Supplementary Table S1. Evaluation of anti-ORF1p antibodies and clinical variables at time of visit in the JH SPARE SLE cohort.

	Anti- ORF1p		*p*-value
	Positive	Negative	
SLEDAI	0 (0-2)	2 (0-4)	0.0760
PGA	0.5 (0-0.5)	0.5 (0-1)	0.2665
C3	118 (32)	129 (39)	0.2013
C4	20.5 (17-26)	23 (18-30)	0.1724
Anti-dsDNA	0 (0-0)	0 (0-0)	0.4365

Two-sample t test was used for normally distributed variables. Mean and stand deviation were reported. Wilcoxon-Mann-Whitney test was used for non-normally distributed variables. Median and Interquartile were reported. Fisher's exact test was used for categorical SLEDAI items.

Supplementary Table S2. Regression analysis of association between peripheral blood gene expression and anti-ORF1p antibodies in the JH SPARE SLE cohort.

	IFN1.2		IFN3.4		IFN5.12	
Variable	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
Anti-ORF1p (pres *vs*. abs)	0.25	0.3199	0.09	0.4290	0.04	0.5260

	BAFF	
Variable	Estimate	*p*-value
Anti-ORF1 (present *vs*. absent)	0.10	0.3161
	Neutrophil	
Variable	Estimate	*p*-value
Anti-ORF1 (present *vs*. absent)	-0.22	0.3814
	Plasma cell	
Variable	Estimate	*p*-value
Anti- ORF1 (present *vs*. absent)	0.07	0.7518

Linear regression was used to evaluate gene expression in peripheral blood cells with anti-ORF1p results.

Supplementary Table S3. Regression analysis of association between peripheral blood gene expression and anti-ORF1p antibodies in the JH SPARE SLE cohort, adjusting for SLEDAI.

	IFN1.2		IFN3.4		IFN5.12	
Variable	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
Anti-ORF1p (pres *vs*. abs)	0.47	0.0524	0.19	0.0792	0.11	0.0855
SLEDAI	0.17	<0.0001	0.08	<0.0001	0.05	<0.0001

	BAFF	
Variable	Estimate	*p*-value
Anti-ORF1(present *vs*. absent)	0.18	0.0650
SLEDAI	0.06	<0.0001

	Neutrophil	
Variable	Estimate	*p*-value
Anti-ORF1 (present *vs*. absent)	-0.06	0.8092
SLEDAI	0.13	0.0001

	Plasma cell	
Variable	Estimate	*p*-value
Anti-ORF1 (present *vs*. absent)	0.21	0.3632
SLEDAI	0.11	0.0006

Supplementary Table S4. Anti-ORF1p positivity is not associated with specific clinical SLE features.

