Supplementary Table 1 MHCi epitopes for Lujo virus. Selected epitopes for vaccine construct are in red color.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Supertype | CD8 epitope | Combined score |  Antigenicity | Immunogenicity | Allergenicity | Toxicity |
| B44 | AEAPSAPPL | 1.8855 |  0.3723 ( Probable NON-ANTIGEN ) | -0.13857 | PROBABLE ALLERGEN | Non-Toxin |
| A26 | ALVKCYDHY | 0.8431 |  0.0656 ( Probable NON-ANTIGEN ) | -0.22196 |  ALLERGEN | Non-Toxin |
| B39 | **DHEARRSEL** | 1.461 | 0.4446 (Probable ANTIGEN). | 0.08987 |  NON-ALLERGEN | Non-Toxin |
| A26 | ELPKNLDLA | 0.834 | 0.7497 (Probable ANTIGEN ) | -0.2251 | Allergen | Non-Toxin |
| A1 | HSDASHLGP | 0.8857 | 1.0699 (Probable ANTIGEN). | -0.07364 | NON-ALLERGEN | Non-Toxin |
| A1 | ITPRCPFCY | 1.0555 | 1.1578 (Probable ANTIGEN). | 0.05284 | ALLERGEN | Non-Toxin |
| A2 | LLMGITPRC | 0.824 |  1.2444 (Probable ANTIGEN). | 0.16412 | ALLERGEN | Non-Toxin |
| B8 | LVKCYDHYL | 0.857 |  -0.2875 ( Probable NON-ANTIGEN ) | -0.08183 | ALLERGEN | Non-Toxin |
| B62 | MGITPRCPF | 1.0349 | 1.3531 (Probable ANTIGEN). | 0.0682 | ALLERGEN | Non-Toxin |
| A3 | PLNCKSCWK | 0.9889 | 0.7331 ( Probable ANTIGEN ) | -0.33816 | NON-ALLERGEN | Non-Toxin |
| B44 | RELPKNLDL | 1.6944 |  0.2494 (Probable NON-ANTIGEN). | -0.22725 | NON-ALLERGEN | Non-Toxin |
| B27 | RRSELHSDA | 1.0067 | 0.5718 (Probable ANTIGEN). | -0.05996 | NON-ALLERGEN | Non-Toxin |
| B62 | SKKALVKCY | 0.8176 | 0.1065 ( Probable NON-ANTIGEN ) | -0.21607 | ALLERGEN | Non-Toxin |
| A3 | **SLLMGITP** | 1.0069 | 0.7967 (Probable ANTIGEN ) | 0.01074 | NON-ALLERGEN | Non-Toxin |
| A2 | YLCLNCLSL | 1.0169 |  1.5365 (Probable ANTIGEN ) | -0.19173 | NON-ALLERGEN | Non-Toxin |

Supplementary Table MHCii epitopes for Lujo virus. Selected epitopes for vaccine construct are in red color.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| allele | start | end | length | method | peptide | percentile\_rank | IFN-GAMMA | IL 4 | IL 10 |
| HLA-DRB1\*11:07 | 59 | 73 | 15 | sturniolo | CLNCLSLLMGITPRC | 1.8 | NEGATIVE |  Inducer | Non inducer |
| HLA-DRB1\*11:07 | 62 | 76 | 15 | sturniolo | **CLSLLMGITPRCPFC** | 1.8 | POSITIVE |  Inducer | Non inducer |
| HLA-DRB1\*11:07 | 65 | 79 | 15 | sturniolo | **LLMGITPRCPFCYRE** | 1.8 | POSITIVE |  Inducer | Non inducer |
| HLA-DRB1\*11:07 | 60 | 74 | 15 | sturniolo | LNCLSLLMGITPRCP | 1.8 | NEGATIVE |  Inducer | Non inducer |
| HLA-DRB1\*11:07 | 63 | 77 | 15 | sturniolo | LSLLMGITPRCPFCY | 1.8 | POSITIVE |  Inducer | Non inducer |
| HLA-DRB1\*11:07 | 61 | 75 | 15 | sturniolo | NCLSLLMGITPRCPF | 1.8 | NEGATIVE |  Inducer | Non inducer |
| HLA-DRB1\*11:07 | 64 | 78 | 15 | sturniolo | SLLMGITPRCPFCYR | 1.8 | POSITIVE |  Inducer | Non inducer |
| HLA-DRB5\*01:01 | 40 | 54 | 15 | Consensus (smm/nn/sturniolo) | CKSCWKSKKALVKCY | 1.9 | POSITIVE |  Inducer | Non inducer |
| HLA-DRB5\*01:01 | 39 | 53 | 15 | Consensus (smm/nn/sturniolo) | NCKSCWKSKKALVKC | 1.9 | NEGATIVE |  Inducer | Non inducer |
