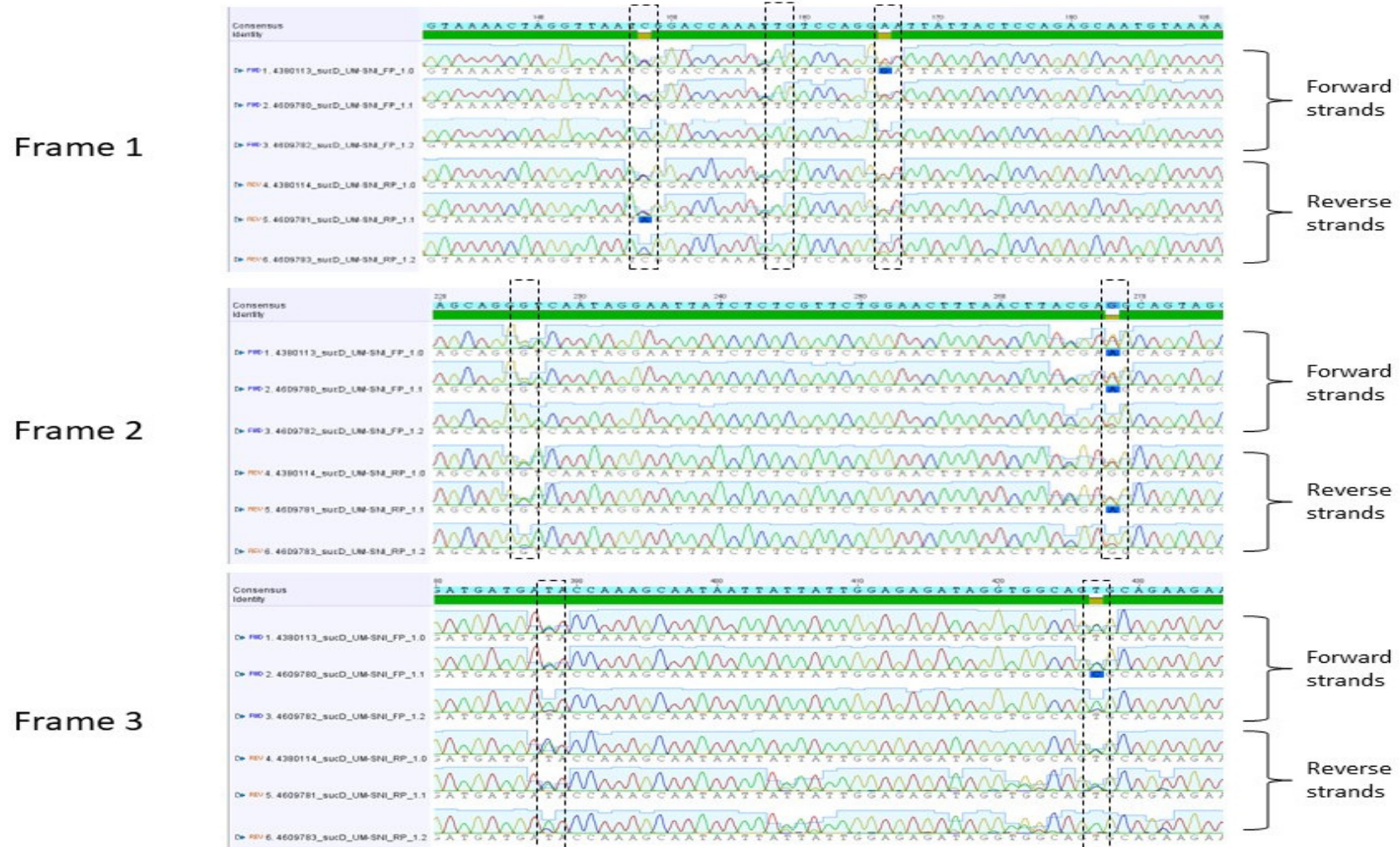
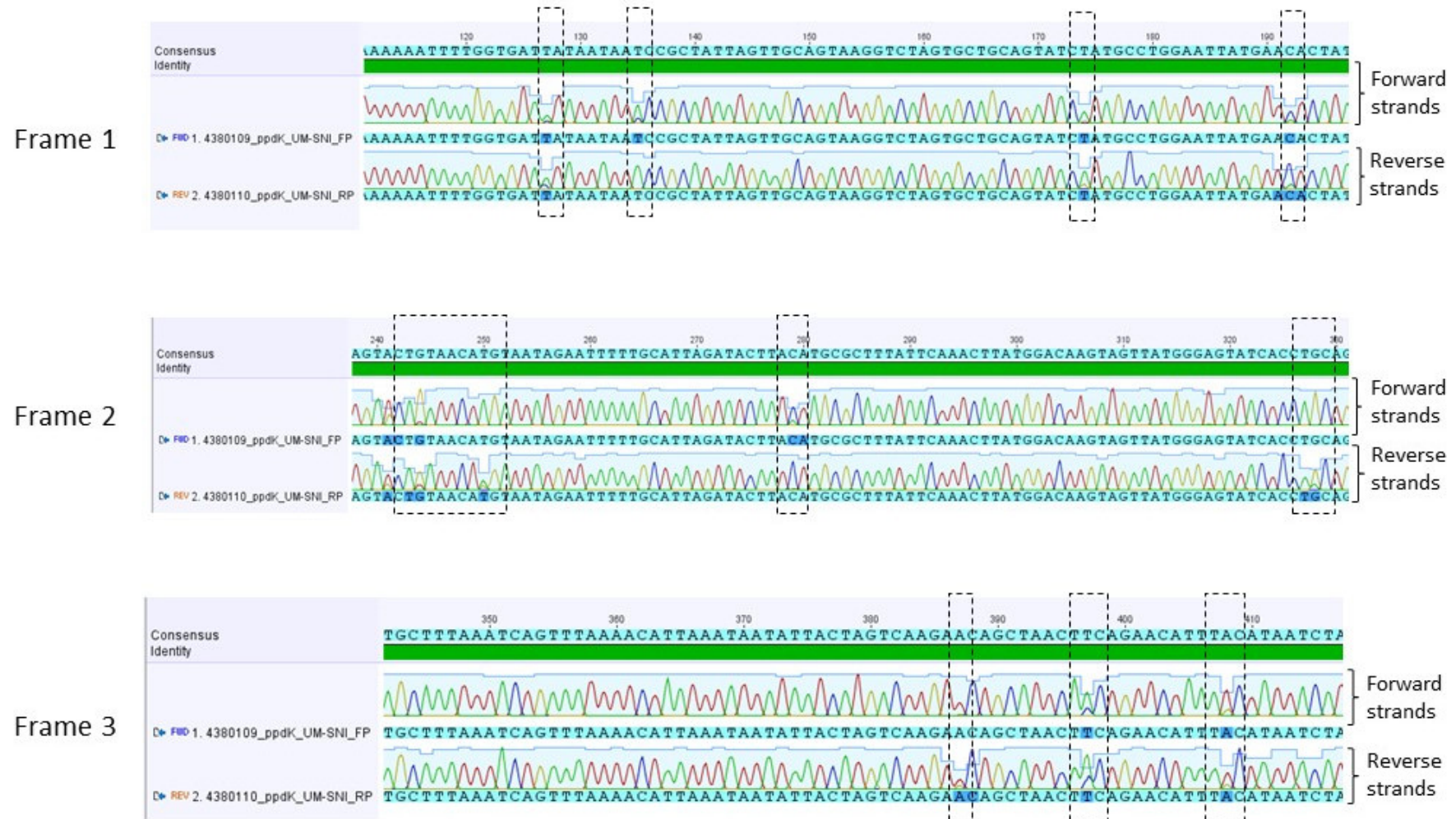


