

BAB V PENUTUP

5.1. Kesimpulan

Penelitian ini mengidentifikasi variasi genetik yang memengaruhi penyakit SLE dengan menunjukkan ekspresi gen *UHRF1BP1*, *SH2B3*, *FCGR2A*, *CD226*, *BANK1*, dan *PXK* pada jaringan darah. Variasi genetik tersebut menimbulkan risiko perkembangan penyakit SLE pada individu. Hasil penelitian ini menunjukkan bahwa variasi genetik *FCGR2A* dalam SNP rs1801274 paling mempengaruhi SLE dalam jaringan darah karena variasi genetik ini juga secara meyakinkan terjadi pada berbagai frekuensi populasi. Data hasil penelitian ini memberikan bukti lebih lanjut, bahwa variasi umum pada genetik berperan dalam sistem imun yang dapat menetapkan risiko SLE.

5.2. Saran

Penelitian selanjutnya dapat memeriksa data 6 variasi genetik untuk memperluas gen risiko SLE agar mendapatkan lebih banyak gen target obat sebagai farmakoterapi penyakit dan memeriksa onset gejala awal untuk mulai memantau adanya kerentanan dan keparahan penyakit.

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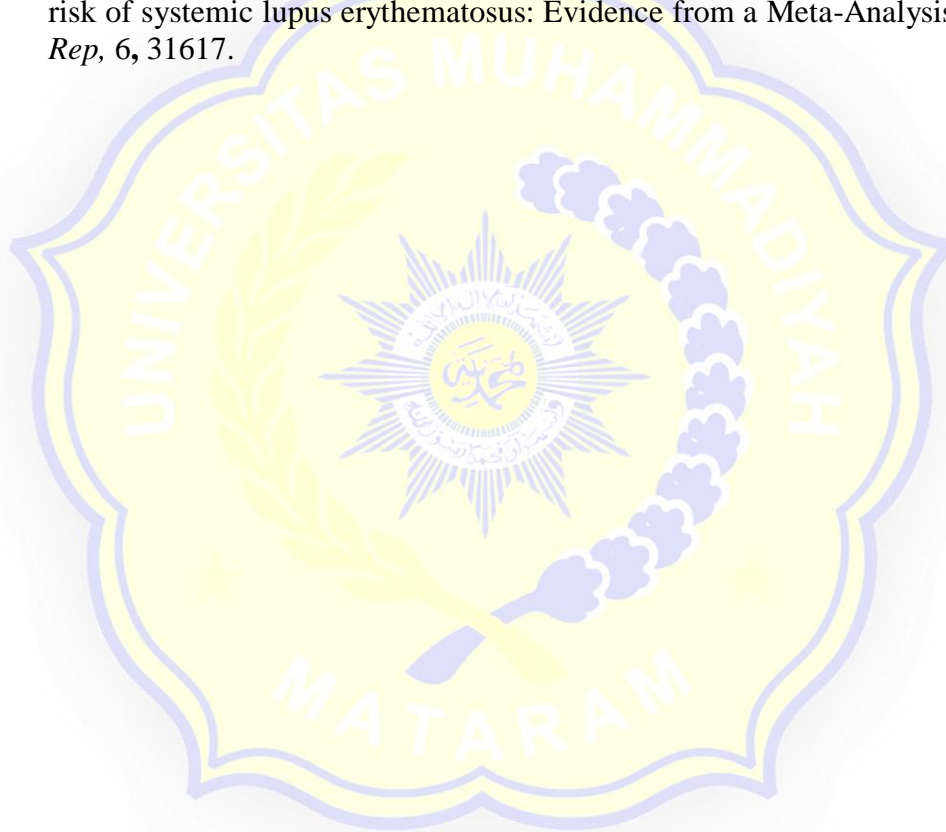
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LAMPIRAN

