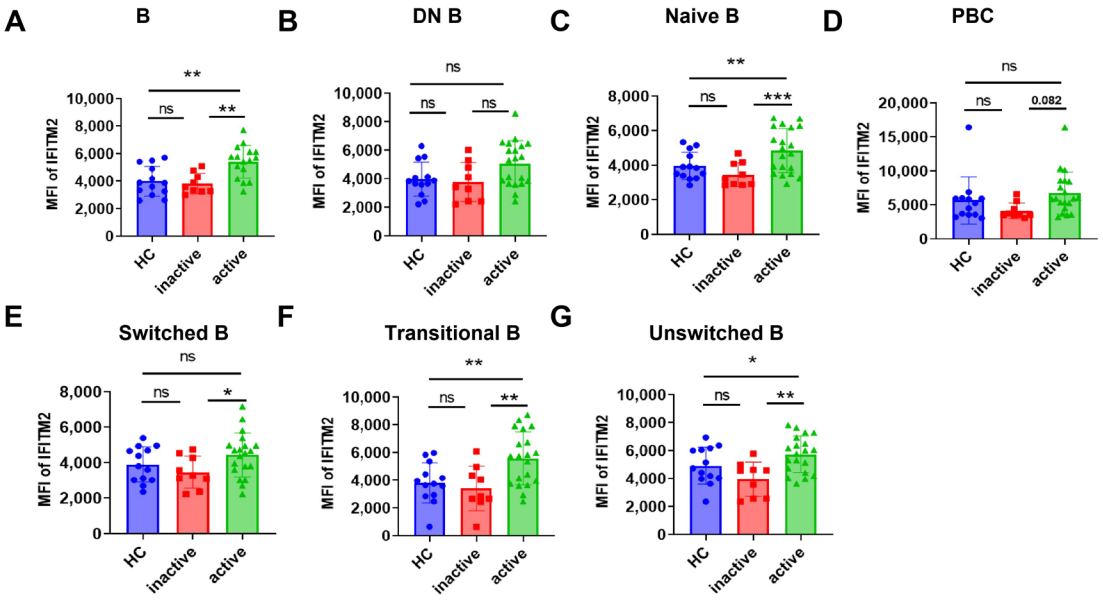
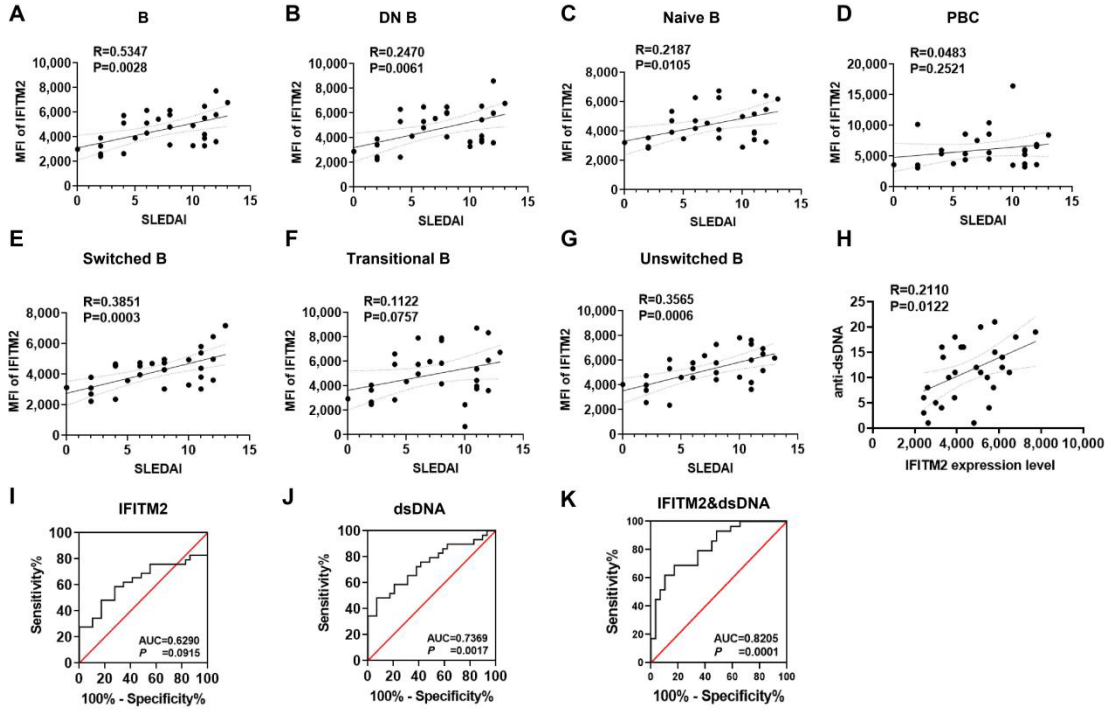
Supplementary Figure 1. **Elevated IFITM2 expression levels are associated with disease activity in SLE patients (in another independent cohort)**