## Supplementary Figures

**Figure S1.** Positions with heterozygous double peaks in the *sucD* allele of *Orientia tsutsugamushi*.





























**Figure S2.** Positions with heterozygous double peaks in the *ppdK* allele of *Orientia tsutsugamushi*.





**Figure S3.** Similarities of *clpA* allele 310 (*Borrelia yangtzensis*) with closely related *clpA* alleles in the PubMLST database.

Allele	% Identity	Mismatches	Gaps	Alignment	Compare
clpA: 82	99.136	5	0	579/579	
clpA: 81	99.136	5	0	579/579	
clpA: 76	98.964	6	0	579/579	
clpA: 100	98.791	7	0	579/579	
clpA: 79	98.618	8	0	579/579	
clpA: 78	98.618	8	0	579/579	
clpA: 83	98.273	10	0	579/579	
clpA: 89	98.100	11	0	579/579	
clpA: 84	98.100	11	0	579/579	
clpA: 75	98.100	11	0	579/579	
clpA: 80	97.582	14	0	579/579	
clpA: 50	96.718	19	0	579/579	
clpA: 257	96.718	19	0	579/579	
clpA: 49	96.546	20	0	579/579	
clpA: 110	96.546	20	0	579/579	
clpA: 96	96.373	21	0	579/579	
clpA: 77	96.200	22	0	579/579	
clpA: 297	94.646	31	0	579/579	
clpA: 179	91.883	47	0	579/579	
clpA: 32	91.537	49	0	579/579	
clpA: 299	91.537	49	0	579/579	
clpA: 234	91.537	49	0	579/579	
clpA: 74	91.379	48	2	580/579	
clpA: 74	91.379	48	2	580/579	
clpA: 28	91.364	50	0	579/579	
clpA: 26	91.364	50	0	579/579	