Lampiran 1 Hasil GWAS setelah penghapusan duplikat diperoleh 471 SNP berdasarkan kriteria inklusi $<10^{-8}$

| Variant and risk allele | P-value |
|-------------------------|---------------------|
| rs268134 | 1×10^{-10} |
| rs4948496 | 1×10^{-10} |
| rs118075465 | 1×10^{-10} |
| rs6533951 | 1×10^{-10} |
| rs564976 | 1×10^{-10} |
| rs2275247 | 1×10^{-10} |
| rs2111485 | 1×10^{-11} |
| rs146280229 | 1×10^{-11} |
| rs565981183 | 1×10^{-11} |
| rs11697848 | 1×10^{-11} |
| rs8072449 | 1×10^{-11} |
| rs3122605 | 1×10^{-11} |
| DQB1*05:03 | 1×10^{-11} |
| rs12636784 | 1×10^{-11} |
| DQA1*01:05 | 1×10^{-11} |
| DRB1*14:01 | 1×10^{-11} |
| rs4958880 | 1×10^{-11} |
| chr7:50307334 | 1×10^{-11} |
| rs139110493 | 1×10^{-12} |
| rs6671847 | 1×10^{-12} |
| rs74290525 | 1×10^{-12} |
| rs79401250 | 1×10^{-12} |
| rs3734266 | 1×10^{-12} |
| DQB1*06:02 | 1×10^{-12} |
| rs9271100 | 1×10^{-12} |
| rs4426778 | 1×10^{-12} |
| B*44:02 | 1×10^{-12} |
| chr6:138190533 | 1×10^{-12} |
| rs11085727 | 1×10^{-13} |
| rs3768792 | 1×10^{-13} |
| rs1264585 | 1×10^{-13} |
| rs16902895 | 1×10^{-13} |
| rs5754467 | 1×10^{-13} |
| rs10018951 | 1×10^{-14} |
| rs11073328 | 1×10^{-14} |

| | |
|----------------------|---------------------|
| rs6679677 | 1×10^{-15} |
| rs9888739 | 1×10^{-15} |
| rs2855772 | 1×10^{-15} |
| rs113284964 | 1×10^{-16} |
| rs131654 | 1×10^{-16} |
| rs4639966 | 1×10^{-16} |
| rs131658 | 1×10^{-16} |
| rs112006329 | 1×10^{-16} |
| rs11644034 | 1×10^{-17} |
| rs11032994 | 1×10^{-17} |
| rs34361002 | 1×10^{-17} |
| rs28364822 | 1×10^{-17} |
| rs4637409 | 1×10^{-17} |
| rs3794060 | 1×10^{-20} |
| chr7:74196185 | 1×10^{-22} |
| rs2732549 | 1×10^{-23} |
| rs4728142 | 1×10^{-23} |
| rs36014129 | 1×10^{-24} |
| rs17484292 | 1×10^{-37} |
| rs13238352 | 1×10^{-38} |
| rs2061831 | 1×10^{-40} |
| rs7574865 | 1×10^{-41} |
| rs10036748 | 1×10^{-45} |
| rs3757387 | 1×10^{-48} |
| rs9273190 | 1×10^{-54} |
| rs35000415 | 1×10^{-60} |
| rs7568275 | 1×10^{-77} |
| rs820077 | 1×10^{-8} |
| rs231694 | 1×10^{-8} |
| B*08:01 | 1×10^{-8} |
| DQA1*05:05 | 1×10^{-8} |
| rs4917385 | 1×10^{-8} |
| rs8023715 | 1×10^{-8} |
| rs4810485 | 1×10^{-8} |
| rs2663054 | 1×10^{-8} |
| rs223889 | 1×10^{-8} |
| rs13344313 | 1×10^{-8} |
| rs1432296 | 1×10^{-8} |
| rs353592 | 1×10^{-8} |
| rs9899849 | 1×10^{-8} |
| rs1444766 | 1×10^{-8} |
| rs7460469 | 1×10^{-8} |

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| rs7300146 | 1×10^{-8} |
| rs112846137 | 1×10^{-8} |
| rs2714333 | 1×10^{-8} |
| rs372605131 | 1×10^{-8} |
| chr1:206735148 | 1×10^{-8} |
| rs1131476 | 1×10^{-9} |
| rs11099582 | 1×10^{-9} |
| rs729302 | 1×10^{-9} |
| rs12129787 | 1×10^{-9} |
| rs7819602 | 1×10^{-9} |
| rs1131265 | 1×10^{-9} |
| rs10460393 | 1×10^{-9} |
| rs10048743 | 2×10^{-10} |
| rs4844538 | 2×10^{-10} |
| rs7929541 | 2×10^{-10} |
| chr6:106564236 | 2×10^{-10} |
| rs73366469 | 2×10^{-11} |
| rs12900640 | 2×10^{-11} |
| rs1317082 | 2×10^{-11} |
| rs702814 | 2×10^{-11} |
| rs34840245 | 2×10^{-11} |
| rs3733345 | 2×10^{-11} |
| rs11117433 | 2×10^{-11} |
| rs2283790 | 2×10^{-11} |
| rs17206287 | 2×10^{-12} |
| rs10207954 | 2×10^{-12} |
| rs3750996 | 2×10^{-12} |
| rs2301271 | 2×10^{-12} |
| rs4252665 | 2×10^{-12} |
| DQA1*03:03 | 2×10^{-12} |
| DQB1*03:03 | 2×10^{-12} |
| DPB1*01:01 | 2×10^{-12} |
| rs554383943 | 2×10^{-13} |
| rs218174 | 2×10^{-13} |
| rs2254546 | 2×10^{-13} |
| DQA1*01:02 | 2×10^{-13} |
| rs10911628 | 2×10^{-13} |
| rs2327832 | 2×10^{-13} |
| DQA1*01:04 | 2×10^{-13} |
| rs35605052 | 2×10^{-13} |
| rs2230926 | 2×10^{-14} |
| rs13306575 | 2×10^{-14} |

