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Supplementary Figure 1. Flow cytometry gating strategy

Supplementary Figure 1. The figure illustrates the sequential gating strategy for quantification of dextramer-positive CD8+ T cells. Initial lymphocyte gates (top left) were subjected to doublet exclusion (top right) and then gated on CD8+ T cells while excluding CD4+ (T helper cells), CD14+ (monocytes) and CD19+ (B cells) (bottom left). A conservative dextramer gate was drawn to reduce false positives and remained fixed for all the analyses. Gate numbers represent percentages of the parent population.
Supplementary Figure 2. *Ex vivo* dextramer plots from carriers of both HLA-A2 and HLA-B8

Supplementary Figure 2. The figure shows *ex vivo* stainings with A2*LLNATIAEV and B8*EPLARLEL dextramers for individuals co-expressing HLA-A2 and HLA-B8. The dextramer frequencies in this experiment were used to determine which peptide to use in subsequent stimulation experiments (except for P11 where both peptides were used).
Supplementary Figure 3. Pro-inflammatory cytokine responses to LLNATIAEV

Supplementary Figure 3. Supernatants from ELISPOT assays were analyzed for individual cytokines by ELISA (A-D) or a panel of 17 cytokines by multiplex technology (E-H). Shown in the figure are the results for IL-6 (A, B), TNFα (C, D), MIP-1α (E, F) and MIP-1β (G, H)
upon ex vivo stimulation (A, C, E, G) and restimulation after in vitro expansion (B, D, F, H). Results from ELISAs are expressed as means of duplicates, while the results from multiplex analyses are either means of duplicates or single well measurements.
Supplementary Figure 4. Molecular models of potential interactions between HLA-C*0701 and ARLELFVVL.
**Figure 4.** Molecular models of potential interactions between HLA-C*0701 and ARLELFVVL. **(A)** Visualization of the electrostatic potential of the peptide pending cleft of HLA-C*0702. Positively charged electrostatic potential is shown in blue color, negatively charged in red. More intense colors indicate stronger electrostatic potential. **(B)** Arginine at position 2 of the ARLELFVVL serves to anchor the peptide to the floor of the antigen-binding cleft of HLA-C*0701 via a salt bridge with aspartic acid at amino acid position 9 (Asp9) and a hydrogen bond with serine at amino acid position 24 (Ser24) of the HLA molecule. Arg70 and possibly also Gln70 may contribute to the anchor site. **(C)** Hydrophobic interactions between leucine 9 of ARLELFVVL and leucines at positions 81 and 95 of HLA-C*0701 may potentially serve to stabilize the peptide-HLA interaction further.
Supplementary Table 1. Patient characteristics

| Patient characteristic | Value |
|------------------------|-------|
| Age (years)            | 50    |
| Gender                 | Male  |
| Diagnosis              | Cancer |
| Treatment             | Chemo |
| Outcome               | 5-year survival |