## Supplementary Table

**Table S1.** The morphological information of small mammals trapped in Johor and Perak, Malaysia.

No.	Species	Voucher No.	Habitat	Locality	Sex	Age	Microorganism detected	Strain	Accession No.	Total number of individuals
1.	<i>Rattus tanezumi</i> R3 mitotype	KTR003	Oil palm plantation	Johor, Malaysia	Female	Sub-adult	-	-	-	113
2.	<i>Rattus tanezumi</i> R3 mitotype	KTR004	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-	
3.	<i>Rattus tanezumi</i> R3 mitotype	KTR005	Oil palm plantation	Johor, Malaysia	Female	Sub-adult	-	-	-	
4.	<i>Rattus tanezumi</i> R3 mitotype	KTR010	Oil palm plantation	Johor, Malaysia	Male	Sub-adult	<i>Orientia tsutsugamushi</i>	UM-SNI41	OP413418	
5.	<i>Rattus tanezumi</i> R3 mitotype	KTR011	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-	
6.	<i>Rattus tanezumi</i> R3 mitotype	KTR013	Oil palm plantation	Johor, Malaysia	Female	Juvenile	-	-	-	
7.	<i>Rattus tanezumi</i> R3 mitotype	KTR021	Oil palm plantation	Johor, Malaysia	Female	Sub-adult	-	-	-	
8.	<i>Rattus tanezumi</i> R3 mitotype	KTR022	Oil palm plantation	Johor, Malaysia	Male	Sub-adult	-	-	-	
9.	<i>Rattus tanezumi</i> R3 mitotype	KTR026	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-	
10.	<i>Rattus tanezumi</i> R3 mitotype	KTR027	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-	
11.	<i>Rattus tanezumi</i> R3 mitotype	KTR028	Oil palm plantation	Johor, Malaysia	Female	Sub-adult	<i>Orientia tsutsugamushi</i>	UM-SNI42	OP413419	
12.	<i>Rattus tanezumi</i> R3 mitotype	KTR032	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-	
13.	<i>Rattus tanezumi</i> R3 mitotype	KTR033	Oil palm plantation	Johor, Malaysia	Female	Sub-adult	-	-	-	

13.	<i>Rattus tanezumi</i> R3 mitotype	KTR033	Oil palm plantation	Johor, Malaysia	Female	Sub-adult	-	-	-
14.	<i>Rattus tanezumi</i> R3 mitotype	KTR034	Oil palm plantation	Johor, Malaysia	Female	Sub-adult	<i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI43	OP413420
15.	<i>Rattus tanezumi</i> R3 mitotype	KTR035	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
16.	<i>Rattus tanezumi</i> R3 mitotype	KTR037	Oil palm plantation	Johor, Malaysia	Male	Adult	<i>Borrelia</i> sp. (LD)	UM-SNI16	OP375130
17.	<i>Rattus tanezumi</i> R3 mitotype	KTR041	Oil palm plantation	Johor, Malaysia	Female	Adult	<i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI46	OP413423
18.	<i>Rattus tanezumi</i> R3 mitotype	KTR042	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
19.	<i>Rattus tanezumi</i> R3 mitotype	KTR043	Oil palm plantation	Johor, Malaysia	Male	Adult	<i>Bartonella</i> <i>phoceensis</i> / <i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI04/ UM-SNI47	OP375118/ OP413424
20.	<i>Rattus tanezumi</i> R3 mitotype	KTR044	Oil palm plantation	Johor, Malaysia	Female	Adult	<i>Borrelia</i> sp. (LD)	UM-SNI17	OP375131
21.	<i>Rattus tanezumi</i> R3 mitotype	KTR045	Oil palm plantation	Johor, Malaysia	Female	Adult	<i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI48	OP413425
22.	<i>Rattus tanezumi</i> R3 mitotype	KTR058	Oil palm plantation	Johor, Malaysia	Male	Sub-adult	-	-	-
23.	<i>Rattus tanezumi</i> R3 mitotype	KTR059	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
24.	<i>Rattus tanezumi</i> R3 mitotype	KTR060	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
25.	<i>Rattus tanezumi</i> R3 mitotype	KTR061	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
26.	<i>Rattus tanezumi</i> R3 mitotype	KTR063	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-
27.	<i>Rattus tanezumi</i> R3 mitotype	KTR068	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-