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| rs11684176 | 2×10^{-14} |
| DQA1*03:01 | 2×10^{-14} |
| rs1734787 | 2×10^{-15} |
| rs4573208 | 2×10^{-15} |
| rs7858766 | 2×10^{-15} |
| DRB1*04:01 | 2×10^{-15} |
| rs11185602 | 2×10^{-16} |
| rs9275599 | 2×10^{-16} |
| rs2041670 | 2×10^{-16} |
| rs1270942 | 2×10^{-165} |
| rs7725218 | 2×10^{-17} |
| rs13332649 | 2×10^{-18} |
| rs12612769 | 2×10^{-19} |
| rs77285596 | 2×10^{-19} |
| rs111508444 | 2×10^{-19} |
| rs5029924 | 2×10^{-19} |
| rs11860650 | 2×10^{-20} |
| rs2736332 | 2×10^{-22} |
| rs7444 | 2×10^{-22} |
| rs7812879 | 2×10^{-24} |
| rs10239000 | 2×10^{-25} |
| rs34536443 | 2×10^{-25} |
| rs74956615 | 2×10^{-25} |
| rs794368 | 2×10^{-26} |
| rs112262437 | 2×10^{-27} |
| rs77000060 | 2×10^{-29} |
| rs117026326 | 2×10^{-298} |
| rs534723171 | 2×10^{-30} |
| rs6932056 | 2×10^{-31} |
| rs78724056 | 2×10^{-32} |
| rs542914466 | 2×10^{-37} |
| rs2039982 | 2×10^{-37} |
| rs17849501 | 2×10^{-59} |
| rs3135394 | 2×10^{-60} |
| rs28359827 | 2×10^{-71} |
| rs11889341 | 2×10^{-76} |
| rs11755393 | 2×10^{-8} |
| rs7941765 | 2×10^{-8} |
| rs7200786 | 2×10^{-8} |
| rs74989671 | 2×10^{-8} |
| rs9322454 | 2×10^{-8} |
| rs111447985 | 2×10^{-8} |

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| rs2618476 | 2×10^{-8} |
| rs1167796 | 2×10^{-8} |
| rs56154925 | 2×10^{-8} |
| rs9852465 | 2×10^{-8} |
| rs11059927 | 2×10^{-8} |
| rs180977001 | 2×10^{-8} |
| rs4690229 | 2×10^{-8} |
| rs11724582 | 2×10^{-8} |
| rs11788118 | 2×10^{-8} |
| rs8054198 | 2×10^{-8} |
| rs1405209 | 2×10^{-8} |
| rs10807602 | 2×10^{-8} |
| rs1635852 | 2×10^{-8} |
| rs960709 | 2×10^{-8} |
| rs7097397 | 2×10^{-9} |
| rs849142 | 2×10^{-9} |
| rs564799 | 2×10^{-9} |
| rs9263715 | 2×10^{-9} |
| rs4830478 | 2×10^{-9} |
| rs57634688 | 2×10^{-9} |
| rs35743748 | 2×10^{-9} |
| rs17321999 | 2×10^{-9} |
| rs3828069 | 2×10^{-9} |
| rs13069553 | 2×10^{-9} |
| rs10499197 | 2×10^{-9} |
| rs1174683 | 2×10^{-9} |
| rs35929052 | 2×10^{-9} |
| rs7911501 | 2×10^{-9} |
| chr12:12874462 | 2×10^{-9} |
| rs4458721 | 3×10^{-10} |
| rs189311301 | 3×10^{-10} |
| rs7565158 | 3×10^{-10} |
| rs34889541 | 3×10^{-10} |
| rs1016140 | 3×10^{-10} |
| rs6927090 | 3×10^{-10} |
| rs12711490 | 3×10^{-10} |
| rs11085725 | 3×10^{-10} |
| rs145720245 | 3×10^{-10} |
| rs111994823 | 3×10^{-11} |
| rs9269233 | 3×10^{-11} |
| rs2523483 | 3×10^{-11} |

