

ONLINE SUPPLEMENTARY DATA

Supplementary Table 1. Summary of the association between specific genotypes and SLE.

Locus/Variant Alleles	Pathological Role in SLE
IL-1 receptor antagonist (IL-1 RN) genes / rs315952	Variations in the number of tandem repeats (VNTRs) in intron 2 of the IL-1RN gene are associated with increased susceptibility to SLE ¹⁻⁴ .
IL1 β -511 /CT	The TT homozygotes are associated with a higher risk of SLE than is the homozygous CC genotype in African Americans ⁵ . The frequency of the T allele was associated with increased susceptibility to SLE and predisposition to neurological disorders in SLE ⁶ .
IL6-174 / GC	The homozygous GG genotype was more prevalent in Malaysian and Bulgarian SLE patients ^{7, 8} . The IL6-174 genotype may contribute to the manifestation of certain diseases, including nephritis ⁹ .
IL10-1082, - 819, - 592 / AC	The IL-10 promoter is highly polymorphic, and 3 single nucleotide polymorphisms (SNPs) at positions -1082, -819, and -592 from the transcription start site are correlated with IL-10 production ¹⁰ . A recent meta-analysis of 38 case-control studies concluded that the IL10.G microsatellites, the IL-10 -1082G/A and -592C/A polymorphisms and the haplotype -1082G/-819C/-592C are associated with SLE susceptibility ¹¹ .
Fc γ RIIa / 131 FR	Fc γ RIIa is a low-affinity receptor for IgG expressed on macrophages, neutrophils, monocytes and platelets ¹¹ . A meta-analysis in 2009 including 29 studies showed that the overall homozygosity of RR and the low-binding allele of Fc γ RIIa were associated with the development of SLE and lupus nephritis ¹² .
Fc γ RIIIa / 158 FV	The Fc γ RIII a is anchored on the transmembrane on natural killer cells and macrophages ¹³ . The FF homozygotes have low-binding phenotypes with less engagement and activation of NK cells that has been shown to predispose to autoimmune disorders and nephritis ¹⁴ . Several studies support the association of the F allele with susceptibility to SLE ^{15, 16} .
Fc γ RIIIb/ NA1/2	The Fc γ RIII b molecule is expressed in neutrophils (13) and preferentially removes small immune complexes from the circulation ¹⁷ . NA2/NA2 homozygotes have been associated with SLE development in Thai and Spanish populations ^{18, 19} . NA1/NA1 homozygotes are protected against central nervous system involvement ²⁰ .
TNF α -308 / AG	A meta-analysis of 28 studies concluded that the TNF- α promoter-308-A/G polymorphism is associated with susceptibility to SLE, although this effect may vary according to different ethnicities ²¹ . The genotype (AA + GA) at the TNF-308 promoter was significantly associated with clinical manifestations, such as malar rash, arthritis, oral ulcers, serositis and the SLE disease activity index ²² .
LTA-252 / AG	The LTA 252 AG polymorphism has been associated with SLE susceptibility in German, Asian and Egyptian patients ²²⁻²⁴ . This polymorphism has also been associated with renal lupus and arthritis in SLE ^{9, 22} .
ITGAMrs1143679 / HR	Several studies have demonstrated a link between the missense mutation at rs1143679 and susceptibility to SLE in various populations ²⁵⁻³⁰ . Certain manifestations of SLE, such as arthritis and nephritis, have also been linked to the missense mutation of ITGAM rs1143679 ^{29, 30} .
MBL2 Exon 1/ AO	Variant alleles are collectively denoted as O, while non-mutated alleles are referred to as A. A meta-analysis concluded that the MBL2 A/O