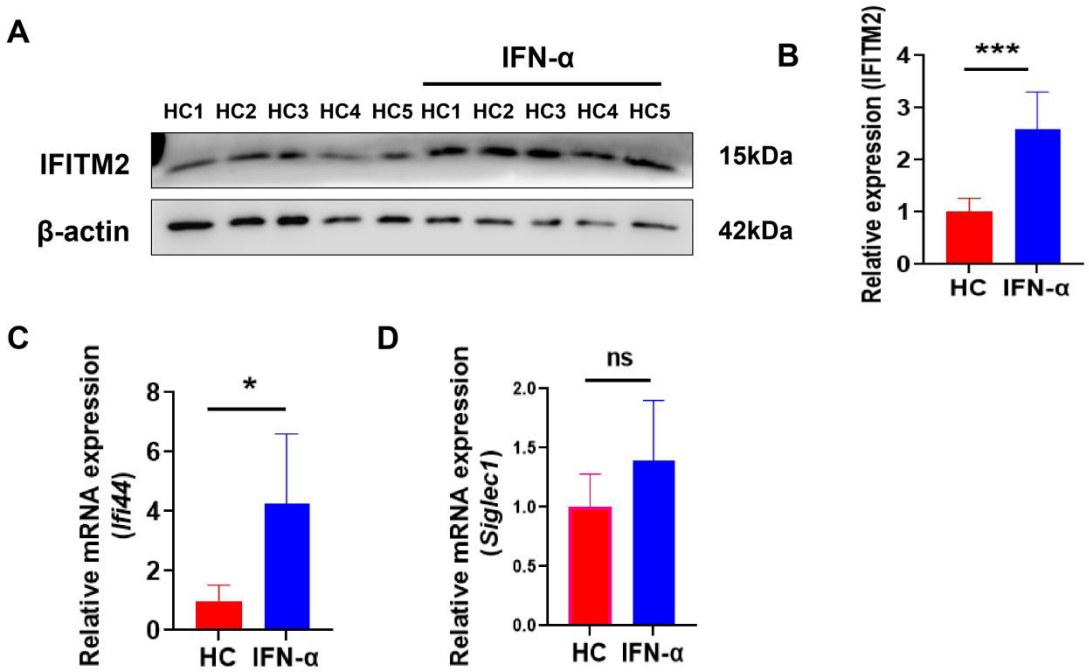
A-G. Expression of IFITM2 in B cell subsets among inactive SLE patients (SLEDAI ≤ 4) (n = 9), active SLE patients (SLEDAI > 4) (n = 16), and HC (n =13). one-way ANOVA was used for Supplementary Figure 1 A-G; * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Supplementary Figure 2. The relationship between IFITM2 and SLEDAI in different B cell subsets of SLE patients. (in another independent cohort)