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| rs61759532 | 3×10^{-11} |
| rs11574637 | 3×10^{-11} |
| rs13116227 | 3×10^{-11} |
| rs2476601 | 3×10^{-12} |
| rs68008267 | 3×10^{-12} |
| rs7170151 | 3×10^{-12} |
| rs5029939 | 3×10^{-12} |
| rs4713853 | 3×10^{-12} |
| rs76413021 | 3×10^{-13} |
| rs387619 | 3×10^{-13} |
| rs3747093 | 3×10^{-13} |
| rs75881311 | 3×10^{-13} |
| rs9651076 | 3×10^{-13} |
| rs9603612 | 3×10^{-13} |
| rs5778759 | 3×10^{-13} |
| rs9311676 | 3×10^{-14} |
| DQA1*02:01 | 3×10^{-14} |
| rs12574073 | 3×10^{-14} |
| rs150724213 | 3×10^{-15} |
| rs669763 | 3×10^{-15} |
| rs6804441 | 3×10^{-16} |
| chr2:191943742 | 3×10^{-16} |
| rs77885959 | 3×10^{-17} |
| DRB1*12:01 | 3×10^{-17} |
| rs13389408 | 3×10^{-17} |
| rs58721818 | 3×10^{-19} |
| rs704840 | 3×10^{-19} |
| rs199789198 | 3×10^{-194} |
| rs574027387 | 3×10^{-23} |
| rs77971648 | 3×10^{-23} |
| rs200283861 | 3×10^{-23} |
| rs6641111 | 3×10^{-25} |
| DQA1*01:01 | 3×10^{-25} |
| rs36030018 | 3×10^{-36} |
| rs10174238 | 3×10^{-42} |
| rs71403211 | 3×10^{-49} |
| rs34572943 | 3×10^{-76} |
| rs12531540 | 3×10^{-8} |
| rs117522574 | 3×10^{-8} |
| rs28410471 | 3×10^{-8} |
| rs11679244 | 3×10^{-8} |
| rs6590330 | 3×10^{-8} |

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| rs17603856 | 3×10^{-8} |
| rs7197475 | 3×10^{-8} |
| rs4739134 | 3×10^{-8} |
| rs911263 | 3×10^{-8} |
| rs1804182 | 3×10^{-8} |
| rs6074813 | 3×10^{-8} |
| rs10795956 | 3×10^{-8} |
| rs7172677 | 3×10^{-8} |
| rs7258015 | 3×10^{-8} |
| rs2422345 | 3×10^{-8} |
| rs76246107 | 3×10^{-8} |
| rs2286672 | 3×10^{-9} |
| HLA | 3×10^{-9} |
| rs193107685 | 3×10^{-9} |
| rs114092478 | 3×10^{-93} |
| rs5986948 | 4×10^{-10} |
| rs2980512 | 4×10^{-10} |
| rs956237 | 4×10^{-11} |
| DRB1*03:01 | 4×10^{-11} |
| rs1749792 | 4×10^{-11} |
| rs113478424 | 4×10^{-12} |
| rs2523968 | 4×10^{-12} |
| rs11673604 | 4×10^{-12} |
| rs566731348 | 4×10^{-12} |
| rs802791 | 4×10^{-12} |
| rs7708392 | 4×10^{-13} |
| rs2304256 | 4×10^{-13} |
| rs6874758 | 4×10^{-14} |
| rs10484578 | 4×10^{-14} |
| rs13239597 | 4×10^{-14} |
| chr1:173191475 | 4×10^{-14} |
| rs116991837 | 4×10^{-15} |
| rs118048475 | 4×10^{-15} |
| rs4622329 | 4×10^{-15} |
| rs9373839 | 4×10^{-15} |
| rs7726414 | 4×10^{-16} |
| rs10028805 | 4×10^{-17} |
| DRB1*01:01 | 4×10^{-17} |
| rs2431098 | 4×10^{-18} |
| rs10912578 | 4×10^{-19} |
| rs140780894 | 4×10^{-19} |
| rs368529276 | 4×10^{-19} |

