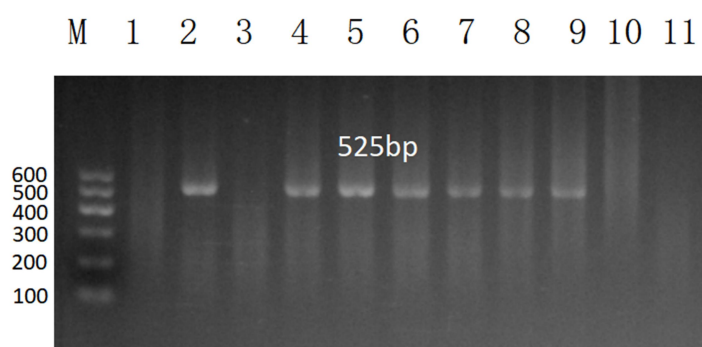


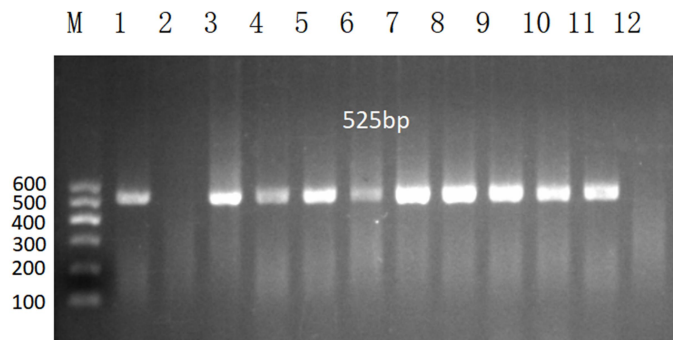
**Supplementary Material for A Diagnostic Accuracy Study of Combined
OMP22-PCR and SAT for Brucellosis in Xinjiang, China**

This document contains: Supplementary Figs S1-S3, Supplementary Tables S1-S7, and
Supplementary Datasets S1.



Supplementary Fig. S1. Representative electrophoretogram of OMP22-PCR detection in partial blood samples.

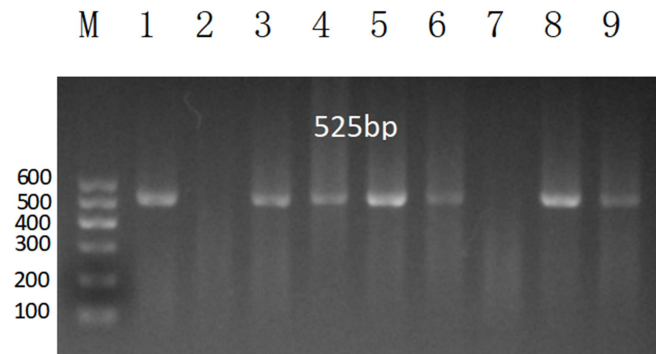
M: DNA Marker; 1: Negative control (ddH₂O); 2: Positive control (Brucella 16M); 3: Negative control (E. coli); 4-9: OMP22-PCR positive serum samples; 10-11: OMP22-PCR negative serum samples.



Supplementary Fig. S2. Electrophoretogram of OMP22-PCR detection in clinical isolates.

M: DNA Marker; 1: Positive control (Brucella 16M); 2: Negative control (ddH₂O);

3-11: Genomic DNA from clinical isolates (samples 1-9); 12: E. coli control.



Supplementary Fig. S3. Representative electrophoretogram of OMP22-PCR

detection in urine and CSF samples.

M: DNA Marker; 1: Positive control (Brucella 16M); 2: Negative control (ddH₂O);

3-6: OMP22-PCR positive urine samples; 7: OMP22-PCR negative urine sample; 8-9:

OMP22-PCR positive CSF samples.

Supplementary Table S1.

Diagnostic Performance of the Standard Tube Agglutination Test (SAT) in Serum
Samples Compared to Blood Culture (Reference Standard)

	Blood Culture Positive	Blood Culture Negative	Total
SAT Positive	60(True Positive)	3 (False Positive)	63
SAT Negative	2(False Negative)	22(True Negative)	24
Total	62	25	87

Note: Based on this 2x2 contingency table, the diagnostic performance of SAT was calculated as follows: Sensitivity = $60/62 = 96.8\%$; Specificity = $22/25 = 88.0\%$; Positive Predictive Value (PPV) = $60/63 = 95.2\%$; Negative Predictive Value (NPV) = $22/24 = 91.7\%$.

Supplementary Table S2.