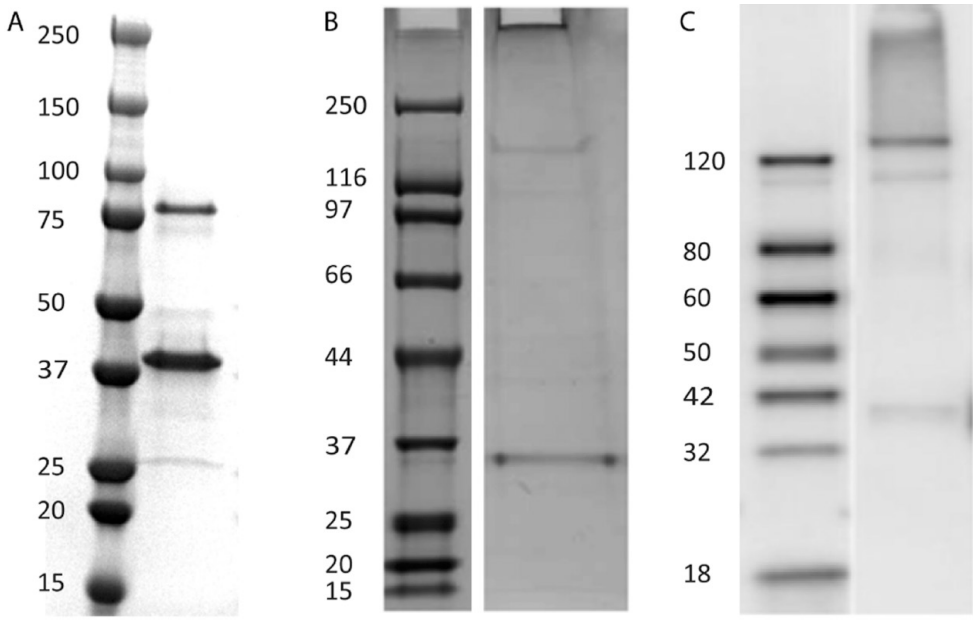
Disease manifestations	Anti-ORF1 antibody positive (n=25)	Anti-ORF1 antibody negative (n=133)	OR (95% CI)	*p*-value
Malar rash	13 (52%)	77 (57.9%)	0.79 (0.32,1.97)	0.6618
Discoid rash	5 (20%)	29 (21.8%)	0.9 (0.3,2.68)	1.0000
Photosensitivity	15 (60%)	74 (55.6%)	1.19 (0.5,2.88)	0.8267
Mouth ulcers	14 (56%)	77 (57.9%)	0.93 (0.39,2.29)	1.0000
Alopecia	14 (56%)	90 (67.7%)	0.61 (0.25,1.51)	0.2613
SCLE	1 (4%)	8 (6%)	0.65 (0.03,4.76)	1.0000
Arthralgias	22 (88%)	126 (94.7%)	0.41 (0.1,1.97)	0.1964
Arthritis	18 (72%)	109 (82%)	0.57 (0.2,1.71)	0.2749
Pleuritis	12 (48%)	76 (57.1%)	0.69 (0.28,1.68)	0.5111
Pericarditis	6 (24%)	38 (28.8%)	0.78 (0.29,2.11)	0.8088
Proteinuria	14 (56%)	61 (45.9%)	1.5 (0.63,3.7)	0.3886
Nephrotic syndrome	5 (20%)	20 (15%)	1.41 (0.46,4.2)	0.5530
Haematuria	9 (36%)	41 (30.8%)	1.26 (0.47,3.09)	0.6428
Renal insufficiency	8 (32%)	29 (21.8%)	1.68 (0.65,4.38)	0.3050
Renal failure	1 (4%)	6 (4.5%)	0.88 (0.04,6.53)	1.0000
Seizures	2 (8%)	6 (4.5%)	1.83 (0.25,10.06)	0.6134
Psychosis	2 (8%)	2 (1.5%)	5.6 (0.58,54.05)	0.1181
Organic brain syndrome	0 (0%)	9 (6.8%)	N/C	0.3564
Mononeuritis multiplex	0 (0%)	2 (1.5%)	N/C	1.0000
Cranial neuropathy	0 (0%)	5 (3.8%)	N/C	1.0000
Peripheral neuropathy	2 (8%)	6 (4.5%)	1.83 (0.25,10.06)	0.6134
Transverse myelitis	0 (0%)	4 (3%)	N/C	1.0000
Anaemia	21 (84%)	96 (72.2%)	2.02 (0.64,6.8)	0.3198
Haemolytic anaemia	2 (8%)	8 (6%)	1.36 (0.2,6.33)	0.6595
Coombs	3 (12%)	22 (16.5%)	0.69 (0.16,2.44)	0.7678
Leukopenia	12 (48%)	58 (43.6%)	1.19 (0.48,2.89)	0.8268
Lymphopenia	13 (52%)	55 (41.4%)	1.53 (0.63,3.84)	0.3811
Thrombocytopenia	8 (32%)	34 (25.6%)	1.37 (0.53,3.48)	0.6218

Anti-ORF1p antibody status was compared against historical disease manifestations in the JH SPARE SLE cohort.

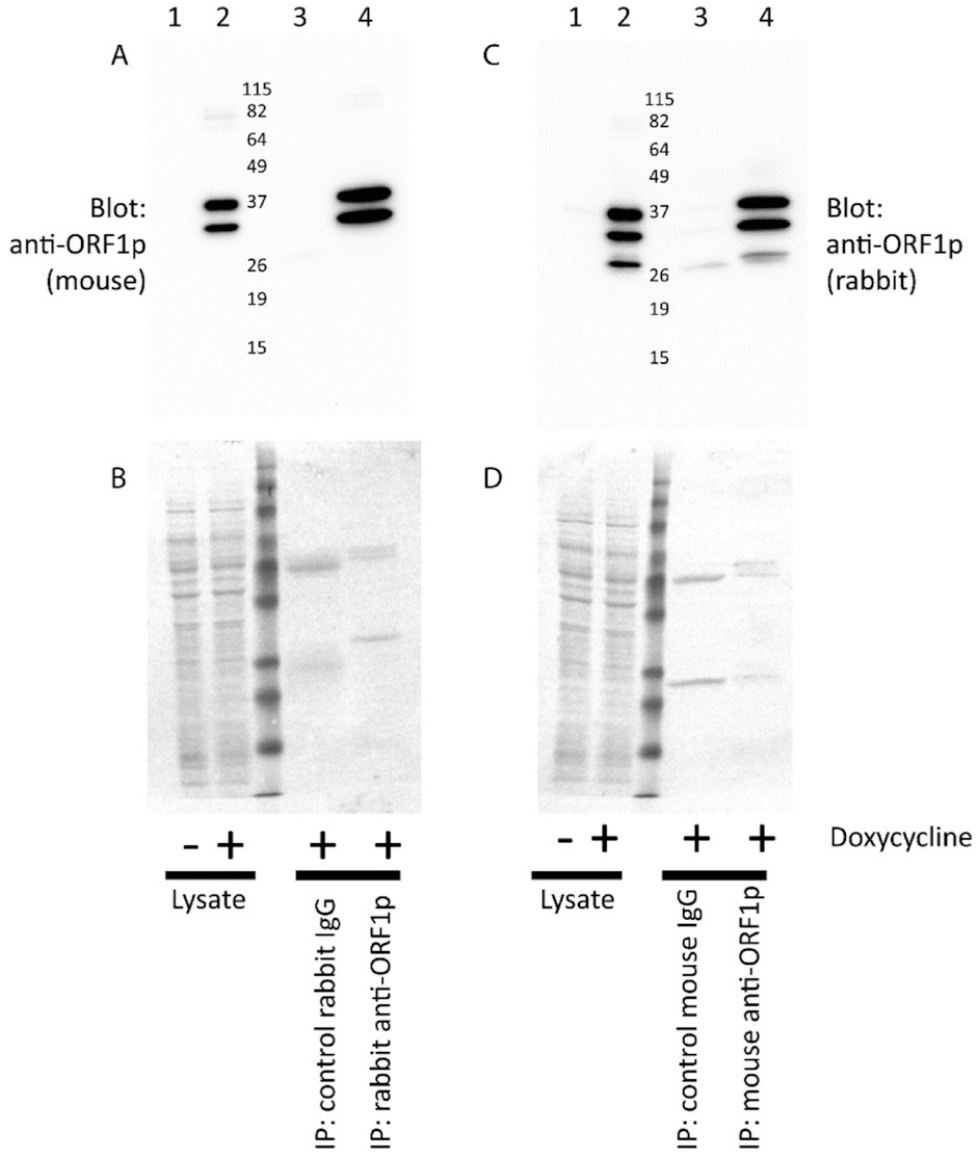
Supplementary Table S5. Anti-ORF1p positivity is not associated with additional serological markers of SLE.

