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| **HLA class I** | **PEPTIDE SEQUENCE** | **EPITOPE ORIGIN** | **DESCRIPTION** |
| A\*02:01 | VLAELVKQI | HCMV IE1 (81-89) | Immediate-early protein of CMV |
| A\*02:01 | NLVPMVATV | HCMV pp65 (495-503) | Phosphoprotein 65, viriontegument |
| A\*02:01 | YLLEMLWRL | EBV LMP-1 (125-133) | Latent Membrane protein 1 |
| A\*02:01 | CLGGLLTMV | EBV LMP-2 (426-434) | Latent Membrane protein 2 |
| A\*02:01 | FLYALALLL | EBV LMP-2 (356-364) | Latent Membrane protein 2 |
| A\*02:01 | FLDKGTYTL | EBV BALF-4 (276-284) | Envelope glycoprotein B |
| A\*02:01 | GLCTLVAML | EBV BMLF-1 (259-267) | Early antigen, lytic phase |
| B\*08:01 | QIKVRVDMV | HCMV IE1 (88-96) | Immediate-early protein of CMV |
| B\*08:01 | QAKWRLQTL | EBV EBNA3A (158-166) | Nuclear Antigen 3ALatent phase |
| B\*08:01 | FLRGRAYGL | EBV EBNA-3A (193-201) | Nuclear Antigen 3ALatent phase |
| B\*08:01 | RAKFKQLL | EBV BZLF-1 (190-197) | EA: disruption of viral latency and start lytic phase |
| B\*07:02 | TPRVTGGGAM | HCMV pp65 (417-426) | Phosphoprotein 65, viriontegument |
| B\*07:02 | RPHERNGFTVL | HCMV pp65 (265-275) | Phosphoprotein 65, viriontegument |
| B\*07:02 | RPPIFIRRL | EBV EBNA-3A (247-255) | Nuclear protein 3ALatent phase |
| B\*07:02 | QPRAPIRPI | EBV EBNA-3C (881-889) | Nuclear protein 3CLatent phase |

**Supplementary Table 1:** Pentamers for EBV and CMV antigens used in the study.