

Table S1. Information of Sacbrood virus prevalence detection. The primer sequences are shown in Table S2.

Number	Region	Year	Host	Prevalence	Sample size	Primer number	NCBI Accession	Reference
1	Algeria	2013	AM	13.79%	29	2	-	[140]
2	Argentina	2015	AM	1.10%	385	3	-	[141]
3	Australia	2015	AM	35%	1240	9	-	[142]
4	Austria	2004	AM	49%	90	1	-	[143]
5	Bangladesh	1995	*	+	*	-	-	[144]
6	Belarus	1996	*	+	*	-	-	[72]
7	Belgium	2017	AM	97.13%	557	8	-	[145]
8	Belize	1993	*	+	*	-	-	[146]
9	Bhutan	1990	*	+	*	-	-	[14]
10	Brazil	2011	AM	18.18%	11	12	-	[8]
11	Bulgaria	2018	AM	12%	50	2	MG649495-99	[147]
12	Canada	2010	AM	16%	103	6	-	[148]
13	Chile	2010	AM	14.29%	21	4	-	[149]
14	China	2019	AC	20%	15	1	MW892515-24	[150]
15	Colombia	2014	AM	23.40%	483	4	-	[151]
16	Costa Rica	1996	*	+	*	-	-	[152]
17	Croatia	2010	AM	40.24%	82	1	-	[153]
18	Cuba	2019	AM	9.09%	22	11	-	[154]
19	Cyprus	1996	*	+	*	-	-	[72]
20	Czech Rep.	2017	AM	3.03%	33	1	MK550481	[32]
21	Denmark	2012	AM	39%	269	1	-	[155]
22	Ecuador	2017	AM	11.76%	17	5	-	[156]
23	Egypt	1988	*	+	*	-	-	[157]
24	Fiji	1986	AM	79%	96	-	-	[158]
25	Finland	1993	*	+	*	-	-	[146]
26	France	2015	AC	91.30%	23	5	-	[77]
27	Germany	2017	AM	11.10%	1064	3	-	[159]
28	Greece	2011	AM	6.67%	15	6	-	[160]
29	Guatemala	1996	*	+	*	-	-	[152]
30	Honduras	1993	*	+	*	-	-	[146]

Number	Region	Year	Host	Prevalence	Sample size	Primer number	NCBI Accession	Reference
31	Hungary	2004	AM	2%	52	1	-	[161]
32	India	2008	AM	0.08%-14.70%	*	-	-	[162]
33	Indonesia	2014	AC	+	*	1	KJ629177	[88]
34	Iran	2012	AM	18.50%	160	1	-	[163]
35	Ireland	1993	*	+	*	-	-	[146]
36	Israel	2009	AM	4%	71	*	-	[164]
37	Italy	2021	AM	100%	180	1	-	[165]
38	Japan	2018	AM	3.80%	26	1	-	[166]
39	Jordan	1993	*	+	*	-	-	[157]
40	Kenya	2014	AM	14%	100	1	-	[167]
41	Korea	2012	AC	35.29%	527	1	JN542440-42	[168]
42	Latvia	1995	*	+	*	-	-	[144]
43	Lithuania	2014	AM	33.70%	359	6	KP223782-88	[169]
44	Luxembourg	2011	AM	100%	20	3	-	[170]
45	Malaysia	2014	AC	+	*	1	KJ629178	[88]
46	Mexico	2012	AM	20%	10	2	-	[171]
47	Moldova	1996	*	+	*	-	-	[72]
48	Mongolia	2013	AM	73.50%	151	3	LN875562-68	[172]
49	Morocco	2018	AM	14.20%	60	2	MT863272	[173]
50	Myanmar	1993	*	+	*	-	-	[146]
51	Nepal	1999	AM	+	*	1	AF284616-29	[174]
52	New Zealand	2002	AM	5.5%-15%	20	-	-	[175]
53	Nicaragua	1996	*	+	*	-	-	[152]
54	Niue	1993	*	+	*	-	-	[146]
55	Norway	2014	AM	+	*	8	-	[176]
56	Oman	1997	*	+	*	-	-	[157]
57	Pakistan	1996	*	+	*	-	-	[72]
58	Panama	1996	*	+	*	-	-	[152]
59	Papua New Guinea	2014	AM	+	*	1	KJ629175-76	[88]
60	Peru	2014	AM	0%	10	*	-	[177]
61	Philippines	1996	AC	+	37	-	-	[178]