Distribution of Standard Tube Agglutination Test (SAT) Titers in Patients with
Brucellosis (Case Group) and Control Subjects

SAT Titer	Case Group (n=62)	Control Group (n=25)
Negative	2 (3.2%)	22 (88.0%)
1:100	23 (37.1%)	3 (12.0%)
1:200	28 (45.2%)	0 (0.0%)
1:400	9 (14.5%)	0 (0.0%)
Overall Positive	60 (96.8%)	3 (12.0%)

Supplementary Table S3.

Diagnostic Performance of OMP22-PCR in Serum Samples Compared to Blood
Culture (Reference Standard)

	Blood Culture Positive	Blood Culture Negative	Total
OMP22-PCR Positive	58 (True Positive)	2 (False Positive)	60
OMP22-PCR Negative	4 (False Negative)	23 (True Negative)	27
Total	62	25	87
Positive Rate by Group	58/62 (93.5%)	2/25 (8.0%)	

Note: Based on this 2x2 contingency table, the diagnostic performance of OMP22-PCR was calculated as follows: Sensitivity = $58/62 = 93.5\%$; Specificity = $23/25 = 92.0\%$; Positive Predictive Value (PPV) = $58/60 = 96.7\%$; Negative Predictive Value (NPV) = $23/27 = 85.2\%$. The group-specific positive rates are provided for additional context.

Supplementary Table S4.

Consistency analysis of OMP22-PCR and SAT detection results

	SAT Positive	SAT Negative	Total
OMP22-PCR Positive	56	4	60
OMP22-PCR Negative	7	20	27
Total	63	24	87
Kappa value	0.70		

Supplementary Table S5.

Comparison of Diagnostic Efficacy Indicators for OMP22-PCR, Standard Tube Agglutination Test (SAT), and Their Combined Detection Strategy

Indicator	OMP22-PCR	SAT	Combination
Sensitivity/%	93.5	96.8	96.8
Specificity/%	92.0	88.0	100.0
Positive Predictive Value/%	96.7	95.2	100.0
Negative Predictive Value/%	85.2	91.7	92.6
Accuracy/%	93.1	94.3	97.7
AUC (95% CI)	0.928 (0.856-0.999)	0.921 (0.841-1.000)	0.981 (0.952-1.000)

Supplementary Table S6.

OMP22-PCR Detection Rates Across Different Clinical Sample Types from Patients with Confirmed Brucellosis

OMP22-PCR	Blood(n=62)	Urine(n=20)	CSF(n=2)
Positive	58	14	2
Negative	4	6	0
Positivity Rate	93.5%	70%	100%

Note: The differential positivity rates across sample types likely reflect variations in bacterial load and distribution in body fluids. The 100% detection rate in

CSF, while promising, is based on a very small sample size and requires further validation.

Supplementary Table S7.

Integrated test results for the 62 brucellosis patients.

Patient -ID	Group	Clinical _Stage	SAT Titer	OMP22-PCR Result	Urine_OMP22 _PCR	CSF_OMP22_PCR	Clinical_Isolat e_OMP22_PCR
P01	Case	Acute	1:100	Positive	Positive	N/A	N/A
P02	Case	Acute	1:200	Positive	N/A	N/A	N/A
P03	Case	Chronic	1:100	Negative	N/A	N/A	N/A
P04	Case	Acute	1:200	Positive	N/A	N/A	N/A
P05	Case	Chronic	1:100	Negative	N/A	N/A	N/A
P06	Case	Acute	1:400	Positive	N/A	Positive	N/A
P07	Case	Acute	1:100	Positive	N/A	N/A	N/A
P08	Case	Subacute	1:400	Positive	N/A	N/A	N/A
P09	Case	Subacute	1:200	Positive	N/A	N/A	N/A
P10	Case	Acute	1:100	Positive	N/A	N/A	N/A
P11	Case	Acute	1:200	Positive	N/A	N/A	N/A
P12	Case	Subacute	1:100	Positive	N/A	N/A	N/A
P13	Case	Acute	1:200	Positive	N/A	N/A	N/A
P14	Case	Acute	1:200	Positive	N/A	N/A	N/A
P15	Case	Subacute	1:200	Positive	N/A	N/A	N/A
P16	Case	Acute	1:200	Positive	N/A	N/A	N/A
P17	Case	Acute	1:100	Positive	N/A	N/A	N/A
P18	Case	Subacute	1:100	Positive	N/A	N/A	N/A
P19	Case	Acute	1:100	Positive	N/A	N/A	N/A
P20	Case	Acute	<1:100	Positive	Positive	N/A	Positive
P21	Case	Acute	1:100	Positive	Negative	N/A	Positive
P22	Case	Acute	1:400	Positive	Positive	N/A	Positive
P23	Case	Chronic	1:100	Positive	Negative	N/A	Positive
P24	Case	Acute	1:200	Positive	Positive	N/A	Positive
P25	Case	Subacute	1:100	Positive	Positive	N/A	Positive
P26	Case	Subacute	1:100	Positive	Positive	N/A	Positive
P27	Case	Acute	1:200	Positive	Positive	N/A	Positive
P28	Case	Acute	1:100	Positive	Positive	N/A	Positive
P29	Case	Acute	1:200	Positive	Positive	N/A	Positive
P30	Case	Acute	1:100	Positive	Positive	N/A	Positive
P31	Case	Chronic	1:200	Positive	Negative	N/A	Positive
P32	Case	Acute	1:100	Positive	Positive	N/A	Positive
P33	Case	Subacute	1:200	Positive	Positive	N/A	Positive