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| rs12537284 | 4×10^{-19} |
| chr6:32614963 | 4×10^{-21} |
| rs6889239 | 4×10^{-24} |
| DQB1*05:01 | 4×10^{-25} |
| rs9270970 | 4×10^{-26} |
| rs35472514 | 4×10^{-53} |
| rs587680541 | 4×10^{-62} |
| rs34723256 | 4×10^{-68} |
| rs12706861 | 4×10^{-71} |
| rs3024505 | 4×10^{-8} |
| rs2540119 | 4×10^{-8} |
| rs10995254 | 4×10^{-8} |
| rs1170426 | 4×10^{-8} |
| rs10245867 | 4×10^{-8} |
| rs2953898 | 4×10^{-8} |
| rs1780813 | 4×10^{-8} |
| rs150518861 | 4×10^{-8} |
| rs114038709 | 4×10^{-8} |
| rs113333331 | 4×10^{-8} |
| rs6586391 | 4×10^{-8} |
| rs61811916 | 4×10^{-8} |
| rs11066301 | 4×10^{-8} |
| chr10:50076325 | 4×10^{-8} |
| rs10774625 | 4×10^{-9} |
| rs3806357 | 4×10^{-9} |
| rs34868004 | 4×10^{-9} |
| rs6886392 | 4×10^{-9} |
| chr7:128575797 | 4×10^{-9} |
| rs887369 | 5×10^{-10} |
| rs2317230 | 5×10^{-10} |
| 4:102721293 | 5×10^{-10} |
| DRB1*01:02 | 5×10^{-10} |
| rs11845506 | 5×10^{-10} |
| rs17445836 | 5×10^{-10} |
| rs146003878 | 5×10^{-11} |
| rs73954925 | 5×10^{-11} |
| rs2176082 | 5×10^{-11} |
| rs9268807 | 5×10^{-117} |
| rs34330 | 5×10^{-12} |
| rs5029937 | 5×10^{-13} |
| rs58688157 | 5×10^{-13} |
| DRB1*11:01 | 5×10^{-13} |

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| DQB1*03:02 | 5×10^{-15} |
| DRB1*15:03 | 5×10^{-15} |
| rs9275572 | 5×10^{-16} |
| rs530634980 | 5×10^{-18} |
| rs35789010 | 5×10^{-19} |
| rs2736337 | 5×10^{-22} |
| rs34725611 | 5×10^{-23} |
| rs75163761 | 5×10^{-24} |
| rs9270984 | 5×10^{-24} |
| rs9274384 | 5×10^{-31} |
| rs41298401 | 5×10^{-45} |
| rs2222631 | 5×10^{-8} |
| rs2671655 | 5×10^{-8} |
| rs137956 | 5×10^{-8} |
| rs1547624 | 5×10^{-8} |
| rs2384991 | 5×10^{-8} |
| rs55849330 | 5×10^{-8} |
| rs117821148 | 5×10^{-8} |
| rs9934578 | 5×10^{-8} |
| rs4963128 | 5×10^{-9} |
| rs2663052 | 5×10^{-9} |
| rs145396511 | 5×10^{-9} |
| rs36023980 | 5×10^{-9} |
| rs780669 | 5×10^{-9} |
| rs10069690 | 5×10^{-9} |
| rs1217393 | 5×10^{-9} |
| rs35677470 | 5×10^{-9} |
| rs597808 | 6×10^{-10} |
| rs2289583 | 6×10^{-10} |
| rs1788097 | 6×10^{-10} |
| rs79774308 | 6×10^{-10} |
| rs12575600 | 6×10^{-10} |
| rs2955587 | 6×10^{-10} |
| rs1150757 | 6×10^{-107} |
| rs77583790 | 6×10^{-11} |
| rs4819670 | 6×10^{-11} |
| DQA1*05:01 | 6×10^{-11} |
| rs17849502 | 6×10^{-11} |
| rs11117431 | 6×10^{-11} |
| rs6659932 | 6×10^{-11} |
| rs1150755 | 6×10^{-117} |
| rs10753074 | 6×10^{-12} |

