4       ....-..........................................................................................................695
JF357974 ALTAICA1       ....-..........................................................................................................694
JF357969 SUMATRA1       ....-..........................................................................................................693
JF357970 SUMATRA2       ....-..........................................................................................................694
JF357967 TIGRIS1        ----------------------------------------------------------------------------------------------------526
JF357968 TIGRIS2        ....-..........................................................................................................692
HM589215 amoyensis P27  ....-..........................................................................................................695
HM589214 amoyensis P25  ....-..........................................................................................................695
DQ151550 P.tigris       ....-..........................................................................................................695
DQ151551 F2 Numt        ....A...N.......A...............-...........................................................................672

WEFCOM                  GCTATGACTCAGCTATGACCTAAAGGTCCTGACTCAGTCAAATATAATGTAGCTGGACTTATTCTCTATGCGGGGGTTCCACACGTACAACAAACAAGGT 795
Ti2                     ............................C.............................................................................794
JF357971 CORBETTI1      ............................C.............................................................................794
JF357973 ALTAICA4       ............................C.............................................................................795
JF357974 ALTAICA1       ............................C.............................................................................794
JF357969 SUMATRA1       ............................C.........................G....................................................793
JF357970 SUMATRA2       ............................C.........................G....................................................794
JF357967 TIGRIS1        ----------------------------------------------------------------------------------------------------526
JF357968 TIGRIS2        ............................C.............................................................................792
HM589215 amoyensis P27  ............................C.............................................................................795
HM589214 amoyensis P25  ............................C.............................................................................795
DQ151550 P.tigris       ............................C.............................................................................795
DQ151551 F2 Numt        ....................C.......................................CCR...C...RS-3.....................772
                                      CSB I
WEFCOM                  GTTATTCAGTCAATGGTCACAGGACATATACTTAAATTCCTATTGTTCCACAGGACACGGCATGCGCGCACCCACGTATACGCGTACACGTATACACGTA 895
Ti2                     ..............................................................................G.......894
JF357971 CORBETTI1      ..............................................................Y...............894
JF357973 ALTAICA4       ..............................................................................895
JF357974 ALTAICA1       ...................G..........................................C.......894
JF357969 SUMATRA1       ...................G..........................................C.......893
JF357970 SUMATRA2       ...................G..........................................C.......894
JF357967 TIGRIS1        ----------------------------------------------------------G...C...TA........C.......553
JF357968 TIGRIS2        ..............................................................................892
HM589215 amoyensis P27  ..............................................................C.......895
HM589214 amoyensis P25  ..............................................................................895
DQ151550 P.tigris       ..............................................................................895
DQ151551 F2 Numt        ..............................C...............A..........--------864

WEFCOM                  TACACGTACACACGTACACACGTACACACGTATAC----------------ACGTACACACGTACACACGTATACACGTATACACGTACAC------ACG 973
Ti2                     ...............C..ACGTATACACGTATAC.....C.....C.....T..ACGTAT... 994
JF357971 CORBETTI1      ...............T.....T.....C..--------ACGTATAC.....T.....------... 980
JF357973 ALTAICA4       C.....C..--------ACGTATAC.....T.....T.....T..------... 981
JF357974 ALTAICA1       C.....R.....R....C..GTGTA--CACGTACAC.....C.....C..R.....GTGTAC... 992
JF357969 SUMATRA1       C.....ACGTATACGCGTACAC--.....C.....C.....T..ACGTAT... 991
JF357970 SUMATRA2       C.....C..ACGTACACACGTACAC.....T.....C.....C.....ACGTAT..A 994
JF357967 TIGRIS1        C.....------A--CACGTACAC.....C.....C.....Y..------... 639
JF357968 TIGRIS2        C.....C------A--CACGTATAC.....T.....C.....C.....------... 978
HM589215 amoyensis P27  C.....T.....GCGTAC--ACGTACAC.....C.....T..GCGTAC... 993
HM589214 amoyensis P25  C.....--------TACACGTACAC.....C.....C.....---------- 949
DQ151550 P.tigris       C.....C..--------ACGTATAC.....T.....C.....C.....T..------... 981
DQ151551 F2 Numt        ----------------------------------------------------------------------------------------------------864