P34	Case	Acute	1:200	Positive	Negative	N/A	Positive
P35	Case	Subacute	1:200	Positive	Negative	N/A	Positive
P36	Case	Subacute	1:400	Positive	Positive	N/A	Positive
P37	Case	Acute	1:100	Positive	Negative	N/A	Positive
P38	Case	Acute	1:100	Positive	N/A	N/A	Positive
P39	Case	Acute	1:100	Positive	N/A	N/A	Positive
P40	Case	Acute	1:200	Positive	N/A	N/A	N/A
P41	Case	Acute	1:200	Positive	Positive	N/A	N/A
P42	Case	Chronic	1:200	Positive	N/A	N/A	N/A
P43	Case	Acute	1:200	Positive	N/A	N/A	N/A
P44	Case	Acute	1:100	Positive	N/A	N/A	N/A
P45	Case	Acute	1:200	Positive	N/A	N/A	N/A
P46	Case	Subacute	1:200	Positive	N/A	N/A	N/A
P47	Case	Acute	1:100	Positive	N/A	N/A	N/A
P48	Case	Subacute	1:100	Positive	N/A	N/A	N/A
P49	Case	Acute	1:200	Positive	N/A	N/A	N/A
P50	Case	Subacute	1:200	Positive	N/A	N/A	N/A
P51	Case	Acute	1:200	Positive	N/A	N/A	N/A
P52	Case	Acute	1:200	Positive	N/A	N/A	N/A
P53	Case	Chronic	1:100	Negative	N/A	N/A	N/A
P54	Case	Acute	1:200	Positive	N/A	N/A	N/A
P55	Case	Subacute	1:400	Negative	N/A	Positive	N/A
P56	Case	Subacute	1:200	Positive	N/A	N/A	N/A
P57	Case	Chronic	1:200	Positive	N/A	N/A	N/A
P58	Case	Subacute	1:400	Positive	N/A	N/A	N/A
P59	Case	Chronic	1:400	Positive	N/A	N/A	N/A
P60	Case	Acute	<1:100	Positive	N/A	N/A	N/A
P61	Case	Acute	<1:100	Positive	N/A	N/A	N/A
P62	Case	Acute	1:400	Positive	N/A	N/A	N/A

Note: N/A, not applicable (sample not collected/tested).

Supplementary Datasets S1.

Clinical data of the brucellosis patients and healthy controls.

Patient-ID	Group	Age	Sex	Sample_Type	Fever	Sweating	Arthralgia
P01	Case	18	Male	Serum, Urine	Y	N	N
P02	Case	54	Female	Serum	Y	Y	Y
P03	Case	56	Male	Serum	Y	Y	Y
P04	Case	30	Female	Serum	Y	Y	Y
P05	Case	76	Male	Serum	Y	N	N
P06	Case	68	Female	Serum, CSF	Y	N	N

