

kidney, liver and lung were identified by searching the TiGER database of tissue expression. This database consists of expression data from microarray, real-time PCR, proteomics, etc. studies and is reported as a fold change compared with housekeeping genes/proteins used in each respective assay. These proteins are variably expressed in the tissue yet all tissues express some proteins from which new peptides were derived after infection.

**Supplemental Table 1: Characterization of HLA-A\*01:01-, HLA-B\*35:01-, and HLA-B\*45:01-restricted VACV-derived determinants presented during active infection**

**Supplemental Table 2: Characterization of HLA-A\*01:01-, HLA-A\*02:01-, HLA-B\*07:02-, HLA-B\*35:01-, and HLA-B\*45:01-restricted self peptides presented before and during active infection**

**Supplementary Table 3: Amino acid sequences of peptides eluted for HLA-A\*02:01 in two replicate experiments demonstrating >60% concordance between experiments**

**Supplemental Table 4: Potential allopeptides presented by HLA-A\*01:01, -A\*02:01, -B\*07:02, -B\*35:01, and -B\*45:01 after infection with VACV.**