WEFCOM                  TACACACGTACACACGTACACACGTATACACGTACACACGTA----------CACACGTACACACGTACACACGTATACGCGTACAC--GTACAC- 1056
Ti2                     CGT.....C.....----------.....C..A....T..AC...T..G 1080
JF357971 CORBETTI1      .....T.....C.....----------T.....T.....T..G....C..--.....AC.....- 1063
JF357973 ALTAICA4       ..T.....T.....T.....----------T.....C..A.....AC...T..- 1058
JF357974 ALTAICA1       .....C.....CACACGTACACGTGT.....C..A.....AC.....- 1091
JF357969 SUMATRA1       CGT.....C.....T.....----------.....A....T..GC...--.- 1074
JF357970 SUMATRA2       CGT.T..ACGT.T.....C.....----------.....C..A....T..AC...T..- 1079
JF357967 TIGRIS1        ..T.....C.....----------.....T.....T.....C..A.....AC.....- 724
JF357968 TIGRIS2        .....T.....C.....----------.....T.....A....Y..AC.....- 1063
HM589215 amoyensis P27  .....C.....----------.....C..A.....AC.....- 1078
HM589214 amoyensis P25  .....C.....----------.....T.....T.....A.....AC.....- 1034
DQ151550 P.tigris       ..T.....T.....T.....T.....----------T.....T.....C..A.....AC...T..- 1066
DQ151551 F2 Numt        ----------------------------------------------------------------------------------------------------864
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WEFCOM                  -----ACGTACACACGTACACACGTATACGCGTACAC--GTACACACGTACACACGTACACACGTACACACGTACACACGTACACACGTACACACGTACA 1149
Ti2                     CGTAC.....C..A.......AC..................................................................... 1180
JF357971 CORBETTI1      -----.....C..------..--..................................................................... 1150
JF357973 ALTAICA4       -----.....T.......T..................--..................................................................... 1151
JF357974 ALTAICA1       -----.....C..A.......AC.....................................................T. 1186
JF357969 SUMATRA1       -----.....C..A.......AC..................................................................... 1169
JF357970 SUMATRA2       -----G.......--.....C..A.......AC..........................................................................1172
JF357967 TIGRIS1        -----.....G........N...Y..--.....................................T.......T. 817
JF357968 TIGRIS2        -----.....A....T..--.CGT.....................................T.......T. 1156
HM589215 amoyensis P27  -----.....T.....--..................................................................... 1171
HM589214 amoyensis P25  -----.....T.....--..................................................................... 1127
DQ151550 P.tigris       -----.....T..G.....GTAC.C...TAC....--..................................................................... 1159
DQ151551 F2 Numt        ------------------------------------------------------------------------------------------------------ 864
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WEFCOM                  CACGTACACACGTACACACGTACACACGTA------------------------TACACGTATACACGTATACACGTATACACATGCAAACTTTTTTGAT 1225
Ti2                     .....T.....TACACGTATACACGTATACACGTA.....G.AT.C..--------- 1280
JF357971 CORBETTI1      .....CACACGTACACACGTATACACGTA.....G.AT.C..--------- 1241
JF357973 ALTAICA4       .....TACACGTATACACGTATACACGTA..... 1251
JF357974 ALTAICA1       .....T.....T.....T.....TACACGTATACACGTATACACGTA..... 1286
JF357969 SUMATRA1       .....T.....T.....TACGCGTATACACGTATACACGTA..... 1269
JF357970 SUMATRA2       .....T.....T.....TACACGTATACACGTATACACGTA..... 1272
JF357967 TIGRIS1        .....T.....CACACGTACACACGTATACACGTA.....A.GC-------..... 909
JF357968 TIGRIS2        .....T.....T.....CACACGTACACACGTATACACGTA.....CG-------..... 1248
HM589215 amoyensis P27  .....CACACGTACACACGTATACACGTA..... 1271
HM589214 amoyensis P25  .....T.....TACACGTATACACGTATACACGTA..... 1227
DQ151550 P.tigris       .....CACACGTACACACGTACACACGTA..... 1259
DQ151551 F2 Numt        ------------------------------------------------------------------------------------------------------ 900
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WEFCOM                  TTAGTAAATAATTAGCTTAACCAAACCCCCCTTACCCCCC-GTTAATCTTATTTATTATAGTACGTGTTTATTTCTGTCTTGCCAAACCCCAAAAACAAG 1324
Ti2                     .....-.....C..... 1379
JF357971 CORBETTI1      ------------------------------------------------------------------------------------------------------ 1241
JF357973 ALTAICA4       .....-..... 1350
JF357974 ALTAICA1       .....-..... 1385
JF357969 SUMATRA1       .....-..... 1368
JF357970 SUMATRA2       .....-..... 1371
JF357967 TIGRIS1        .....-..... 1008
JF357968 TIGRIS2        .....-..... 1347
HM589215 amoyensis P27  .....-..... 1370
HM589214 amoyensis P25  .....-..... 1326
DQ151550 P.tigris       .....-..... 1358
DQ151551 F2 Numt        .....T.....A.....C.....C.....C.A.....C.....A..... 1000