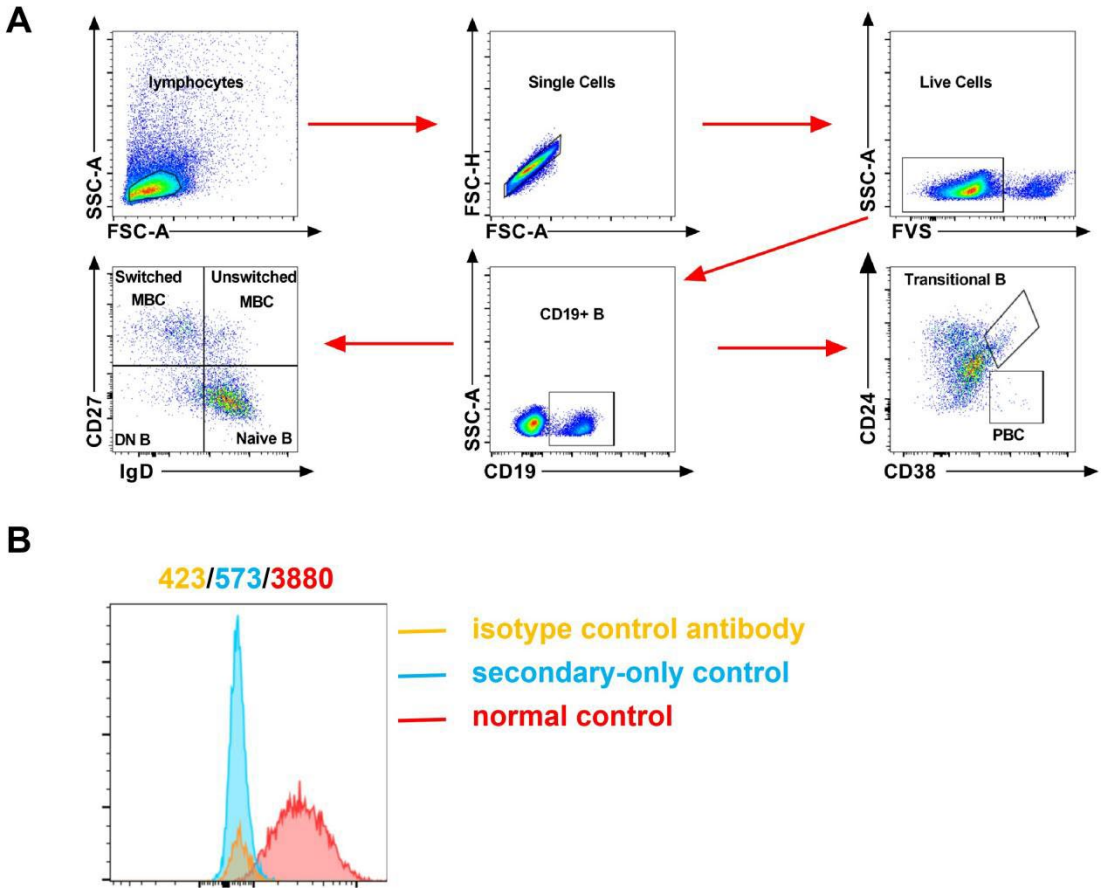
A-K. Correlation between IFITM2 in B cells and subsets with SLEDAI-2K score. Pearson correlation or Spearman rank correlation was used for Supplementary Figure 2A-K

Supplementary Figure 3. IFN-α stimulation upregulates IFITM2 protein and IFI44 mRNA expression in B cells.



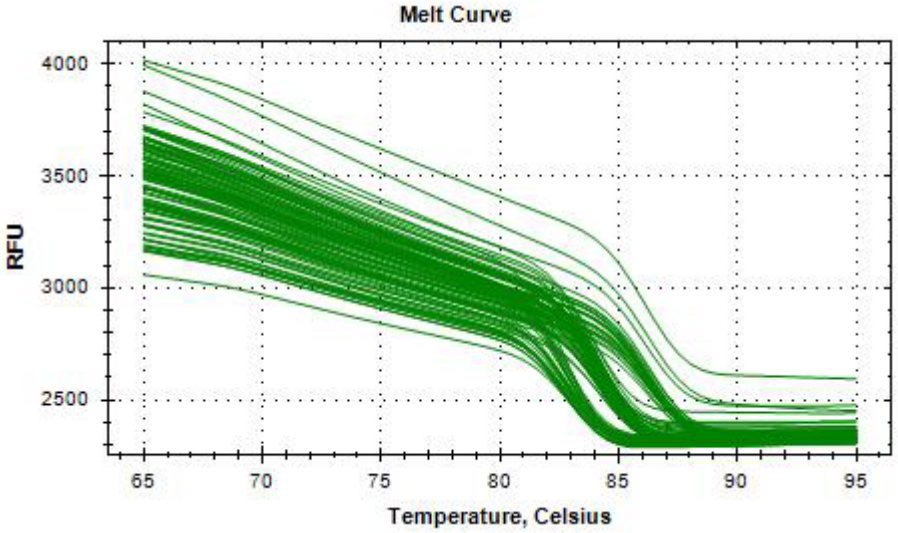
A-B. Immunoblot analysis of IFITM2 expression in B cells from HC (n = 5). C-D. RT-qPCR of *Ifi44* and *Siglec1* in B cells from HC (n = 5).independent samples t-test was used for Supplementary Figure 3A-D; * $P < 0.05$, *** $P < 0.001$.

Supplementary Figure 4. Flow cytometry gating strategy and isotype antibody fluorescent secondary antibody control



A.B-cell flow cytometry gating strategy; B. IFITM2 isotype antibody and fluorescent secondary antibody control.

Supplementary Figure 5. Melting curve of IFITM2 qPCR products



Supplementary Table 1. Basic characteristics of SLE patients and healthy controls.