28.	<i>Rattus tanezumi</i> R3 mitotype	KTR069	Oil palm plantation	Johor, Malaysia	Male	Adult	<i>Borrelia</i> sp. (LD)	UM-SNI18	OP375132
29.	<i>Rattus tanezumi</i> R3 mitotype	KTR070	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
30.	<i>Rattus tanezumi</i> R3 mitotype	KTR071	Oil palm plantation	Johor, Malaysia	Female	Sub-adult	<i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI50	OP413427
31.	<i>Rattus tanezumi</i> R3 mitotype	KTR072	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
32.	<i>Rattus tanezumi</i> R3 mitotype	KTR073	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-
33.	<i>Rattus tanezumi</i> R3 mitotype	KTR074	Oil palm plantation	Johor, Malaysia	Female	Juvenile	-	-	-
34.	<i>Rattus tanezumi</i> R3 mitotype	KTR075	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-
35.	<i>Rattus tanezumi</i> R3 mitotype	KTR077	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-
36.	<i>Rattus tanezumi</i> R3 mitotype	KTR078	Oil palm plantation	Johor, Malaysia	Male	Sub-adult	-	-	-
37.	<i>Rattus tanezumi</i> R3 mitotype	KTR079	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
38.	<i>Rattus tanezumi</i> R3 mitotype	KTR080	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
39.	<i>Rattus tanezumi</i> R3 mitotype	KTR081	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
40.	<i>Rattus tanezumi</i> R3 mitotype	KTR082	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
41.	<i>Rattus tanezumi</i> R3 mitotype	KTR083	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
42.	<i>Rattus tanezumi</i> R3 mitotype	KTR086	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
43.	<i>Rattus tanezumi</i> R3 mitotype	KTR087	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-

44.	<i>Rattus tanezumi</i> R3 mitotype	KTR093	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
45.	<i>Rattus tanezumi</i> R3 mitotype	KTR094	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
46.	<i>Rattus tanezumi</i> R3 mitotype	KTR095	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
47.	<i>Rattus tanezumi</i> R3 mitotype	KTR096	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
48.	<i>Rattus tanezumi</i> R3 mitotype	KTR097	Oil palm plantation	Johor, Malaysia	Male	Sub-adult	-	-	-
49.	<i>Rattus tanezumi</i> R3 mitotype	KTR098	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
50.	<i>Rattus tanezumi</i> R3 mitotype	KTR099	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-
51.	<i>Rattus tanezumi</i> R3 mitotype	KTR101	Oil palm plantation	Johor, Malaysia	Female	Juvenile	-	-	-
52.	<i>Rattus tanezumi</i> R3 mitotype	THTR003	Paddy field	Perak, Malaysia	Male	-	-	-	-
53.	<i>Rattus tanezumi</i> R3 mitotype	THTR004	Oil palm plantation	Perak, Malaysia	Female	Adult	<i>Bartonella phoceensis</i>	UM-SNI05	OP375119
54.	<i>Rattus tanezumi</i> R3 mitotype	THTR005	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
55.	<i>Rattus tanezumi</i> R3 mitotype	THTR006	Residential area	Perak, Malaysia	Male	Adult	<i>Bartonella phoceensis</i>	UM-SNI06	OP375120
56.	<i>Rattus tanezumi</i> R3 mitotype	THTR007	Residential area	Perak, Malaysia	Male	Sub-adult	<i>Bartonella phoceensis</i>	UM-SNI07	OP375121
57.	<i>Rattus tanezumi</i> R3 mitotype	THTR008	Residential area	Perak, Malaysia	Female	Adult	<i>Bartonella phoceensis</i>	UM-SNI08	OP375122
58.	<i>Rattus tanezumi</i> R3 mitotype	THTR009	Residential area	Perak, Malaysia	Female	Sub-adult	-	-	-
59.	<i>Rattus tanezumi</i> R3 mitotype	THTR010	Residential area	Perak, Malaysia	Female	Adult	<i>Bartonella phoceensis</i>	UM-SNI09/ UM-SNI26	OP375122/ OP413403