WEFCOM                  ACTAAACCCGTATCTAGGCACAAGGCCTAAGA-TTAACGTTTACAAACTCTACCAACCCCATCATTACCAATTATTAATACTAAATCATAACTTCGTTCG 1423
Ti2                     .....-..... 1478
JF357971 CORBETTI1      -------------------------------------..A....C------------------------------------------------------ 1249
JF357973 ALTAICA4       .....-..... 1449
JF357974 ALTAICA1       .....-..... 1484
JF357969 SUMATRA1       .....-..... 1467
JF357970 SUMATRA2       .....-..... 1470
JF357967 TIGRIS1        .....-..... 1107
JF357968 TIGRIS2        .....-..... 1446
HM589215 amoyensis P27  .....-..... 1469
HM589214 amoyensis P25  .....-..... 1425
DQ151550 P.tigris       .....-.....T. 1457
DQ151551 F2 Numt        .....-.....C.A..GT.....A.....T.....T.....C.....G.....T..... 1099

WEFCOM                  CAGTTATCTATAGATACGACAACCCGATCTCTAATTCGTCCCTATCGAACAATATTTACATACCCAACAACCCTATGTCTTG 1505
Ti2                     ..... 1560
JF357971 CORBETTI1      ------------------------------------------------------------------------------ 1249
JF357973 ALTAICA4       ..... 1531
JF357974 ALTAICA1       ..... 1566
JF357969 SUMATRA1       .....C..... 1549
JF357970 SUMATRA2       .....C..... 1552
JF357967 TIGRIS1        ..... 1189
JF357968 TIGRIS2        ..... 1528
HM589215 amoyensis P27  ..... 1551
HM589214 amoyensis P25  ..... 1507
DQ151550 P.tigris       .....C.... 1539
DQ151551 F2 Numt        .....T.....C.....C.....T.....A..... 1181
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Fig. S3. The mitogenome map of the tiger (*P. t. tigris*) including F2 *numt* (red curve). Fragment 9 of this study contained two distinct sequences; 9.1 (blue line) and 9.2 (blue dashed line), where the *numt* sequence was found (red box). The grey curve indicates the region containing two highly distinct sequences when compared with other reported complete mitogenomes. The green curve indicates the sequence range used to construct the phylogenetic tree in Figure 2.