*Note: This is a placeholder for the actual table content.*
| Patient ID | Sex | Other Autoimmune Diseases | Disease Duration at Sampling (y) | Age at Diagnosis (y) | 21OH Ab Index | HLA-A | HLA-B | HLA-C | HLA-DRB1 | HLA-DQA1 | HLA-DQB1 | HLA-DPB1 |
|------------|-----|---------------------------|---------------------------------|---------------------|---------------|-------|-------|-------|-----------|-----------|-----------|-----------|
| P1         | M   | T1D                       | 52                              | 11                  | 468           | 02:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P2         | F   | Hypothyroidism            | 31                              | 19                  | 236           | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P3         | M   | Hyper, Alopecia, Vitiligo | 16                              | 24                  | 971           | 02:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P4         | M   | Hypothyroidism            | 7                               | 18                  | 961           | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P5         | F   | Vitiligo                  | 9                               | 13                  | 424           | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P6         | F   | Type 1 diabetes           | 0                               | 29                  | 1175          | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P7         | F   | None                      | 5                               | 23                  | 848           | 02:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P8         | F   | None                      | 0                               | 45                  | 1374          | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P9         | F   | Type 1 diabetes           | 4                               | 34                  | 583           | 02:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P10        | M   | Vitiligo                  | 4                               | 22                  | 557           | 02:01 | 02:01 | 02:01 | 02:01     | 02:01     | 02:01     | 02:01     |
| P11        | M   | APS-1                     | 28                              | 10                  | 488           | 02    | 02    | NA    | 03:01     | 03:01     | 02:01     | 03:01     |
| P12        | F   | None                      | 3                               | 25                  | 822           | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P13        | F   | Hypothyroidism, Hypothyroidism | 18 | 40                  | 742           | 01:01 | 03:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P14        | M   | Type 1 diabetes, Hypothyroidism | 7   | 13                  | 1101          | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P15        | F   | Type 1 diabetes, Hypothyroidism | 21 | 36                  | 662           | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P16        | F   | Hypothyroidism, Pernicious anemia, Vitiligo | 7 | 33                  | 841           | 01:01 | 02:01 | 02:01 | 02:01     | 02:01     | 02:01     | 02:01     |
| P17        | F   | Celiac disease, Primary ovarian insufficiency | 36 | 33                  | 778           | 01:01 | 01:01 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P18        | M   | Hypothyroidism            | 9      | 10        | 505 J        | 01:01 | 03:01 | 07:02 | 03:01     | 01:01     | 01:01     | 01:01     |
| P19        | F   | Hyperthyroidism, Vitiligo | 3      | 1        | 584 J        | 01:01 | 24:02 | 08:01 | 08:01     | 01:01     | 01:01     | 01:01     |
| P20        | F   | Hypothyroidism            | 4      | 3        | 748 J        | 01:01 | 33:00 | 08:01 | 14:02     | 01:01     | 01:01     | 01:01     |
| P21        | M   | Hypothyroidism            | 27     | 18       | 575          | 25:01 | 01:00 | 01:01 | 01:01     | 01:01     | 01:01     | 01:01     |
| P22        | F   | Hypothyroidism            | 23     | 28       | 378          | 01:01 | 03:01 | 08:01 | 27:05     | 01:01     | 01:01     | 01:01     |
| P23        | F   | Hypothyroidism            | 5      | 37       | 283          | 01:01 | 02:01 | 08:01 | 44:02     | 01:01     | 01:01     | 01:01     |
| P24        | F   | None                      | 18     | 21       | 600          | 01:01 | 24:02 | 28:01 | 27:02     | 01:01     | 01:01     | 01:01     |
| P25        | F   | Hypothyroidism            | 0      | 58       | 1273         | 01:01 | 01:01 | 01:01 | 44:02     | 01:01     | 01:01     | 01:01     |
| P26        | F   | None                      | 4      | 26       | 527          | 01:01 | 03:01 | 08:01 | 40:01     | 01:01     | 01:01     | 01:01     |
| P27        | F   | T1D, Hypothyroidism, Hyperparathyroidism | 0 | 41                  | 601           | NA    | NA    | 07:01 | 07:01     | 01:01     | 01:01     | 01:01     |
|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| P28 | F | Hypothyroidism | 7 | 57 | 500 | 01.01 | 24:02 | 08:01 | 35:03 | 04:01 | 07:01 | 03:01 | 12:01 | 05:01 | 05:05 | 02:01 | 01:01 | 04:01 |
| P29 | M | Hyperthyroidism | 1 | 20 | 515 | 01.01 | 33:01 | 08:01 | 08:01 | 07:01 | 07:01 | 03:01 | 03:01 | 05:01 | 05:01 | 02:01 | 02:01 | 01:01 | 04:01 |
| P30 | F | Hypothyroidism | 2 | 40 | 572 | 01.01 | 02:01 | 07:02 | 08:01 | 07:01 | 07:02 | 03:01 | 04:01 | 03:01 | 05:01 | 02:01 | 03:02 | 04:01 | 04:01 |
| P31 | F | T1D, Hyperthyroidism, Vitiligo | 7 | 47 | 831 | 01.01 | 03:01 | 08:01 | 44:02 | 05:01 | 07:01 | 03:01 | 04:01 | 03:01 | 05:01 | 02:01 | 03:02 | NA | |
| P32 | M | Vitiligo | 11 | 14 | 351 | 01.01 | 02:01 | 08:01 | 15:01 | 03:04 | 07:01 | 03:01 | 04:01 | 03:01 | 05:01 | 02:01 | 03:02 | 01:01 | 04:01 |
| P33 | M | Hypothyroidism | 25 | 27 | 803 | 01.01 | 02:01 | 08:01 | 15:01 | 03:04 | 07:01 | 03:01 | 04:01 | 03:01 | 05:01 | 02:01 | 03:02 | 04:01 | 04:01 |
| P34 | F | Primary Ovarian Insufficiency, Vitiligo | 14 | 15 | 726 | 01.01 | 33:03 | 08:01 | 51:01 | 07:01 | 15:02 | 03:01 | 04:07 | 03:03 | 05:01 | 02:01 | 03:01 | 03:01 | 04:01 |