	polymorphism may be associated with SLE ³¹ . Several articles have also suggested the role of the MBL2 gene as a disease-modifying locus, predisposing to nephritis and complicating infections ^{32, 33} .
MBL2 promoter rs7096206 / XY	The MBL2 -221X allele is the main promoter polymorphism affecting the MBL concentration ³⁴ . A meta-analysis that was conducted in 2005 including 4 studies on the MBL2 -221 polymorphism concluded that the X allele was strongly associated with susceptibility to SLE ³⁵ . Some studies have also linked the MBL2 -221 polymorphism with clinical manifestations of SLE, such as early onset, cutaneous manifestations, pleuritis/pericarditis and antiphospholipid antibodies ^{32, 36} .
Vitamin D	A meta-analysis that was conducted on vitamin D and SLE revealed that the BsmI polymorphism showed a significant association with SLE and lupus nephritis (LN) in Asians ³⁷ . It has also been reported that B-allele-negative patients have a greater risk of developing lupus nephritis ³⁸ .
XRCC1	The XRCC1 Arg399Gln polymorphism has been linked to SLE susceptibility in Taiwanese and Polish populations ^{39, 40} . This polymorphism has also been associated with disease manifestations, such as photosensitivity, malar rash, arthritis, and hematologic abnormalities ^{39, 40} .

References

1. Huang CM, Wu MC, Wu JY, Tsai FJ. Interleukin-1 receptor antagonist gene polymorphism in chinese patients with systemic lupus erythematosus. *Clin Rheumatol*. 2002 Jun;21(3):255-7.
2. Blakemore AIF, Tarlow JK, J.Cork M, Gordon C, Emery P, Duff GW. Interleukin-1 receptor antagonist gene polymorphism as a disease severity factor in systemic lupus erythematosus. *Arthritis & Rheumatism*. 1994;37(9):1380-5.
3. Suzuki H, Matsui Y, Kashiwagi H. Interleukin-1 receptor antagonist gene polymorphism in Japanese patients with systemic lupus erythematosus. *Arthritis Rheum-Us*. 1997 Feb;40(2):389-90.
4. Tahmasebi Z, Akbarian M, Mirkazemi S, Shahlaee A, Alizadeh Z, Amirzargar AA, et al. Interleukin-1 gene cluster and IL-1 receptor polymorphisms in Iranian patients with systemic lupus erythematosus. *Rheumatol Int*. 2013 Oct;33(10):2591-6.
5. Parks CG, Pandey JP, Dooley MA, Treadwell EL, St Clair EW, Gilkeson GS, et al. Genetic polymorphisms in tumor necrosis factor (TNF)-alpha and TNF-beta in a population-based study of systemic lupus erythematosus: associations and interaction with the interleukin-1alpha-889 C/T polymorphism. *Hum Immunol*. 2004 Jun;65(6):622-31.
6. Tsai LJ, Hsiao SH, Tsai JJ, Lin CY, Tsai LM, Lan JL. Higher genetic susceptibility to inflammation in mild disease activity of systemic lupus erythematosus. *Rheumatol Int*. 2009 Jul;29(9):1001-11.
7. Chua KH, Kee BP, Tan SY, Lian LH. Interleukin-6 promoter polymorphisms (-174 G/C) in Malaysian patients with systemic lupus erythematosus. *Braz J Med Biol Res*. 2009 Jun;42(6):551-5.
8. Hristova M, Dourmishev L, Kamenarska Z, Nikolova S, Kaneva R, Vinkov A, et al. Role of the promoter polymorphism IL-6 -174G/C in dermatomyositis and systemic lupus erythematosus. *Biomed Res Int*. 2013;2013:315365.
9. Santos MJ, Fernandes D, Capela S, da Silva JC, Fonseca JE. Interleukin-6 promoter polymorphism -174 G/C is associated with nephritis in Portuguese Caucasian systemic lupus erythematosus patients. *Clin Rheumatol*. 2011 Mar;30(3):409-13.
10. Iyer SS, Cheng G. Role of interleukin 10 transcriptional regulation in inflammation and autoimmune disease. *Crit Rev Immunol*. 2012;32(1):23-63.
11. Liu P, Song J, Su H, Li L, Lu N, Yang R, et al. IL-10 gene polymorphisms and susceptibility to systemic lupus erythematosus: a meta-analysis. *Plos One*. 2013;8(7):e69547.
12. Yuan H, Pan HF, Li LH, Feng JB, Li WX, Li XP, et al. Meta analysis on the association between FcgammaRIIa-R/H131 polymorphisms and systemic lupus erythematosus. *Mol Biol Rep*. 2009 May;36(5):1053-8.
13. Hatta Y, Tsuchiya N, Ohashi J, Matsushita M, Fujiwara K, Hagiwara K, et al. Association of Fc gamma receptor IIIB, but not of Fc gamma receptor IIA and IIIA polymorphisms with systemic lupus erythematosus in Japanese. *Genes Immun*. 1999 Sep;1(1):53-60.
14. Wu J, Edberg JC, Redecha PB, Bansal V, Guyre PM, Coleman K, et al. A novel polymorphism of FcgammaRIIIa (CD16) alters receptor function and predisposes to autoimmune disease. *The Journal of clinical investigation*. 1997 Sep 1;100(5):1059-70.
15. Koene HR, Kleijer M, Swaak AJ, Sullivan KE, Bijl M, Petri MA, et al. The Fc gammaRIIIA-158F allele is a risk factor for systemic lupus erythematosus. *Arthritis Rheum*. 1998 Oct;41(10):1813-8.
16. Dai M, Zhou Z, Wang X, Qian X, Huang X. Association of FcgammaRIIIa-158V/F with systemic lupus erythematosus in a Chinese population. *Int J Rheum Dis*. 2013 Dec;16(6):685-91.
17. Takai T. Multiple loss of effector cell functions in FcR gamma-deficient mice. *Int Rev Immunol*. 1996;13(4):369-81.
18. Siriboonrit U, Tsuchiya N, Sirikong M, Kyogoku C, Bejrachandra S, Suthipinittharm P, et al. Association of Fcgamma receptor IIb and IIIB polymorphisms with susceptibility to systemic lupus erythematosus in Thais. *Tissue Antigens*. 2003 May;61(5):374-83.