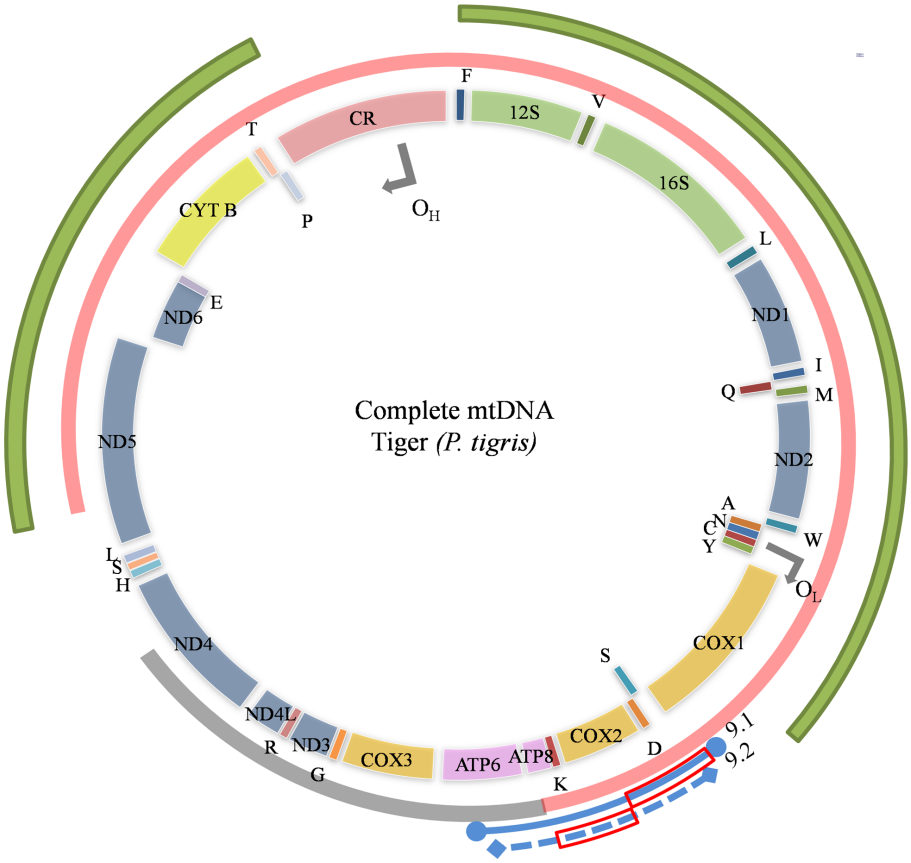

Fig. S4. The alignment of confounding sequences near the 5' end of F2 *numt* (red arrow). The sequences of the WEFCOM tiger (fragment numbers 8, 9.1, 9.2 and 10) were aligned to HM569215 P27 of Zhang et al. (2011), JF357971 CORBETTI1 of Kitpipit et al. (2012, *cymt* DQ151550 and F2 *numt* (DQ151551) reported by Kim et al. (2006). The sequences resembling F2 *numt* are labeled in red. Two distinct sequences contaminated with *numt* were found in fragment 9. The start point of the ambiguous sequences is at the last domain of the *COX1* gene. The alignment shows that the amplicon 9.1 was initially similar to *numt* and could not be aligned with the adjacent fragment (red dashed boxes). There is a turning point at the middle of *COX2* (red arrow head) where the amplicon 9.2 which was initially identical to *cymt* turned to the *numt* sequence and amplicon 9.1 turned to the *cymt* sequence. After the end of F2 *numt* at the *ATP6* gene, the 9.1 and 9.2 amplicons remain different (labeled cyan).

