**New Associations with HIV Predisposing and Protective Alleles of the HLA System in a Peruvian Population**

**Supplementary Table 1.** **Complete allele frequencies detected in study population for each locus.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **HLA-A** | **Freq** | **HLA-B** | **Freq** | **HLA-C** | **Freq** | **HLA-DPB1** | **Freq** | **HLA-DQA1** | **Freq** | **HLA-DQB1** | **Freq** | **HLA-DRB1** | **Freq** |
| A\*01:01 | 0.020 | B\*07:02 | 0.050 | C\*01:02 | 0.121 | DPB1\*02:01 | 0.070 | DQA1\*01:01 | 0.051 | DQB1\*02:01 | 0.060 | DRB1\*01:01 | 0.010 |
| A\*01:02 | 0.005 | B\*08:01 | 0.020 | C\*01:17 | 0.005 | DPB1\*02:02 | 0.005 | DQA1\*01:02 | 0.082 | DQB1\*02:02 | 0.005 | DRB1\*01:02 | 0.020 |
| A\*02:01 | 0.355 | B\*13:02 | 0.005 | C\*02:02 | 0.030 | DPB1\*03:01 | 0.040 | DQA1\*01:03 | 0.010 | DQB1\*02:188 | 0.005 | DRB1\*01:03 | 0.010 |
| A\*02:02 | 0.005 | B\*13:03 | 0.005 | C\*03:02 | 0.015 | DPB1\*04:01 | 0.160 | DQA1\*01:04 | 0.010 | DQB1\*02:197 | 0.010 | DRB1\*03:01 | 0.030 |
| A\*02:03 | 0.010 | B\*14:01 | 0.005 | C\*03:03 | 0.025 | DPB1\*04:02 | 0.295 | DQA1\*01:05 | 0.026 | DQB1\*02:59 | 0.005 | DRB1\*04:01 | 0.005 |
| A\*02:04 | 0.005 | B\*14:02 | 0.030 | C\*03:04 | 0.071 | DPB1\*05:01 | 0.040 | DQA1\*01:06 | 0.005 | DQB1\*03:02 | 0.210 | DRB1\*04:02 | 0.010 |
| A\*02:05 | 0.005 | B\*15:01 | 0.020 | C\*04:01 | 0.227 | DPB1\*09:01 | 0.005 | DQA1\*01:48 | 0.005 | DQB1\*03:03 | 0.050 | DRB1\*04:03 | 0.025 |
| A\*02:06 | 0.005 | B\*15:02 | 0.005 | C\*04:03 | 0.005 | DPB1\*104:01 | 0.015 | DQA1\*02:01 | 0.046 | DQB1\*03:22 | 0.015 | DRB1\*04:04 | 0.065 |
| A\*02:10 | 0.005 | B\*15:04 | 0.060 | C\*05:01 | 0.020 | DPB1\*105:01 | 0.005 | DQA1\*02:17 | 0.010 | DQB1\*03:229 | 0.005 | DRB1\*04:07 | 0.130 |
| A\*02:11 | 0.100 | B\*15:10 | 0.005 | C\*06:02 | 0.015 | DPB1\*107:01 | 0.045 | DQA1\*03:01 | 0.225 | DQB1\*03:251 | 0.015 | DRB1\*04:10 | 0.020 |
| A\*02:13 | 0.020 | B\*15:17 | 0.005 | C\*07:01 | 0.076 | DPB1\*1082:01 | 0.005 | DQA1\*03:02 | 0.107 | DQB1\*03:419 | 0.280 | DRB1\*04:11 | 0.015 |
| A\*02:22 | 0.045 | B\*15:39 | 0.010 | C\*07:02 | 0.187 | DPB1\*1083:01 | 0.005 | DQA1\*03:03 | 0.077 | DQB1\*03:49 | 0.005 | DRB1\*07:01 | 0.030 |
| A\*02:33 | 0.005 | B\*15:42 | 0.010 | C\*07:05 | 0.005 | DPB1\*10:01 | 0.010 | DQA1\*03:15 | 0.005 | DQB1\*03:95N | 0.010 | DRB1\*08:02 | 0.110 |
| A\*02:58 | 0.005 | B\*18:01 | 0.015 | C\*07:18 | 0.005 | DPB1\*11:01 | 0.020 | DQA1\*04:01 | 0.112 | DQB1\*03:96 | 0.100 | DRB1\*08:03 | 0.010 |
| A\*02:60 | 0.005 | B\*27:05 | 0.005 | C\*08:01 | 0.040 | DPB1\*1243:01 | 0.005 | DQA1\*05:01 | 0.026 | DQB1\*03:99Q | 0.015 | DRB1\*08:04 | 0.015 |
| A\*03:01 | 0.045 | B\*35:01 | 0.115 | C\*08:02 | 0.015 | DPB1\*126:01 | 0.010 | DQA1\*05:03 | 0.117 | DQB1\*04:02 | 0.040 | DRB1\*08:18 | 0.015 |
| A\*03:05 | 0.005 | B\*35:02 | 0.020 | C\*08:03 | 0.046 | DPB1\*1317:01Q | 0.005 | DQA1\*05:05 | 0.061 | DQB1\*04:52 | 0.005 | DRB1\*09:01 | 0.145 |
| A\*11:01 | 0.020 | B\*35:04 | 0.015 | C\*08:27 | 0.005 | DPB1\*133:01 | 0.010 | DQA1\*05:48 | 0.020 | DQB1\*05:01 | 0.045 | DRB1\*09:21 | 0.025 |