1 In-house radioimmunoassay used for establishing disease etiology; antibody (Ab) index ≥ 56 denotes positivity.
2 Sample used for experiments with LLNATIAEV and EPLARLEL.
3 Sample used for experiments with ARLELFVVL.
4 Sample used for expansion upon ARLELFVVL stimulation.
**Supplementary Table 2.** Overview of multiplex cytokine data (GM-CSF, sCD137 and IFNγ, quantified as pg/ml) from peptide stimulations.

| ID | Day | Stimulant     | GM-CSF | SD   | sCD137 | SD   | IFNγ | SD   |
|----|-----|---------------|--------|------|--------|------|------|------|
| C1 | 0   | Blank         | 0,8    | -    | #NUM   | -    | #NUM | -    |
| C1 | 0   | LLNATIAEV     | 1,5    | -    | #NUM   | -    | 0,5  | -    |
| C1 | 13  | Blank         | 136,6  | -    | 20,9   | -    | 7,3  | -    |
| C1 | 13  | LLNATIAEV     | 223,3  | -    | 26,7   | -    | 3,1  | -    |
| C3 | 0   | Blank         | 10,4   | 1,6  | 1,6    | -    | 1,6  | -    |
| C3 | 0   | LLNATIAEV     | 11,4   | -    | 0,3    | -    | 3,1  | -    |
| C7 | 0   | Blank         | 5,2    | 0,2  | 4,7    | 1,2  | 0,0  | 0,0  |
| C7 | 0   | LLNATIAEV     | 5,2    | 0,2  | 5,5    | 0,0  | 0,0  | 0,0  |
| C7 | 13  | Blank         | 177,4  | 10,0 | 118,9  | 10,2 | 0,6  | 0,6  |
| C7 | 13  | LLNATIAEV     | 160,7  | 4,7  | 102,6  | 4,3  | 0,6  | 0,6  |
| P2 | 0   | Blank         | 16,4   | -    | 4,0    | -    | 4,6  | -    |
| P2 | 0   | LLNATIAEV     | 25,2   | -    | 3,2    | -    | 7,3  | -    |
| P2 | 13  | Blank         | 98,5   | -    | 27,4   | -    | 7,3  | -    |
| P2 | 13  | LLNATIAEV     | 57,5   | -    | 33,1   | -    | 4,6  | -    |
| P3 | 16  | Blank         | 5,7    | 0,6  | 8,9    | 0,0  | 20,7 | 3,6  |
| P3 | 16  | LLNATIAEV     | 24,6   | 0,6  | 11,0   | 1,8  | 178,2| 2,9  |
| P4 | 0   | Blank         | 0,9    | 0,2  | 5,6    | 1,2  | 0,0  | 0,0  |
| P4 | 0   | EPLARLEL      | 2,0    | 0,2  | 6,0    | 0,6  | 0,0  | 0,0  |
| P4 | 13  | Blank         | 18,2   | 1,8  | 26,5   | 1,1  | 0,0  | 0,0  |
| P4 | 13  | EPLARLEL      | 27,0   | 0,2  | 28,5   | 0,6  | 1,4  | 0,6  |
| P5 | 0   | Blank         | 7,5    | -    | 1,6    | -    | 1,6  | -    |
| P5 | 0   | LLNATIAEV     | 25,2   | -    | 0,3    | -    | 3,1  | -    |
| P5 | 13  | Blank         | 198,9  | -    | 74,1   | -    | 3,1  | -    |
| P5 | 13  | LLNATIAEV     | 150,6  | -    | 92,5   | -    | 0,0  | -    |
| P7 | 0   | Blank         | 6,0    | 0,6  | 4,3    | 0,6  | 0,0  | 0,0  |
| P7 | 0   | LLNATIAEV     | 8,2    | 1,0  | 5,5    | 0,0  | 0,0  | 0,0  |
| P7 | 13  | Blank         | 20,7   | 2,9  | 23,8   | 3,9  | 0,0  | 0,0  |
| P7 | 13  | LLNATIAEV     | 32,5   | 3,0  | 37,5   | 2,2  | 0,0  | 0,0  |
| P8 | 0   | Blank         | 3,7    | -    | 3,8    | -    | 1,8  | -    |
| P8 | 0   | EPLARLEL      | 2,3    | -    | 5,5    | -    | 1,8  | -    |
| P8 | 13  | Blank         | 1,8    | -    | 5,5    | -    | 0,0  | -    |
| P8 | 13  | EPLARLEL      | 2,3    | -    | 4,7    | -    | 0,0  | -    |
**Supplementary Table 3.** Overview of multiplex cytokine data (IL-10, Granzyme A and IL-13, quantified as pg/ml) from peptide stimulations.