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                                 COX1
HM589215 P27        ATG-TTCATAAACCGCTGAGTATTTTCAACCAATCACAAGGATATTGTAACTCTTTACCTTTTATTTGGCGCCTGGGCTGGTATGGTGGGGACTGCCCTCAGTCTCCTAATTCGAGCCGAACTGGGTCAACCTGGCACACTACTAGGAGA
JF357971 CORBETTI1   ...-...............C...........................G.....................T..............................................T...............................
DQ151550            ...G.......-.......C....C......................G.....C...............................A.......................................................
DQ151551 F2 Numt     TATG..............C..................A...T...G...C.........C................C........A........T.........T....C.........................G........G..

HM589215 P27        TGACCAAATTTATAATGTGGTAGTTACTGCCCATGCCTTTGTGATAATCTTTTTTATAGTAATGCCTATTATAATTGGAGGGTTCGGAAACTGGCTAGTTCCGTTAATAATCGGGGCCCCCGATATGGCATTCCCTCGAATGAATAACAT
JF357971 CORBETTI1   ..................A.......................................................................A................................A.....................................
DQ151550            ..................NA......................................................................A................................A.....................................
DQ151551 F2 Numt     C................A..C..C..C.............A........C....................G........A...........AT.G.....A........T..A...........A....................T..

HM589215 P27        AAGCTTCTGACTCCTTCCCCCATCCTTCCTACTTCTGCTCGCATCGTCTATGGTAGAAGCTGGGGCAGGAACTGGGTGGACAGTATACCCACCCCTAGCTGGCAACCTAGCCCATGCAGGAGCATCCGTGGATCTAACTATTTTTTCACT
JF357971 CORBETTI1   ..................................................................................................................................................................
DQ151550            ..................................................................................................................................................................
DQ151551 F2 Numt     G....................G..T.........T..........A...........G.....A.....G.....A.................T.....C...........T.................A....................

HM589215 P27        ACACCTAGCAGGCGTCTCCTCAATCTTAGGTGCTATTAATTTTATTACTACTATTATTAATATAAAACCGCCCGCTATGTCCCAATACCAAACACCCCTATTTGTTTGATCGGTTCTAATTACTGCTGTGTTGCTACTTCTATCACTGCC
JF357971 CORBETTI1   ..................................................................................G.................................................................
DQ151550            ..................................................................................G.................................................................
DQ151551 F2 Numt     ...........G.N..............N................C....................C..T.....A........T................C.........T....C........A................A..

HM589215 P27        AGTTTTAGCAGCAGGCATCACCATGCTACTGACAGATCGAAATCTAAATACCACATTTTTTGATCCT-GCTGGGGGAGGAGACCCCATCTTA----TATCAACACCTATTCTGATTCTTCGGTCACCCAGAAGTCTATATCTTAATCCTG
JF357971 CORBETTI1   ..................................................................-..C.....................----.....................................................
DQ151550            ..................................................................-..C.....................----.....................................................
DQ151551 F2 Numt     .....................T..A....................G..C..............C..CC..C..A.....G..T..T......CTTA....................T....................C..T.....TT.A

HM589215 P27        CCCGGGTTTGGAATAATTTCACATATTGTCACCTACTACTCAGGCAAAAAAGAACCTTTTGGCTACATGGGGATAGTCTGAGCCATAATGTCAATTGGCTTTCTGGGCTTTATCGTATGGGCCCATCACATGTTTACTGTAGGGATAGAT
JF357971 CORBETTI1   ..................................................................................................................................................................
DQ151550            ..................................................................................................................................................................
DQ151551 F2 Numt     ...........................CT..............T..........................A.....T.....T.....A...............................A....................G.........
WEFCOM 8            --------------------.....................................................................................................................

HM589215 P27        GTGGATACACGAGCATACTTTACGTCAGCTACTATAATTATCGCTATTCCTACTGGGGTAAAAGTATTTAGCTGATTGGCCACTCTTCACGGGGGTAATATTAAATGGTCTCCCGCTATACTATGGGCTTTGGGATTCATTTTCCTATTC
JF357971 CORBETTI1   ..................................................................................................................................................................
DQ151550            ..................................................................................................................................................................
DQ151551 F2 Numt     .....C................A................T........C.......................C............T..A........C........C..T.....G.....A...C................C...
WEFCOM 8            ..................................................................................................................................................................