Sample	age	gender	SLEADI-2k	treatment history	Laboratory examinations
Patient 1	60	Female	0	hydroxychloroquine	
Patient 2	12	Female	7	Rivaroxaban	Bilateral enlarged kidneys
Patient 3	74	Female	0	Non-steroidal anti-inflammatory drugs	
Patient 4	19	Female	0	hydroxychloroquine	
Patient 5	18	Female	6	hydroxychloroquine	
Patient 6	50	Female	6	Non-steroidal anti-inflammatory drugs	Simple right renal cyst
Patient 7	35	Female	8	hydroxychloroquine	
Patient 8	32	Female	8	Non-steroidal anti-inflammatory drugs	Simple right renal cyst
Patient 9	36	Female	5	hydroxychloroquine	
Patient 10	27	Female	9	Diuretic	Crescentic glomerulonephritis (Type Ⅱ) with partial glomerulosclerosis
Patient 11	31	Female	2	hydroxychloroquine	Bilateral enlarged kidneys
Patient 12	69	Female	6	Diuretic	
Patient 13	16	Female	4	hydroxychloroquine	
Patient 14	10	Female	12	hydroxychloroquine	Bilateral enlarged kidneys with increased parenchymal echogenicity
Patient 15	56	Female	10	hydroxychloroquine	Simple right renal cyst
Patient 16	23	Female	7	Non-steroidal anti-inflammatory drugs	Perinephric hematoma
Patient 17	14	Female	6	hydroxychloroquine	
Patient 18	10	Female	7	hydroxychloroquine	
Patient 19	64	Female	11	Diuretic	Perinephric hematoma with right pelvi-ureteric hemorrhage
Patient 20	53	Female	0	hydroxychloroquine	
Patient 21	10	Female	16	hydroxychloroquine	
Patient 22	53	Female	0	Diuretic	
Patient 23	35	Female	3	hydroxychloroquine	
Patient 24	34	Female	11	hydroxychloroquine	

Patient 25	29	Female	6	hydroxychloroquine	
Patient 26	36	Female	2	Antiplatelet drugs	
Patient 27	43	Female	11	hydroxychloroquine	Multiple left renal cysts
Patient 28	29	Female	6	Antihistamines	
Patient 29	32	Female	8	hydroxychloroquine	
Patient 30	18	Female	11	hydroxychloroquine	Mild mesangial proliferative lupus nephritis (Class Ⅱ)
Patient 31	14	Female	12	hydroxychloroquine	Multiple right renal cysts
Patient 32	39	Female	6	Antihistamines	Multiple right renal cysts
Patient 33	45	Female	6	hydroxychloroquine	Diffuse renal changes with reduced bilateral kidney volume
Patient 34	56	Female	4	hydroxychloroquine	Multiple left renal cysts
Patient 35	39	Female	2	Diuretic	Multiple right renal cysts
HC 1	12	Female			
HC 2	32	Female			
HC 3	27	Female			
HC 4	10	Female			
HC 5	56	Female			
HC 6	23	Female			
HC 7	14	Female			
HC 8	64	Female			
HC 9	29	Female			
HC 10	43	Female			
HC 11	18	Female			
HC 12	14	Female			
HC 13	45	Female			
HC 14	39	Female			
HC 15	39	Female			

Supplementary Table 2: Multiple-testing correction for Figure 2H–N

	Discovery	P value	q value
B	Yes	0.0043	0.0211
Naive B	Yes	0.0058	0.0211
DN B	Yes	0.0058	0.0211
Switched B	Yes	0.0035	0.0211
Unswitched B	No	0.0577	0.1496
PBC	No	0.0317	0.0959
Transitional B	Yes	0.0025	0.0211

Supplementary Table 3: Multiple-testing correction for Figure 3A-S

	Discovery	P value	q value
IgG	Yes	0.0161	0.0775
IgM	No	0.2251	0.8430
IFN-α	Yes	0.0001	0.0067
IFN-γ	Yes	0.0147	0.0762
TFN-α	Yes	0.0012	0.0270
IL-6	Yes	0.1757	0.7402
IL-10	Yes	0.1924	0.7629
IL-17A	No	0.3409	1.0000
C3	Yes	0.0026	0.0438
C4	Yes	0.0006	0.0202
AHA	Yes	0.0139	0.0762
AnuA	Yes	0.0096	0.0756
ACA-IgM	Yes	0.0036	0.0485
ACA-IgG	Yes	0.0115	0.0762
ACA-IgA	Yes	0.0051	0.0573
anti-β2GP-IgM	Yes	0.0267	0.1200
anti-β2GP-IgG	Yes	0.0125	0.0762
anti-β2GP-IgA	Yes	0.0101	0.0756
anti-dsDNA	Yes	0.0091	0.0756

Supplementary Table 4: Multiple-testing correction for Figure 4H-J

	Discovery	P value	q value
UTP	No	0.0137	0.0754
Scr	No	0.3421	0.9408
BUN	No	0.8022	1.0000