| A\*23:01 | 0.005 | B\*35:05 | 0.040 | C\*12:02 | 0.010 | DPB1\*135:01 | 0.005 | DQA1\*06:01 | 0.005 | DQB1\*05:03 | 0.020 | DRB1\*10:01 | 0.015 |
| A\*24:02 | 0.110 | B\*35:09 | 0.010 | C\*12:03 | 0.020 | DPB1\*13:01 | 0.010 |  |  | DQB1\*05:226 | 0.005 | DRB1\*11:01 | 0.015 |
| A\*24:03 | 0.010 | B\*35:14 | 0.010 | C\*14:02 | 0.005 | DPB1\*14:01 | 0.135 |  |  | DQB1\*05:296 | 0.005 | DRB1\*11:02 | 0.010 |
| A\*25:01 | 0.015 | B\*35:20 | 0.005 | C\*15:02 | 0.030 | DPB1\*17:01 | 0.005 |  |  | DQB1\*06:01 | 0.005 | DRB1\*11:04 | 0.020 |
| A\*26:01 | 0.015 | B\*35:22 | 0.005 | C\*15:05 | 0.005 | DPB1\*184:01 | 0.005 |  |  | DQB1\*06:02 | 0.040 | DRB1\*12:01 | 0.005 |
| A\*30:01 | 0.010 | B\*35:25 | 0.005 | C\*16:02 | 0.005 | DPB1\*18:01 | 0.005 |  |  | DQB1\*06:03 | 0.005 | DRB1\*12:02 | 0.005 |
| A\*30:02 | 0.015 | B\*35:31 | 0.010 | C\*17:01 | 0.010 | DPB1\*21:01 | 0.005 |  |  | DQB1\*06:04 | 0.015 | DRB1\*13:02 | 0.030 |
| A\*30:04 | 0.005 | B\*35:43 | 0.010 |  |  | DPB1\*23:01 | 0.005 |  |  | DQB1\*06:09 | 0.010 | DRB1\*13:03 | 0.010 |
| A\*31:01 | 0.035 | B\*38:01 | 0.050 |  |  | DPB1\*352:01 | 0.005 |  |  | DQB1\*06:112N | 0.005 | DRB1\*14:02 | 0.090 |
| A\*31:02 | 0.005 | B\*39:01 | 0.040 |  |  | DPB1\*40:01 | 0.005 |  |  | DQB1\*06:118 | 0.005 | DRB1\*14:06 | 0.005 |
| A\*31:04 | 0.005 | B\*39:05 | 0.020 |  |  | DPB1\*45:01 | 0.005 |  |  | DQB1\*06:44 | 0.005 | DRB1\*14:54 | 0.020 |
| A\*32:01 | 0.010 | B\*39:06 | 0.025 |  |  | DPB1\*585:01 | 0.005 |  |  |  |  | DRB1\*15:01 | 0.025 |
| A\*33:01 | 0.020 | B\*39:09 | 0.030 |  |  | DPB1\*651:01 | 0.035 |  |  |  |  | DRB1\*15:03 | 0.015 |
| A\*33:03 | 0.005 | B\*39:13 | 0.020 |  |  | DPB1\*835:01 | 0.005 |  |  |  |  | DRB1\*16:01 | 0.005 |
| A\*34:02 | 0.005 | B\*40:01 | 0.005 |  |  | DPB1\*882:01 | 0.005 |  |  |  |  | DRB1\*16:02 | 0.040 |
| A\*68:01 | 0.040 | B\*40:02 | 0.040 |  |  | DPB1\*954:01 | 0.005 |  |  |  |  |  |  |
| A\*68:02 | 0.010 | B\*40:04 | 0.045 |  |  | DPB1\*968:01 | 0.005 |  |  |  |  |  |  |
| A\*69:01 | 0.005 | B\*40:08 | 0.005 |  |  |  |  |  |  |  |  |  |  |
| A\*80:01 | 0.010 | B\*40:09 | 0.005 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*41:01 | 0.005 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*44:02 | 0.010 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*44:03 | 0.010 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*46:01 | 0.005 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*48:01 | 0.065 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*48:04 | 0.005 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*49:01 | 0.020 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*51:01 | 0.040 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*51:08 | 0.005 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*51:13 | 0.005 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*52:01 | 0.010 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*53:01 | 0.020 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*54:01 | 0.005 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*55:01 | 0.005 |  |  |  |  |  |  |  |  |  |  |