P07	Case	52	Male	Serum	N	N	N
P08	Case	70	Male	Serum	N	Y	Y
P09	Case	52	Female	Serum	Y	Y	Y
P10	Case	45	Male	Serum	N	N	N
P11	Case	61	Female	Serum	Y	Y	Y
P12	Case	58	Male	Serum	Y	Y	Y
P13	Case	54	Male	Serum	Y	Y	Y
P14	Case	48	Male	Serum	Y	Y	Y
P15	Case	66	Male	Serum	Y	Y	Y
P16	Case	41	Male	Serum	Y	Y	Y
P17	Case	8	Male	Serum	Y	N	N
P18	Case	63	Male	Serum	Y	Y	N
P19	Case	43	Male	Serum	Y	Y	N
P20	Case	50	Male	Serum, Urine	N	Y	Y
P21	Case	49	Male	Serum, Urine	Y	Y	Y
P22	Case	40	Male	Serum, Urine	Y	N	N
P23	Case	59	Male	Serum, Urine	Y	Y	Y
P24	Case	44	Male	Serum, Urine	Y	Y	Y
P25	Case	67	Male	Serum, Urine	N	N	N
P26	Case	47	Male	Serum, Urine	Y	Y	Y
P27	Case	17	Male	Serum, Urine	Y	Y	Y
P28	Case	42	Male	Serum, Urine	Y	N	Y
P29	Case	51	Male	Serum, Urine	Y	Y	N
P30	Case	46	Female	Serum, Urine	Y	Y	N
P31	Case	70	Male	Serum, Urine	Y	N	N
P32	Case	50	Female	Serum, Urine	Y	N	N
P33	Case	63	Male	Serum, Urine	Y	N	Y
P34	Case	60	Male	Serum, Urine	Y	N	Y
P35	Case	54	Female	Serum, Urine	Y	N	N
P36	Case	59	Male	Serum, Urine	Y	N	Y
P37	Case	54	Male	Serum, Urine	Y	Y	Y
P38	Case	56	Male	Serum	Y	Y	Y
P39	Case	57	Male	Serum	Y	N	Y
P40	Case	52	Male	Serum	Y	N	N
P41	Case	60	Male	Serum, Urine	Y	N	Y
P42	Case	51	Male	Serum	Y	N	Y
P43	Case	47	Male	Serum	Y	Y	Y
P44	Case	55	Female	Serum	N	N	N
P45	Case	51	Male	Serum	Y	Y	N
P46	Case	54	Female	Serum	N	N	Y
P47	Case	48	Male	Serum	N	N	Y
P48	Case	61	Female	Serum	Y	Y	Y
P49	Case	75	Female	Serum	Y	Y	Y

P50	Case	74	Female	Serum	Y	N	Y
P51	Case	48	Male	Serum	Y	N	Y
P52	Case	64	Female	Serum	N	N	Y
P53	Case	72	Male	Serum	Y	Y	N
P54	Case	56	Male	Serum	Y	N	Y
P55	Case	69	Male	Serum, CSF	Y	Y	N
P56	Case	57	Male	Serum	Y	Y	Y
P57	Case	52	Female	Serum	N	N	Y
P58	Case	48	Male	Serum	Y	Y	Y
P59	Case	34	Male	Serum	Y	N	N
P60	Case	55	Male	Serum	Y	Y	Y
P61	Case	37	Male	Serum	Y	N	Y
P62	Case	5	Female	Serum	Y	Y	N
C01	Control-Health	49	Male	Serum	N	N	N
C02	Control-Health	20	Female	Serum	N	N	N
C03	Control-Health	55	Female	Serum	N	N	N
C04	Control-Health	56	Male	Serum	N	N	N
C05	Control-Health	69	Male	Serum	N	N	N
C06	Control-Health	59	Male	Serum	N	N	N
C07	Control-Health	46	Male	Serum	N	N	N
C08	Control-Health	52	Male	Serum	N	N	N
C09	Control-Health	37	Male	Serum	N	N	N
C10	Control-Health	48	Female	Serum	N	N	N
C11	Control-Health	60	Male	Serum	N	N	N
C12	Control-Health	76	Male	Serum	N	N	N
C13	Control-Health	62	Female	Serum	N	N	N
C14	Control-Health	57	Male	Serum	N	N	N
C15	Control-Health	66	Male	Serum	N	N	N
C16	Control-Disease	51	Female	Serum	Y	N	N
C17	Control-Disease	70	Male	Serum	Y	N	N
C18	Control-Disease	40	Male	Serum	Y	N	N
C19	Control-Disease	47	Female	Serum	Y	N	N
C20	Control-Disease	17	Female	Serum	Y	N	N
C21	Control-Disease	39	Male	Serum	Y	N	N
C22	Control-Disease	56	Male	Serum	Y	N	N
C23	Control-Disease	46	Female	Serum	Y	N	N
C24	Control-Disease	64	Male	Serum	Y	N	N
C25	Control-Disease	28	Female	Serum	Y	N	N

Note: Y = Yes, N = No.