HM589215 P27        ACCGTAGGGGGCTTAACAGGAATTGTATTAGCAAACTCCTCATTGGATATTGTCCTTCACGACACATACTACGTAGTAGCCCACTTCCACTACGTCTTGTCAATAGGAGCAGTATTTGCTATCATAGGGGGCTTCGTTCACTGATTCCCC
JF357971 CORBETTI1   ..................................................................................................................................................................
DQ151550            ..........................C.......................................................................................T...........................
DQ151551 F2 Numt     ........A..................C.......T........A........T.....................................T.................................A........C..T.........
WEFCOM 8            ..................................................................................................................................................
```

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HM589215 P27        TTATTCTCAGGGTATACTCTTGATAATACTTGGGCAAAAGTTCATTTTACGATCATGTTCGTAGGTGTCAATATAACGTTTTTCCCTCAGCATTTCCTAGGCCTGTCTGGGATGCCTCGACGTTATTCTGACTATCCAGACGCGTATACA
JF357971 CORBETTI1  ....................................................................................................................................................
DQ151550            ....................................................................................................................................................
DQ151551 F2 Numt     C...................C..................A.............T.........................................T...........C..A............G..........C........A......
WEFCOM 8            ....................................................................................................................................................
                                                                                                  START
HM589215 P27        ACTTGAAACGCAATCTCCTCAATAGGCTCTTTTATTTCACTAACAGCAGTAATATTAATAGTCTTTATAATGTGAGAAGCTTTCGCATCAAAGCGAGAAGTAGCCACAGTGGAACTAACCACAACTAATCTCGAATGACTTCACGGATGT
JF357971 CORBETTI1  .........A..........................................................G...........................................................................
DQ151550            ....................................................................................................................................................
DQ151551 F2 Numt    .........A.........................................C..C......T......G.............T..................G....T.......................T.....G..G..T......
WEFCOM 8            .........A..........................................................G...........................................................................
WEFCOM 9.1          ------------------------------------------------------------------G.............T..................G....T.......................T.....G..G..T......
                                                                                                  tRNA-Ser                                                tRNA-Asp
HM589215 P27        CCTCCTCCGTATCACACATTTGAAGAGCCAGCCTACGTGCTGTTAAAATAAGAAAGGAAGGAATCGAACCTCCTTAGACTGGTTTCAAGCCAATACCATAACCACTATGTCTTTCTCAATTAAGAAGTATTAGTAAAATAATTACATAAC