|  |  | B\*57:03 | 0.005 |  |  |  |  |  |  |  |  |  |  |

**Supplementary Table 2. Allele frequency distribution of HLA class I and II systems and his association between PLHIV (cases) and HIV-uninfected (controls) in Peru.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **HLA alleles** | **Allele frequency** | |  | **Allele effect** | | | |
| **PLHIV** | **HIV-uninfected** |  | **OR** | **CI** | ***p*** | ***p* adj** |
| A\*02:01 | 0.339 | 0.375 |  | 0.866 | 0.4302-1.7441 | 0.687 | 0.687 |
| A\*02:11 | 0.134 | 0.057 |  | 2.273 | 0.6852-7.5384 | 0.180 | 0.453 |
| A\*24:02 | 0.107 | 0.114 |  | 1.768 | 0.5995-5.2154 | 0.302 | 0.453 |
| B\*15:04 | 0.054 | 0.068 |  | 0.880 | 0.1826-4.2383 | 0.873 | 0.873 |
| B\*35:01 | 0.116 | 0.114 |  | 0.884 | 0.2826-2.7639 | 0.832 | 0.873 |
| B\*48:01 | 0.054 | 0.080 |  | 0.723 | 0.1929-2.7057 | 0.630 | 0.873 |
| C\*01:02 | 0.091 | 0.159 |  | 1.015 | 0.3582-2.8781 | 0.977 | 0.977 |
| C\*03:04 | 0.082 | 0.057 |  | 0.549 | 0.1301-2.3179 | 0.415 | 0.691 |
| C\*04:01 | 0.236 | 0.216 |  | 1.192 | 0.52-2.7332 | 0.678 | 0.848 |
| C\*07:01 | 0.118 | 0.023 |  | 10.222 | 1.4014-74.5521 | **0.022** | 0.109 |
| C\*07:02 | 0.182 | 0.193 |  | 1.555 | 0.5866-4.1221 | 0.375 | 0.691 |
| DPB1\*02:01 | 0.080 | 0.057 |  | 0.556 | 0.0844-3.6697 | 0.542 | 0.542 |
| DPB1\*04:01 | 0.188 | 0.125 |  | 1.835 | 0.689-4.8881 | 0.225 | 0.449 |
| DPB1\*04:02 | 0.277 | 0.318 |  | 1.395 | 0.6514-2.9863 | 0.392 | 0.522 |
| DPB1\*14:01 | 0.098 | 0.182 |  | 0.517 | 0.1862-1.4331 | 0.205 | 0.449 |
| DQA1\*01:01 | 0.056 | 0.046 |  | 0.843 | 0.1452-4.8932 | 0.849 | 0.849 |
| DQA1\*01:02 | 0.120 | 0.034 |  | 1.959 | 0.4673-8.2107 | 0.358 | 0.568 |
| DQA1\*03:01 | 0.232 | 0.216 |  | 1.170 | 0.5031-2.7201 | 0.716 | 0.818 |
| DQA1\*03:02 | 0.148 | 0.057 |  | 5.297 | 1.4752-19.0213 | **0.011** | 0.085 |
| DQA1\*03:03 | 0.056 | 0.102 |  | 0.351 | 0.074-1.668 | 0.188 | 0.376 |
| DQA1\*04:01 | 0.074 | 0.159 |  | 0.352 | 0.0893-1.3855 | 0.135 | 0.376 |
| DQA1\*05:03 | 0.093 | 0.148 |  | 0.629 | 0.2015-1.9664 | 0.426 | 0.568 |
| DQA1\*05:05 | 0.037 | 0.091 |  | 0.317 | 0.0577-1.7399 | 0.186 | 0.376 |
| DQB1\*02:01 | 0.080 | 0.034 |  | 2.700 | 0.4822-15.1198 | 0.258 | 0.258 |
| DQB1\*03:02 | 0.241 | 0.171 |  | 2.128 | 0.77-5.8808 | 0.145 | 0.258 |
| DQB1\*03:419 | 0.223 | 0.352 |  | 0.327 | 0.112-0.9563 | **0.041** | 0.165 |
| DQB1\*03:96 | 0.071 | 0.136 |  | 0.454 | 0.1243-1.6603 | 0.233 | 0.258 |
| DRB1\*04:04 | 0.063 | 0.068 |  | 3.059 | 0.5937-15.7629 | 0.181 | 0.302 |
| DRB1\*04:07 | 0.125 | 0.136 |  | 1.015 | 0.3323-3.0992 | 0.979 | 0.979 |
| DRB1\*08:02 | 0.071 | 0.159 |  | 0.347 | 0.087-1.384 | 0.134 | 0.302 |
| DRB1\*09:01 | 0.170 | 0.114 |  | 4.788 | 1.3941-16.4434 | **0.013** | 0.064 |
| DRB1\*14:02 | 0.063 | 0.125 |  | 0.625 | 0.1837-2.1229 | 0.451 | 0.563 |

OR: odds ratio; CI: confidence interval. P-values were calculated using a logistic regression model. The adjusted p-values (P adj) were calculated using 10,000 permutation results and by imposing a false discovery rate (FDR) of 0.05. A p-value < 0.05 was considered statistically significant (highlighted in bold).