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| rs2421184 | 6×10^{-12} |
| rs4930642 | 6×10^{-13} |
| rs4917014 | 6×10^{-14} |
| rs4852324 | 6×10^{-14} |
| rs2299864 | 6×10^{-15} |
| rs2070197 | 6×10^{-24} |
| rs1150754 | 6×10^{-29} |
| rs10845602 | 6×10^{-31} |
| rs12539741 | 6×10^{-31} |
| rs2736336 | 6×10^{-32} |
| rs2516465 | 6×10^{-48} |
| rs1059702 | 6×10^{-54} |
| rs77009341 | 6×10^{-62} |
| C*07:01 | 6×10^{-74} |
| rs2267828 | 6×10^{-8} |
| rs3024493 | 6×10^{-8} |
| rs1143679 | 6×10^{-8} |
| rs2867700 | 6×10^{-8} |
| rs11679484 | 6×10^{-8} |
| rs4978037 | 6×10^{-8} |
| rs7382170 | 6×10^{-8} |
| rs2205960 | 6×10^{-9} |
| rs143123127 | 6×10^{-9} |
| rs372942110 | 6×10^{-9} |
| rs2371790 | 6×10^{-9} |
| rs12531711 | 6×10^{-9} |
| A*31:01 | 6×10^{-9} |
| rs114090659 | 6×10^{-92} |
| rs6568431 | 7×10^{-10} |
| rs4388254 | 7×10^{-10} |
| rs11553760 | 7×10^{-10} |
| rs10857635 | 7×10^{-10} |
| rs11235667 | 7×10^{-11} |
| DQB1*02:01 | 7×10^{-11} |
| rs12736195 | 7×10^{-11} |
| rs744600 | 7×10^{-11} |
| rs1128334 | 7×10^{-12} |
| DRB1*15:01 | 7×10^{-12} |
| rs1913517 | 7×10^{-12} |
| rs76596471 | 7×10^{-12} |
| rs73135369 | 7×10^{-13} |
| rs116785379 | 7×10^{-16} |

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| rs6705628 | 7×10^{-17} |
| rs10954214 | 7×10^{-17} |
| rs77465633 | 7×10^{-18} |
| rs57141708 | 7×10^{-22} |
| rs12928725 | 7×10^{-22} |
| rs10896045 | 7×10^{-26} |
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| rs12068671 | 7×10^{-8} |
| rs9394274 | 7×10^{-8} |
| rs12132445 | 7×10^{-8} |
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| rs6445975 | 7×10^{-9} |
| rs653178 | 7×10^{-9} |
| rs2618444 | 7×10^{-9} |
| rs1439112 | 7×10^{-9} |
| rs10716716 | 8×10^{-10} |
| rs6762714 | 8×10^{-10} |
| rs12153670 | 8×10^{-10} |
| chr8:11354097 | 8×10^{-10} |
| rs2736345 | 8×10^{-11} |
| rs9295676 | 8×10^{-11} |
| rs3821236 | 8×10^{-11} |
| DQB1*03:01 | 8×10^{-12} |
| rs9273076 | 8×10^{-13} |
| DRB1*07:01 | 8×10^{-14} |
| rs7582694 | 8×10^{-16} |
| rs2736340 | 8×10^{-17} |
| rs558702 | 8×10^{-21} |
| rs9268486 | 8×10^{-27} |
| rs2431697 | 8×10^{-28} |
| rs1966002 | 8×10^{-31} |
| rs10516487 | 8×10^{-8} |
| rs1267499 | 8×10^{-8} |
| rs1385374 | 8×10^{-8} |
| rs4916342 | 8×10^{-9} |
| rs11059919 | 8×10^{-9} |
| rs9462027 | 8×10^{-9} |
| rs2941509 | 8×10^{-9} |
| rs9611155 | 8×10^{-9} |
| rs3857496 | 8×10^{-9} |
| rs877819 | 8×10^{-9} |

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| rs340630 | 8×10^{-9} |
| rs10946940 | 8×10^{-9} |
| rs4807205 | 8×10^{-9} |
| rs7960611 | 8×10^{-9} |
| rs12802200 | 9×10^{-10} |
| rs2544920 | 9×10^{-10} |
| rs1061502 | 9×10^{-11} |
| rs10488631 | 9×10^{-110} |
| rs146063533 | 9×10^{-16} |
| rs6736175 | 9×10^{-17} |
| rs1131665 | 9×10^{-21} |
| rs7090925 | 9×10^{-8} |
| rs56285849 | 9×10^{-8} |
| rs62149377 | 9×10^{-8} |
| C*05:01 | 9×10^{-9} |
| rs5022165 | 9×10^{-9} |