							<i>Orientia tsutsugamushi</i>		
60.	<i>Rattus tanezumi</i> R3 mitotype	THTR013	Residential area	Perak, Malaysia	Female	Adult	-	-	-
61.	<i>Rattus tanezumi</i> R3 mitotype	THTR015	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
62.	<i>Rattus tanezumi</i> R3 mitotype	THTR016	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
63.	<i>Rattus tanezumi</i> R3 mitotype	THTR019	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
64.	<i>Rattus tanezumi</i> R3 mitotype	THTR042	Oil palm plantation	Perak, Malaysia	Female	Adult	<i>Orientia tsutsugamushi</i>	UM-SNI29	OP413406
65.	<i>Rattus tanezumi</i> R3 mitotype	THTR043	Oil palm plantation	Perak, Malaysia	Female	Adult	<i>Bartonella phoceensis/ Orientia tsutsugamushi</i>	UM-SNI11/ UM-SNI30	OP375125/ OP413407
66.	<i>Rattus tanezumi</i> R3 mitotype	THTR044	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
67.	<i>Rattus tanezumi</i> R3 mitotype	THTR046	Oil palm plantation	Perak, Malaysia	Male	Sub-adult	<i>Bartonella phoceensis/ Orientia tsutsugamushi</i>	UM-SNI12/ UM-SNI33	OP375126/ OP413410
68.	<i>Rattus tanezumi</i> R3 mitotype	THTR047	Oil palm plantation	Perak, Malaysia	Male	Adult	<i>Orientia tsutsugamushi</i>	UM-SNI34	OP413411
69.	<i>Rattus tanezumi</i> R3 mitotype	THTR048	Oil palm plantation	Perak, Malaysia	Female	Sub-adult	<i>Bartonella phoceensis/ Orientia tsutsugamushi</i>	UM-SNI13/ UM-SNI35	OP375127/ OP413412
70.	<i>Rattus tanezumi</i> R3 mitotype	THTR110	Residential area	Perak, Malaysia	Male	Adult	-	-	-
71.	<i>Rattus tanezumi</i> R3 mitotype	THTR112	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-

72.	<i>Rattus tanezumi</i> R3 mitotype	THTR113	Oil palm plantation	Perak, Malaysia	Female	Sub-adult	-	-	-
73.	<i>Rattus tanezumi</i> R3 mitotype	THTR114	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
74.	<i>Rattus tanezumi</i> R3 mitotype	THTR115	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
75.	<i>Rattus tanezumi</i> R3 mitotype	THTR118	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
76.	<i>Rattus tanezumi</i> R3 mitotype	THTR119	Oil palm plantation	Perak, Malaysia	Male	Juvenile	-	-	-
77.	<i>Rattus tanezumi</i> R3 mitotype	THTR120	Oil palm plantation	Perak, Malaysia	Male	Adult	<i>Borrelia</i> sp. (RF)	UM-SNI21	OP375135
78.	<i>Rattus tanezumi</i> R3 mitotype	THTR121	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
79.	<i>Rattus tanezumi</i> R3 mitotype	THTR123	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
80.	<i>Rattus tanezumi</i> R3 mitotype	THTR125	Oil palm plantation	Perak, Malaysia	Male	Sub-adult	-	-	-
81.	<i>Rattus tanezumi</i> R3 mitotype	THTR126	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
82.	<i>Rattus tanezumi</i> R3 mitotype	THTR127	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
83.	<i>Rattus tanezumi</i> R3 mitotype	THTR128	Oil palm plantation	Perak, Malaysia	Male	Adult	<i>Borrelia</i> sp. (RF)	UM-SNI22	OP375136
84.	<i>Rattus tanezumi</i> R3 mitotype	THTR129	Oil palm plantation	Perak, Malaysia	Male	Juvenile	-	-	-
85.	<i>Rattus tanezumi</i> R3 mitotype	THTR133	Oil palm plantation	Perak, Malaysia	Male	Adult	<i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI36	OP413413
86.	<i>Rattus tanezumi</i> R3 mitotype	THTR134	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
87.	<i>Rattus tanezumi</i> R3 mitotype	THTR136	Residential area	Perak, Malaysia	Female	Sub-adult	-	-	-

88.	<i>Rattus tanezumi</i> R3 mitotype	THTR138	Residential area	Perak, Malaysia	Male	Adult	-	-	-
89.	<i>Rattus tanezumi</i> R3 mitotype	THTR139	Residential area	Perak, Malaysia	Female	Adult	-	-	-
90.	<i>Rattus tanezumi</i> R3 mitotype	THTR140	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
91.	<i>Rattus tanezumi</i> R3 mitotype	THTR141	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
92.	<i>Rattus tanezumi</i> R3 mitotype	THTR142	Residential area	Perak, Malaysia	Male	Adult	<i>Borrelia burgdorferi</i>	UM-SNI15	OP375129
93.	<i>Rattus tanezumi</i> R3 mitotype	THTR143	Residential area	Perak, Malaysia	Male	Adult	-	-	-
94.	<i>Rattus tanezumi</i> R3 mitotype	THTR145	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
95.	<i>Rattus tanezumi</i> R3 mitotype	THTR146	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
96.	<i>Rattus tanezumi</i> R3 mitotype	THTR147	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
97.	<i>Rattus tanezumi</i> R3 mitotype	THTR148	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
98.	<i>Rattus tanezumi</i> R3 mitotype	THTR149	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
99.	<i>Rattus tanezumi</i> R3 mitotype	THTR153	Oil palm plantation	Perak, Malaysia	Male	Juvenile	-	-	-
100.	<i>Rattus tanezumi</i> R3 mitotype	THTR157	Residential area	Perak, Malaysia	Male	Adult	-	-	-
101.	<i>Rattus tanezumi</i> R3 mitotype	THTR158	Residential area	Perak, Malaysia	Male	Sub-adult	-	-	-
102.	<i>Rattus tanezumi</i> R3 mitotype	THTR159	Oil palm plantation	Perak, Malaysia	Female	Sub-adult	-	-	-
103.	<i>Rattus tanezumi</i> R3 mitotype	THTR160	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-