19. Gonzalez-Escribano MF, Aguilar F, Sanchez-Roman J, Nunez-Roldan A. FcgammaRIIA, FcgammaRIIIA and FcgammaRIIIB polymorphisms in Spanish patients with systemic lupus erythematosus. *Eur J Immunogenet.* 2002 Aug;29(4):301-6.
20. Chen JY, Wang CM, Tsao KC, Chow YH, Wu JM, Li CL, et al. Fcgamma receptor IIa, IIIa, and IIIb polymorphisms of systemic lupus erythematosus in Taiwan. *Ann Rheum Dis.* 2004 Jul;63(7):877-80.
21. Zou YF, Feng XL, Tao JH, Su H, Pan FM, Liao FF, et al. Meta-analysis of TNF-alpha promoter -308A/G polymorphism and SLE susceptibility in Asian populations. *Rheumatol Int.* 2011 Aug;31(8):1055-64.
22. Ahmed HH, Taha FM, Darweesh Hel S, Morsi HM. Association between TNF promoter -308 G>A and LTA 252 A>G polymorphisms and systemic lupus erythematosus. *Mol Biol Rep.* 2014;41(4):2029-36.
23. Bettinotti MP, Hartung K, Deicher HR, Keller E, Mikschl S, Albert E. DR2 haplotypes (DRB1, DQA1, DQB1) associated with systemic lupus erythematosus. *Immunogenetics.* 1993;38(1):74-7.
24. Zhang J, Ai R, Chow F. The polymorphisms of HLA-DR and TNF B loci in northern Chinese Han nationality and susceptibility to systemic lupus erythematosus. *Chin Med Sci J.* 1997 Jun;12(2):107-10.
25. Nath SK, Han S, Kim-Howard X, Kelly JA, Viswanathan P, Gilkeson GS, et al. A nonsynonymous functional variant in integrin-alpha(M) (encoded by ITGAM) is associated with systemic lupus erythematosus. *Nat Genet.* 2008 Feb;40(2):152-4.
26. Sanchez E, Webb RD, Rasmussen A, Kelly JA, Riba L, Kaufman KM, et al. Genetically determined Amerindian ancestry correlates with increased frequency of risk alleles for systemic lupus erythematosus. *Arthritis Rheum-Us.* 2010 Dec;62(12):3722-9.
27. Yang W, Zhao M, Hirankarn N, Lau CS, Mok CC, Chan TM, et al. ITGAM is associated with disease susceptibility and renal nephritis of systemic lupus erythematosus in Hong Kong Chinese and Thai. *Hum Mol Genet.* 2009 Jun 1;18(11):2063-70.
28. Hom G, Graham RR, Modrek B, Taylor KE, Ortmann W, Garnier S, et al. Association of systemic lupus erythematosus with C8orf13-BLK and ITGAM-ITGAX. *N Engl J Med.* 2008 Feb 28;358(9):900-9.
29. Toller-Kawahisa JE, Vigato-Ferreira ICC, Pancoto JAT, Mendes CT, Martinez EZ, Palomino GM, et al. The variant of CD11b, rs1143679 within ITGAM, is associated with systemic lupus erythematosus and clinical manifestations in Brazilian patients. *Hum Immunol.* 2014 Feb;75(2):119-23.
30. Warchol T, Lianeri M, Lacki JK, Olesinska M, Jagodzinski PP. ITGAM Arg77His is associated with disease susceptibility, arthritis, and renal symptoms in systemic lupus erythematosus patients from a sample of the Polish population. *DNA Cell Biol.* 2011 Jan;30(1):33-8.
31. Xu WD, Peng H, Zhou M, Zhang M, Li BZ, Pan HF, et al. Association of RANTES and MBL gene polymorphisms with systemic lupus erythematosus: a meta-analysis. *Mol Biol Rep.* 2013 Feb;40(2):941-8.
32. Sandrin-Garcia P, Brandao LA, Coelho AV, Guimaraes RL, Pancoto JA, Segat L, et al. Mannose binding lectin gene (MBL2) functional polymorphisms are associated with systemic lupus erythematosus in southern Brazilians. *Hum Immunol.* 2011 Jun;72(6):516-21.
33. Garred P, Voss A, Madsen HO, Junker P. Association of mannose-binding lectin gene variation with disease severity and infections in a population-based cohort of systemic lupus erythematosus patients. *Genes and immunity.* 2001 Dec;2(8):442-50.
34. Madsen HO, Garred P, Thiel S, Kurtzhals JA, Lamm LU, Ryder LP, et al. Interplay between promoter and structural gene variants control basal serum level of mannan-binding protein. *J Immunol.* 1995 Sep 15;155(6):3013-20.