JF357971 CORBETTI1  ....................................................................................................................................................
DQ151550            ....................................................................................................................................................
DQ151551 F2 Numt    ..C.....A.....A...T.....G.....C.....G.....T.....C.....C
WEFCOM 8            ....................................................................................................................................................
WEFCOM 9.1          ..C.....A.....................A....T.......G.....C.......G.............T...............C.................C...........
WEFCOM 9.2          --------------------------------------------------------------------------------------------------------------------------------
                                                                                                  COX2
HM589215 P27        TTTGTCAAAGTTAAATTATAGGTTTAAGCCCTATGTGCTT-CCATGGCATACCCCTTCCAACTAGGTTTTCAAGATGCTACATCCCCCATTATAGAAGAGCTTTCACACTT-CCATGATCATACATTAATAATTGTATTCCTAATTAGCT
JF357971 CORBETTI1  ........................................-...................................................T.......-.......................................
DQ151550            ....................................-...................................................-.......................................
DQ151551 F2 Numt     ........G.............C.............A...T....................T.............................C...........CCT......T.........C...C.........-..............
WEFCOM 8            ....................................-..............C.....................................................--------------------------------------------
WEFCOM 9.1          ........G.............C.............A...-.....................................C...........CCT......-.........C...C.......................
WEFCOM 9.2          ....................................-..............C.....................................T.......-.......................................

HM589215 P27        CCCTAGTCCTCTACATTATCTCATTAATACTGACAACTAAACTTACGCATACAAGCACAATAGATGCCCAAGAAGTAGAAACTATCTGAACCATTTTACCAGCCATCATCTTAATTCTCATTGCCCTGCCTTCCTTACGAATTCTCTATA
JF357971 CORBETTI1  ...................................................................G.....................................................................
DQ151550            ....................................................................................................................................................
DQ151551 F2 Numt    ..........T..T..C......C.......A.....C.....C.....C...........G.....................C..T.................T.......................A..C...................
WEFCOM 9.1          ..........T..T..C......C.......A.....C.....C.....C...........G.....................C....................T.......................A..C...................
WEFCOM 9.2          ....................................................................................................TURNING POINT.............
HM589215 P27        TAATAGATGAGATTAATAATCCCTCCCTCACTGTAAAGACTATAGGACATCAGTGATACTGAAGTTATGAGTACACCGACTATGAGGACCTAAGCTTCGACTCCTATATAATTCCCACTCAAGAGCTAAAGCCCGGAGAACTCCGACTAT