Number	Region	Year	Host	Prevalence	Sample size	Primer number	NCBI Accession	Reference
62	Poland	2004	AM	+	12	1	-	[143]
63	Romania	1993	*	+	*	-	-	[146]
64	Russia	2016	AM	+	*	*	*	[179]
65	Samoa	1993	*	+	*	-	-	[146]
66	Saudi Arabia	1990	*	+	*	-	-	[157]
67	Serbia	2017	AM	24%	150	7	KM001901	[180]
68	Slovenia	2020	AM	31.48%	305	9	-	[181]
69	Solomon Islands	1993	*	+	*	-	-	[146]
70	South Africa	1999	AM	+	*	1	AF284616-29	[174]
71	Spain	2008	AM	0.83%	484	4	FJ812813-14	[108]
72	Sweden	2009	AM	+	25	3	-	[182]
73	Switzerland	2008	AM	7.7%-43.8%	29	2	-	[183]
74	Syria	2017	*	13.33%	240	*	-	[184]
75	Thailand	2007	AM	15.22%	46	2	-	[185]
76	Tonga	1996	*	+	*	-	-	[72]
77	Trinidad and Tobago	1995	*	+	*	-	-	[144]
78	Tunisia	1988	*	+	*	-	-	[157]
79	Turkey	2018	AM	22.30%	76	5	-	[186]
80	Uganda	2010	AM	0%	138	7	-	[187]
81	Ukraine	2016	AM	+	*	1	-	[188]
82	United Kingdom	2006	AM	1.40%	69	2	DQ434992	[189]
83	United States	2016	AM	12%-100%	50	1	-	[46]
84	Uruguay	2011	AM	19.40%	103	4	-	[190]
85	Venezuela	1993	*	+	*	-	-	[146]
86	Viet Nam	2015	AC	18.33%	180	1	-	[13]
87	Yemen	2017	AM	0%	16	*	-	[191]

AC: *Apis cerana*; AM: *Apis mellifera*; *: Absence of record; -: No information available; +: Present.

Table S2. Primer list for SBV detection.

Primer number	Sequence (5' to 3')	Reference sequence	Nucleotide positions	Length (bp)	Reference
1	F: ACC AAC CGA TTC CTC AGT AG R: CCT TGG AAC TCT GCT GTG TA	AF092924	221-240 689-708	487	[174]
2	F: GGA TGA AAG GAA ATT ACC AG R: CCA CTA GGT GAT CCA CAC T	AF092924	* *	426	[192]
3	F: TTG GAA CTA CGC ATC TCT G R: GCT CTA ACC TCG CAT CAA C	*	3164-3182 3461-3479	335	[193]
4	F: CGA GTG TTG TGT GTG TAA AGA GA R: CGA AGG GTG AAG TGT AGC AG	NC002066	5307-5329 5628-5647	341	[108]
5	F: CGT AAT TGC GGA GTG GAA AGA TT R: AGA TTC CTT CGA GGG TAC CTC ATC	AF092924	314-336 655-632	342	[109]
6	F: GCT GAG GTA GGA TCT TTG CGT R: TCA TCA TCT TCA CCA TCC GA	AF092924	4957-4977 5762-5781	825	[194]
7	F: GCA CGT TTA ATT GGG GAT CA R: CAG GTT GTC CCT TAC CTC CA	AF092924	1655-1674 2328-2347	693	[34]
8	F: GGG TCG AGT GGT ACT GGA AA R: ACA CAA CAC TCG TGG GTG AC	AF092924	* *	*	[195]
9	F: AAC GTC CAC TAC ACC GAA ATG TC R: ACA CTG CGC GTC TTA ACA TTC C P: TGA TGA GAG TGG ACG AAG A	AF092924	434-456 482-503 460-478	70	[176]
10	F: AGC CAG GTG ATA GAT GCT C R: AAA TAC TCC CGC CAA ATC AC P: (6-Fam) TGG CTC ATC TGG GAT CAC AAT TTC C (Tamra)	*	5030-5048 5349-5368 *	338	[181]

F, Forward; R, Reverse; P: Probe; *: Absence of record.