35. Lee YH, Witte T, Momot T, Schmidt RE, Kaufman KM, Harley JB, et al. The mannose-binding lectin gene polymorphisms and systemic lupus erythematosus: two case-control studies and a meta-analysis. *Arthritis Rheum-U.S.* 2005 Dec;52(12):3966-74.
36. Jakab L, Laki J, Sallai K, Temesszentandrasi G, Pozsonyi T, Kalabay L, et al. Association between early onset and organ manifestations of systemic lupus erythematosus (SLE) and a down-regulating promoter polymorphism in the MBL2 gene. *Clin Immunol.* 2007 Dec;125(3):230-6.
37. Lee YH, Bae SC, Choi SJ, Ji JD, Song GG. Associations between vitamin D receptor polymorphisms and susceptibility to rheumatoid arthritis and systemic lupus erythematosus: a meta-analysis. *Mol Biol Rep.* 2011 Aug;38(6):3643-51.
38. Luo XY, Yang MH, Wu FX, Wu LJ, Chen L, Tang Z, et al. Vitamin D receptor gene BsmI polymorphism B allele, but not BB genotype, is associated with systemic lupus erythematosus in a Han Chinese population. *Lupus.* 2012 Jan;21(1):53-9.
39. Lin YJ, Wan L, Huang CM, Chen SY, Huang YC, Lai CH, et al. Polymorphisms in the DNA repair gene XRCC1 and associations with systemic lupus erythematosus risk in the Taiwanese Han Chinese population. *Lupus.* 2009 Dec;18(14):1246-51.
40. Warchol T, Mostowska A, Lianeri M, Lacki JK, Jagodzinski PP. XRCC1 Arg399Gln gene polymorphism and the risk of systemic lupus erythematosus in the Polish population. *DNA and cell biology.* 2012 Jan;31(1):50-6.