JF357971 CORBETTI1  ....................................................................................C.....C............T.............G.........C
DQ151550            ....................................................................................................................................................
DQ151551 F2 Numt     .......C.C........GC...C.T..T...........C..G........A..G..T.....C.....A.....T........A...........T.............................T.............G.........C
WEFCOM 9.1          .......C.C........GC...C.T..T...........C..G........A..G..T.....C.....A.....T........A...........T.............................T.............G.........C
WEFCOM 9.2          ....................................................................................C.....C............T.............G.........C
HM589215 P27        TAGAAGTTGATAACCGAGTAGTACTACCAATAGAAGTGACCATTCGCGTGTTAATCTCATCAGAAGACGTACTACACTCATGAGCCGTCCCATCCCTGGGCCTAAAAACTGATGCTATTCCAGGCCGACTAAACCAAACAACCCTAATGG
JF357971 CORBETTI1  .......................GT.G..............T......A.....G..........G........G.....G......A.........................C.....C.............................A.
DQ151550            ....................................................................................................................................................
DQ151551 F2 Numt     .......................GT.G..............T......A.....G..........G........G.....G......A.........................C.....C.............................A.
WEFCOM 9.1          ....................................................................................................................................................
WEFCOM 9.2          .......................GT.G..............T......A.....G..........G........G.....G......A.........................C.....C.............................A.
                                                                                                                                                  tRNA-Lys
HM589215 P27        GTACACGACCTGGACTGTATTATGGTCGGTGCTCAGAGATCTGCGGCTCAAACCACAGTTTTATGCCCATTGTTCTTGAACTAGTCCCATTATCATATTTTGAAAAATGATCTGCGTCTATACTGTAAATTCATTAAGAAGCTAAACTAG
JF357971 CORBETTI1  .C.....G.....G..A..........A.........A..............T....................C..............GC.G........C..............A............T....C............T...
DQ151550            ....................................................................................................................................................
DQ151551 F2 Numt     .C.....G.....G..A..........A.........A..............T....................C..............GC.G........C..............A.....G......T....C............T...
WEFCOM 9.1          ....................................................................................................................................................
WEFCOM 9.2          .C.....G.....G..A..........A.........A..............T....................C..............GC.G........C..............A............T....C............T...
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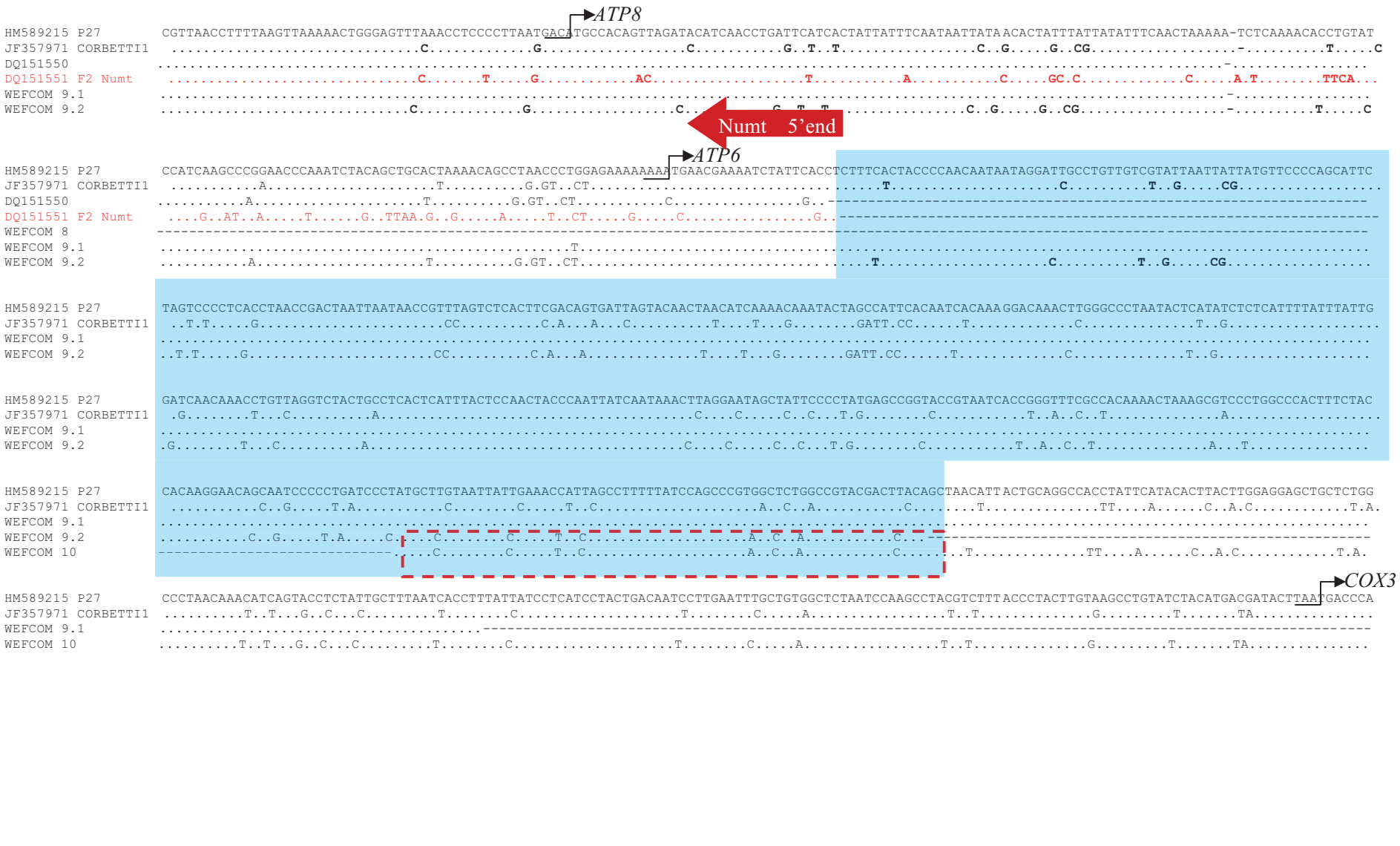
ATP8
Numt 5'end
ATP6
COX3
HM589215 P27
JF357971 CORBETTI1
DQ151550
DQ151551 F2 Numt
WEFCOM 9.1
WEFCOM 9.2
WEFCOM 8
WEFCOM 10