104.	<i>Rattus tanezumi</i> R3 mitotype	THTR161	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
105.	<i>Rattus tanezumi</i> R3 mitotype	THTR162	Oil palm plantation	Perak, Malaysia	Female	Adult	<i>Borrelia</i> sp. (RF)	UM-SNI24	OP537179
106.	<i>Rattus tanezumi</i> R3 mitotype	THTR163	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
107.	<i>Rattus tanezumi</i> R3 mitotype	THTR164	Oil palm plantation	Perak, Malaysia	Female	Adult	<i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI38	OP413415
108.	<i>Rattus tanezumi</i> R3 mitotype	THTR165	Oil palm plantation	Perak, Malaysia	Female	Sub-adult	-	-	-
109.	<i>Rattus tanezumi</i> R3 mitotype	THTR167	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
110.	<i>Rattus tanezumi</i> R3 mitotype	THTR168	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
111.	<i>Rattus tanezumi</i> R3 mitotype	THTR170	Oil palm plantation	Perak, Malaysia	Female	Adult	<i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI39	OP413416
112.	<i>Rattus tanezumi</i> R3 mitotype	THTR171	Oil palm plantation	Perak, Malaysia	Male	Adult	<i>Orientia</i> <i>tsutsugamushi</i>	UM-SNI40	OP413417
113.	<i>Rattus tanezumi</i> R3 mitotype	THTR172	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
114.	<i>Rattus tanezumi</i> R3 mitotype	THTR173	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
115.	<i>Rattus tanezumi</i> R3 mitotype	THTR174	Oil palm plantation	Perak, Malaysia	Female	Sub-adult	<i>Borrelia</i> sp. (RF)	UM-SNI25	OP375138
116.	<i>Rattus</i> <i>argentiater</i>	THTR001	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
117.	<i>Rattus</i> <i>argentiater</i>	THTR020	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
118.	<i>Rattus</i> <i>argentiater</i>	THTR021	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
119.	<i>Rattus</i> <i>argentiater</i>	THTR022	Paddy field	Perak, Malaysia	Male	Adult	<i>Bartonella</i> <i>phoceensis</i>	UM-SNI10	OP375124

120.	<i>Rattus argentiventer</i>	THTR023	Paddy field	Perak, Malaysia	Male	Adult	-	-	-
121.	<i>Rattus argentiventer</i>	THTR025	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
122.	<i>Rattus argentiventer</i>	THTR026	Paddy field	Perak, Malaysia	Male	Sub-adult	-	-	-
123.	<i>Rattus argentiventer</i>	THTR027	Paddy field	Perak, Malaysia	Female	Adult	-	-	-
124.	<i>Rattus argentiventer</i>	THTR028	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
125.	<i>Rattus argentiventer</i>	THTR029	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
126.	<i>Rattus argentiventer</i>	THTR030	Paddy field	Perak, Malaysia	Male	Adult	-	-	-
127.	<i>Rattus argentiventer</i>	THTR031	Paddy field	Perak, Malaysia	Male	Adult	-	-	-
128.	<i>Rattus argentiventer</i>	THTR032	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
129.	<i>Rattus argentiventer</i>	THTR033	Paddy field	Perak, Malaysia	Male	Adult	-	-	-
130.	<i>Rattus argentiventer</i>	THTR034	Paddy field	Perak, Malaysia	Female	Adult	-	-	-
131.	<i>Rattus argentiventer</i>	THTR035	Paddy field	Perak, Malaysia	Female	Sub-adult	-	-	-
132.	<i>Rattus argentiventer</i>	THTR036	Paddy field	Perak, Malaysia	Female	Adult	<i>Orientia tsutsugamushi</i>	UM-SNI27	OP413404
133.	<i>Rattus argentiventer</i>	THTR037	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-
134.	<i>Rattus argentiventer</i>	THTR038	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
135.	<i>Rattus argentiventer</i>	THTR039	Oil palm plantation	Perak, Malaysia	Female	Sub-adult	-	-	-