| HLA-DRB5\*01:01 | 41 | 55 | 15 | Consensus (smm/nn/sturniolo) | KSCWKSKKALVKCYD | 2.2 | POSITIVE |  Inducer | Non inducer |
| HLA-DRB5\*01:01 | 38 | 52 | 15 | Consensus (smm/nn/sturniolo) | LNCKSCWKSKKALVK | 2.5 | NEGATIVE |  Inducer | Non inducer |
| HLA-DRB1\*08:13 | 43 | 57 | 15 | sturniolo | **CWKSKKALVKCYDHY** | 3.7 | NEGATIVE |  Inducer | Inducer |
| HLA-DRB1\*08:13 | 42 | 56 | 15 | sturniolo | SCWKSKKALVKCYDH | 3.7 | POSITIVE |  Inducer | Non inducer |
| HLA-DRB1\*08:13 | 44 | 58 | 15 | sturniolo | WKSKKALVKCYDHY**L** | 3.7 | NEGATIVE |  Inducer | Inducer |
| HLA-DPA1\*03:01/DPB1\*04:02 | 55 | 69 | 15 | Consensus (comb.lib./smm/nn) | DHYLCLNCLSLLMGI | 4 | NEGATIVE | Non Inducer | Inducer |
| HLA-DPA1\*02:01/DPB1\*05:01 | 47 | 61 | 15 | Consensus (comb.lib./smm/nn) | KKALVKCYDHYLCLN | 4.1 | NEGATIVE |  Inducer | Inducer |
| HLA-DPA1\*02:01/DPB1\*05:01 | 49 | 63 | 15 | Consensus (comb.lib./smm/nn) | ALVKCYDHYLCLNCL | 4.3 | NEGATIVE |  Inducer | Inducer |
| HLA-DRB1\*11:28 | 53 | 67 | 15 | sturniolo | CYDHYLCLNCLSLLM | 4.4 | NEGATIVE | Non Inducer | Inducer |
| HLA-DRB1\*11:28 | 56 | 70 | 15 | sturniolo | HYLCLNCLSLLMGIT | 4.4 | NEGATIVE | Non Inducer | Inducer |
| HLA-DRB1\*11:28 | 52 | 66 | 15 | sturniolo | KCYDHYLCLNCLSLL | 4.4 | NEGATIVE | Non Inducer | Inducer |
| HLA-DRB1\*11:28 | 51 | 65 | 15 | sturniolo | VKCYDHYLCLNCLSL | 4.4 | NEGATIVE |  Inducer | Inducer |
| HLA-DPA1\*03:01/DPB1\*04:02 | 54 | 68 | 15 | Consensus (comb.lib./smm/nn) | YDHYLCLNCLSLLMG | 4.4 | NEGATIVE | Non Inducer | Inducer |
| HLA-DRB1\*11:28 | 57 | 71 | 15 | sturniolo | YLCLNCLSLLMGITP | 4.4 | NEGATIVE | Non Inducer | Non inducer |
| HLA-DPA1\*02:01/DPB1\*05:01 | 50 | 64 | 15 | Consensus (comb.lib./smm/nn) | LVKCYDHYLCLNCLS | 4.5 | NEGATIVE |  Inducer | Inducer |
| HLA-DPA1\*02:01/DPB1\*05:01 | 48 | 62 | 15 | Consensus (comb.lib./smm/nn) | KALVKCYDHYLCLNC | 4.6 | NEGATIVE |  Inducer | Inducer |

Supplementary Table 3 B cell epitopes for lujo virus. Selected epitopes for vaccine construc are in red color.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sequence | Start position | Score | Antigenicity | Allergenicity | Toxicity |
| SGSGQPNPKPSDSDHE | 14 | 0.86 | 0.9266 (Probable ANTIGEN) |  ALLERGEN | Non Toxin |
| ETMGQRHSSGSGQPNP | 6 | 0.83 | 0.6107 (Probable ANTIGEN). | NON-ALLERGEN | Non Toxin |
| SDASHLGPLNCKSCWK | 37 | 0.83 | 0.9413 (Probable ANTIGEN). | NON-ALLERGEN | Non Toxin |
| LMGITPRCPFCYRELP | 73 | 0.81 | 0.8654 (Probable ANTIGEN). | ALLERGEN | Non Toxin |
| CKSCWKSKKALVKCYD | 47 | 0.81 | 0.7490 (Probable ANTIGEN). | NON-ALLERGEN | Toxin |
| KPSDSDHEARRSELHS | 22 | 0.79 |  0.3749 (Probable NON-ANTIGEN). | ALLERGEN | Non Toxin |
| HEARRSELHSDASHLG | 28 | 0.72 |  0.5019 (Probable ANTIGEN). | ALLERGEN | Non Toxin |
| VKCYDHYLCLNCLSLL | 58 | 0.71 | 1.2520 (Probable ANTIGEN). | NON-ALLERGEN | Toxin |
| FCYRELPKNLDLAEAP | 82 | 0.59 |  0.6373 (Probable ANTIGEN). | NON-ALLERGEN | Non Toxin |