

Supplementary Materials: Molecular Detection of Arthropod-Borne Pathogens in Eurasian Badgers (*Meles meles*) from the United Kingdom

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Table S1. Gene target, amplicon length, primer pairs and PCR conditions used for the different pathogens.

Pathogen	Gene Target and Amplicon Length (bp)	Primers' Name and Sequence	PCR Conditions	References
Piroplasmid	18S rRNA ¹ 560 bp	Mic1 GTCTTGTAATTGGAATGATGG Mic2 CCAAAGACTTTGATTCTCTC	94 °C—30'' 50 °C—30'' 72 °C—1'	[1]
<i>Anaplasma phagocytophilum</i>	16S rRNA ² 932 bp (First PCR)	GE3a CACATGCAAGTCGAACGGATTATTC GE10r TTCCGTTAAGAAGGATCTAATCTCC	95 °C—30'' 55 °C—30'' 72 °C—1'	[2]
	16S rRNA ² 546 bp (Second PCR)	GE9f AACGGATTATCTTTATAGCTTGCT GE2 GGCAGTATTAAAAGCAGCTCAGGG	95 °C—30'' 55 °C—30'' 72 °C—1'	
<i>Ehrlichia canis</i>	16S rRNA ² 152 bp (First PCR)	ECCf AGAACGAACGCTGGCGGCAAGC ECBr CGTATTACCGCGGCTGCTGGCA	94 °C—1' 55 °C—2' 72 °C—1.5'	[3]
	16S rRNA ² 395bp (Second PCR)	ECAN5 CAATTATTTATAGCCTCTGGCTATAGGA HE3r TATAGGTACCGTCATTATCTTCCCTAT	92 °C—1' 55 °C—2' 72 °C—1.5'	
<i>Coxiella burnetii</i>	IS1111a ³ 687 bp	TRANS-1 TATGTATCCACCGTAGCCAGT TRANS-2 CCCAACAACACCTCCTTATTC	95 °C—30'' 64 °C—1' 72 °C—1'	[4]
<i>Francisella tularensis</i>	TUL4 ⁴ 400 bp	TUL4-435 TCGAAGACGATCAGATACCGTCG TUL4-863 TGCCTTAAACTTCCTTGCGAT	96 °C—1' 60.5 °C—1' 72 °C—1'	[5]
<i>Bartonella</i> spp.	16S rRNA ² 296 bp	P24E CCTCCTTCAGTTAGGCTGG P12B GAGATGGCTTTTGAGATTA	95 °C—1' 57 °C—1' 72 °C—1'	[6]

¹ 18S rRNA: 18S ribosomal RNA; ² 16S rRNA: 16S ribosomal RNA; ³ ISS1111: Insertion Sequence; ⁴ TUL4: Tul4 membrane protein.

Table S2. Details of the results of the BLAST analysis (<https://blast.ncbi.nlm.nih.gov/Blast.cgi>) for the samples PCR positive for piroplasmids

Badger Code	Sequence Length (bp)	% Identity/ % Query Coverage	Description	Sequence Accession Nr	Origin	Species and Sample
UKBADGER13	520	100/100	<i>Babesia</i> sp. badger type A isolate Badger-2 18S rRNA gene	MG799845.1	China: Xinjiang	<i>M. meles</i> , blood
		100/100	<i>Babesia</i> sp. badger type A isolate 04/00402 18S rRNA gene	KT223484.1	Spain	<i>M. meles</i> , blood
		99.81/100	<i>Babesia</i> sp. isolate Badger Type A UK1 18S rRNA gene	KX528553.1	United Kingdom	<i>M. meles</i> , blood
		99.23/100	Piroplasmida sp. mel1/Burgos/2007 18S rRNA gene	FJ225390.1	Spain: Burgos	<i>M. meles</i> , blood
		100/97	<i>Babesia</i> sp. isolate 86/17 18S rRNA gene	MF614153.1	Bosnia—Herzegovina	<i>Felis silvestris</i> , spleen
UKBADGER14	473	100/100	<i>Babesia</i> sp. badger type A isolate Badger-2 18S rRNA gene	MG799845.1	China: Xinjiang	<i>M. meles</i> blood
		100/100	<i>Babesia</i> sp. isolate 86/17 18S rRNA gene	MF614153.1	Bosnia—Herzegovina	<i>Felis silvestris</i> spleen
		100/100	<i>Babesia</i> sp. badger type A isolate 04/00402 18S rRNA gene	KT223484.1	Spain	<i>M. meles</i> blood
		99.79/100	<i>Babesia</i> sp. isolate Badger Type A UK1 18S rRNA gene	KX528553.1	United Kingdom	<i>M. meles</i> blood
		100/99	<i>Babesia</i> sp. voucher 46638_2 small subunit ribosomal RNA gene	MK742772	Italy	<i>M. meles</i> , spleen
UKBADGER15	460	100/100	<i>Babesia</i> sp. badger type A isolate Badger-2 18S rRNA gene	MG799845.1	China Xinjiang	<i>M. meles</i> blood
		100/100	<i>Babesia</i> sp. isolate 86/17 18S rRNA gene	MF614153.1	Bosnia—Herzegovina	<i>Felis silvestris</i> spleen
		100/100	<i>Babesia</i> sp. badger type A isolate 04/00402 18S rRNA gene	KT223484.1	Spain	<i>M. meles</i> blood
		99.78/100	<i>Babesia</i> sp. isolate Badger Type A UK1 18S rRNA gene	KX528553.1	United Kingdom	<i>M. meles</i> blood
		100/99	<i>Babesia</i> sp. voucher 46638_2 small subunit ribosomal RNA gene	MK742772	Italy	<i>M. meles</i> , spleen

UKBADGER16	481	100/100	<i>Babesia</i> sp. badger type A isolate Badger-2 18S rRNA gene	MG799845.1	China: Xinjiang	<i>M. meles</i> blood
		100/100	<i>Babesia</i> sp. isolate 86/17 18S rRNA gene	MF614153.1	Bosnia— Herzegovina	<i>Felis silvestris</i> speen
		100/100	<i>Babesia</i> sp. badger type A isolate 04/00402 18S rRNA gene	KT223484.1	Spain	<i>M. meles</i> blood
		99.79/100	<i>Babesia</i> sp. isolate Badger Type A UK1 18S rRNA gene	KX528553.1	United Kingdom	<i>M. meles</i> blood
		100/98	<i>Babesia</i> sp. voucher 46638_2 small subunit ribosomal RNA gene	MK742772	Italy	<i>M. meles</i> , spleen
UKBADGER17— 19–21	531	100/100	<i>Babesia</i> sp. badger type A isolate Badger-2 18S rRNA gene	MG799845.1	China: Xinjiang	<i>M. meles</i> blood
		100/100	<i>Babesia</i> sp. badger type A isolate 04/00402 18S rRNA gene	KT223484.1	Spain	<i>M. meles</i> blood
		99.81/100	<i>Babesia</i> sp. isolate Badger Type A UK1 18S rRNA gene	KX528553.1	United Kingdom	<i>M. meles</i> blood
		99.25/100	Piroplasmida sp. mel1/Burgos/2007 18S rRNA gene	FJ225390.1	Spain: Burgos	<i>M. meles</i> blood
		100/97	<i>Babesia</i> sp. isolate 86/17 18S rRNA gene	MF614153.1	Bosnia— Herzegovina	<i>Felis silvestris</i> speen

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