136.	<i>Rattus argentiventer</i>	THTR107	Paddy field	Perak, Malaysia	Male	Adult	-	-	-	
137.	<i>Rattus argentiventer</i>	THTR122	Paddy field	Perak, Malaysia	Male	Sub-adult	-	-	-	
138.	<i>Rattus argentiventer</i>	THTR124	Paddy field	Perak, Malaysia	Male	Adult	-	-	-	
139.	<i>Rattus argentiventer</i>	THTR155	Paddy field	Perak, Malaysia	Male	Adult	-	-	-	
140.	<i>Rattus argentiventer</i>	THTR156	Paddy field	Perak, Malaysia	Male	Adult	<i>Orientia tsutsugamushi</i>	UM-SNI37	OP413414	
141.	<i>Rattus tiomanicus</i>	KTR001	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-	22
142.	<i>Rattus tiomanicus</i>	KTR002	Oil palm plantation	Johor, Malaysia	Male	-	-	-	-	
143.	<i>Rattus tiomanicus</i>	KTR006	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-	
144.	<i>Rattus tiomanicus</i>	KTR012	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-	
145.	<i>Rattus tiomanicus</i>	KTR023	Oil palm plantation	Johor, Malaysia	Female	Juvenile	-	-	-	
146.	<i>Rattus tiomanicus</i>	KTR024	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-	
147.	<i>Rattus tiomanicus</i>	KTR029	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-	
148.	<i>Rattus tiomanicus</i>	KTR036	Oil palm plantation	Johor, Malaysia	Female	Adult	<i>Orientia tsutsugamushi</i>	UM-SNI44	OP413421	
149.	<i>Rattus tiomanicus</i>	KTR046	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-	
150.	<i>Rattus tiomanicus</i>	KTR062	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-	
151.	<i>Rattus tiomanicus</i>	KTR065	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-	

152.	<i>Rattus tiomanicus</i>	KTR076	Oil palm plantation	Johor, Malaysia	Male	Juvenile	-	-	-
153.	<i>Rattus tiomanicus</i>	THTR012	Residential area	Perak, Malaysia	Female	Adult	-	-	-
154.	<i>Rattus tiomanicus</i>	THTR017	Oil palm plantation	Perak, Malaysia	Female	Juvenile	-	-	-
155.	<i>Rattus tiomanicus</i>	THTR018	Oil palm plantation	Perak, Malaysia	Female	Sub-adult	-	-	-
156.	<i>Rattus tiomanicus</i>	THTR040	Residential area	Perak, Malaysia	Female	Adult	-	-	-
157.	<i>Rattus tiomanicus</i>	THTR116	Oil palm plantation	Perak, Malaysia	Female	Sub-adult	-	-	-
158.	<i>Rattus tiomanicus</i>	THTR117	Oil palm plantation	Perak, Malaysia	Male	Juvenile	-	-	-
159.	<i>Rattus tiomanicus</i>	THTR137	Residential area	Perak, Malaysia	Male	Adult	-	-	-
160.	<i>Rattus tiomanicus</i>	THTR150	Oil palm plantation	Perak, Malaysia	Female	Adult	<i>Borrelia</i> sp. (RF)	UM-SNI23	OP375137
161.	<i>Rattus tiomanicus</i>	THTR166	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-
162.	<i>Rattus tiomanicus</i>	THTR175	Oil palm plantation	Perak, Malaysia	Female	Juvenile	-	-	-
163.	<i>Rattus exulans</i>	KTR007	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
164.	<i>Rattus exulans</i>	KTR008	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
165.	<i>Rattus exulans</i>	KTR064	Oil palm plantation	Johor, Malaysia			-	-	-
166.	<i>Rattus exulans</i>	THTR002	Paddy field	Perak, Malaysia	Male	Adult	-	-	-
167.	<i>Rattus exulans</i>	THTR014	Residential area	Perak, Malaysia	Male	Juvenile	-	-	-