Serologic findings	Anti-ORF1p antibody positive (n=25)	Anti-ORF1p antibody negative (n=133)	OR (95% CI)	*p*-value
Coombs	3 (12%)	22 (16.5%)	0.69 (0.16,2.44)	0.7678
Lupus anti-coagulant	6 (24%)	48 (36.1%)	0.56 (0.21,1.48)	0.3579
anti-cardiolipin	17 (68%)	87 (65.4%)	1.12 (0.45,2.86)	1.0000
Anti-B2 glycoprotein	4 (16.7%)	45 (34.1%)	0.39 (0.12,1.23)	0.1006
Anti-dsDNA	14 (56%)	85 (63.9%)	0.72 (0.3,1.78)	0.5024
Anti-Sm	7 (28%)	25 (18.8%)	1.67 (0.56,4.62)	0.2887
FP-RPR	2 (8%)	16 (12%)	0.64 (0.1,2.78)	0.7403
ANA	25 (100%)	132 (99.2%)	N/C	1.0000
Speckled	22 (88%)	93 (74%)	2.52 (0.75,8.4)	0.1966
Homogeneous	8 (32%)	51 (41%)	0.68 (0.28,1.68)	0.5038
Nucleolar	3 (12%)	17 (14%)	0.87 (0.25,2.86)	1.0000
Centromere	0 (0%)	2 (2%)	N/C	1.0000
Anti-Ro	7 (28%)	42 (31.6%)	0.84 (0.3,2.16)	0.8168
Anti-La	2 (8%)	22 (16.5%)	0.44 (0.07,1.97)	0.3721
Anti-RNP	7 (28%)	35 (26.3%)	1.09 (0.38,2.84)	0.8106
Low CH50	6 (24%)	17 (12.8%)	2.14 (0.74,6.06)	0.2109
Low C3	14 (56%)	73 (54.9%)	1.05 (0.44,2.59)	1.0000
Low C4	12 (48%)	60 (45.1%)	1.12 (0.45,2.72)	0.8293
Low complement	15 (60%)	80 (60.2%)	0.99 (0.42,2.4)	1.0000
Elevated ESR	19 (76%)	100 (75.2%)	1.04 (0.38,2.88)	1.0000

Anti-ORF1p antibody status was compared against historical antibody positivity in the JH SPARE SLE cohort.



Supplementary Fig. 1. Purified ORF1p and ORF2p.
Purified ORF1p (1 microgram) was analysed by SDS-PAGE and Coomassie staining (A). Purified ORF2p (2 micrograms) was analysed by SDS-PAGE and Coomassie staining (B) and Western blotting with anti-His antibody (C).



Supplementary Fig. 2. Validation of rabbit anti-ORF1p monoclonal antibody (clone EPR22227-6).
RPE-LINE-1 cells were induced with Doxycycline and lysates generated for use in immunoprecipitation-Western blotting experiments.
A: Lane 1: Lysate from untreated cells. Lane 2: Lysate from Doxycycline-induced cells. Lane 3: Control rabbit IgG immunoprecipitation from induced lysate. Lane 4: Anti-ORF1p rabbit monoclonal (clone EPR22227-6) immunoprecipitation from induced lysate. Western blotting performed with mouse anti-ORF1p antibody (clone 4H1).
B: Membrane in (A) stained with Ponceau.
C: Lane 1: Lysate from untreated cells. Lane 2: Lysate from Doxycycline-induced cells. Lane 3: Control mouse IgG immunoprecipitation from induced lysate. Lane 4: Anti-ORF1p mouse monoclonal (clone 4H1) immunoprecipitation from induced lysate. Western blotting performed with rabbit anti-ORF1p antibody (clone EPR22227-6).
D: Membrane in (C) stained with Ponceau.