168.	<i>Rattus exulans</i>	THTR024	Paddy field	Perak, Malaysia	Male	Adult	-	-	-	
169.	<i>Rattus exulans</i>	THTR041	Oil palm plantation	Perak, Malaysia	Male	Adult	<i>Orientia tsutsugamushi</i>	UM-SNI28	OP413405	
170.	<i>Rattus exulans</i>	THTR045	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-	
171.	<i>Rattus exulans</i>	THTR109	Residential area	Perak, Malaysia	Male	Adult	-	-	-	
172.	<i>Rattus exulans</i>	THTR131	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-	
173.	<i>Rattus exulans</i>	THTR152	Oil palm plantation	Perak, Malaysia	Male	Sub-adult	-	-	-	
174.	<i>Rattus exulans</i>	THTR169	Oil palm plantation	Perak, Malaysia	Male	Juvenile	-	-	-	
175.	<i>Rattus exulans</i>	THTR176	Oil palm plantation	Perak, Malaysia	Female	-	-	-	-	
176.	<i>Rattus tanezumi sensu stricto</i>	THTR108	Paddy field	Perak, Malaysia	Female	Adult	-	-	-	1
177.	<i>Tupaia glis</i>	THTR011	Residential area	Perak, Malaysia	Female	Adult	-	-	-	40
178.	<i>Tupaia glis</i>	THTR111	Residential area	Perak, Malaysia	Female	Adult	<i>Borrelia</i> sp. (RF)	UM-SNI20	OP375134	
179.	<i>Tupaia glis</i>	THTR130	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-	
180.	<i>Tupaia glis</i>	THTR132	Oil palm plantation	Perak, Malaysia	Male	Adult	-	-	-	
181.	<i>Tupaia glis</i>	THTR135	Residential area	Perak, Malaysia	Male	Adult	-	-	-	
182.	<i>Tupaia glis</i>	THTR144	Residential area	Perak, Malaysia	Male	Adult	-	-	-	
183.	<i>Tupaia glis</i>	THTR151	Oil palm plantation	Perak, Malaysia	Female	Adult	-	-	-	

184.	<i>Tupaia glis</i>	KTR009	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
185.	<i>Tupaia glis</i>	KTR014	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
186.	<i>Tupaia glis</i>	KTR015	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
187.	<i>Tupaia glis</i>	KTR016	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
188.	<i>Tupaia glis</i>	KTR017	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
189.	<i>Tupaia glis</i>	KTR018	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
190.	<i>Tupaia glis</i>	KTR019	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
191.	<i>Tupaia glis</i>	KTR020	Oil palm plantation	Johor, Malaysia	Male	Sub-adult	-	-	-
192.	<i>Tupaia glis</i>	KTR025	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
193.	<i>Tupaia glis</i>	KTR030	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
194.	<i>Tupaia glis</i>	KTR031	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
195.	<i>Tupaia glis</i>	KTR038	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
196.	<i>Tupaia glis</i>	KTR039	Oil palm plantation	Johor, Malaysia	Female	Adult	<i>Orientia tsutsugamushi</i>	UM-SNI45	OP413422
197.	<i>Tupaia glis</i>	KTR040	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
198.	<i>Tupaia glis</i>	KTR047	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
199.	<i>Tupaia glis</i>	KTR048	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-

200.	<i>Tupaia glis</i>	KTR049	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
201.	<i>Tupaia glis</i>	KTR050	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
202.	<i>Tupaia glis</i>	KTR051	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
203.	<i>Tupaia glis</i>	KTR052	Oil palm plantation	Johor, Malaysia	Male	Adult	<i>Orientia</i>	UM-SNI49	OP413426
204.	<i>Tupaia glis</i>	KTR053	Oil palm plantation	Johor, Malaysia	Male	Adult	<i>tsutsugamushi</i>	-	-
205.	<i>Tupaia glis</i>	KTR054	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
206.	<i>Tupaia glis</i>	KTR055	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
207.	<i>Tupaia glis</i>	KTR056	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
208.	<i>Tupaia glis</i>	KTR057	Oil palm plantation	Johor, Malaysia	Female	Juvenile			-
209.	<i>Tupaia glis</i>	KTR066	Oil palm plantation	Johor, Malaysia	Male	Sub-adult	-	-	-
210.	<i>Tupaia glis</i>	KTR067	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
211.	<i>Tupaia glis</i>	KTR084	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
212.	<i>Tupaia glis</i>	KTR085	Oil palm plantation	Johor, Malaysia	Female	Adult	-	-	-
213.	<i>Tupaia glis</i>	KTR088	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
214.	<i>Tupaia glis</i>	KTR089	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
215.	<i>Tupaia glis</i>	KTR090	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-



216.	<i>Tupaia glis</i>	KTR091	Oil palm plantation	Johor, Malaysia	Male	Adult	<i>Borrelia</i> sp. (RF)	UM-SNI14	OP375128
217.	<i>Tupaia glis</i>	KTR100	Oil palm plantation	Johor, Malaysia	Male	Adult	-	-	-
<b>Total number of individuals</b>								47	217