| ID  | Day | Stimulant     | IL-10 SD | A SD | IL-13 SD |
|-----|-----|---------------|----------|------|----------|
| C1  | 0   | Blank         | 0.8 -    | 101.5 - | #NUM -  |
| C1  | 0   | LLNATIAEV     | 3.1 -    | 226.9 - | 1.6 -    |
| C1  | 13  | Blank         | 153.4 -  | 1290.3 - | 14.2 -   |
| C1  | 13  | LLNATIAEV     | 167.3 -  | 1277.3 - | 14.2 -   |
| C3  | 0   | Blank         | 13.8 -   | 931.3 - | 2.9 -    |
| C3  | 0   | LLNATIAEV     | 11.6 -   | 975.6 - | 2.2 -    |
| C7  | 0   | Blank         | 24.8 1.6 | 482.8 0.0 | 0.3 0.2 |
| C7  | 0   | LLNATIAEV     | 19.1 3.3 | 555.4 0.0 | 0.0 0.0 |
| C7  | 13  | Blank         | 43.5 3.0 | 834.1 21.8 | 359.1 13.6 |
| C7  | 13  | LLNATIAEV     | 34.8 0.0 | 699.6 23.1 | 265.6 17.0 |
| P2  | 0   | Blank         | 11.6 -   | 807.7 - | 2.9 -    |
| P2  | 0   | LLNATIAEV     | 15.9 -   | 1019.0 - | 2.9 -    |
| P2  | 13  | Blank         | 32.5 -   | 2615.6 - | 16.5 -   |
| P2  | 13  | LLNATIAEV     | 32.5 -   | 2428.9 - | 17.0 -   |
| P3  | 16  | Blank         | 0.0 0.0  | 129.1 10.9 | 2.4 0.0 |
| P3  | 16  | LLNATIAEV     | 0.0 0.0  | 261.4 8.3 | 11.8 0.0 |
| P4  | 0   | Blank         | 11.9 3.4 | 199.7 9.3 | 0.0 0.0 |
| P4  | 0   | EPLARLEL      | 8.2 1.8  | 333.9 15.1 | 0.0 0.0 |
| P4  | 13  | Blank         | 16.7 3.3 | 5137.4 234.5 | 4.6 0.3 |
| P4  | 13  | EPLARLEL      | 16.7 0.0 | 4312.9 83.2 | 5.6 1.1 |
| P5  | 0   | Blank         | 5.2 -    | 582.4 - | 1.6 -    |
| P5  | 0   | LLNATIAEV     | 9.5 -    | 855.0 - | 3.5 -    |
| P5  | 13  | Blank         | 42.8 -   | 2809.4 - | 26.5 -   |
| P5  | 13  | LLNATIAEV     | 38.7 -   | 2397.5 - | 20.4 -   |
| P7  | 0   | Blank         | 8.2 1.8  | 537.6 12.7 | 0.4 0.0 |
| P7  | 0   | LLNATIAEV     | 13.1 5.1 | 555.4 0.0 | 0.7 0.4 |
| P7  | 13  | Blank         | 8.2 1.8  | 2076.7 719.7 | 21.8 0.9 |
| P7  | 13  | LLNATIAEV     | 8.2 1.8  | 1192.9 14.6 | 25.3 2.1 |
| P8  | 0   | Blank         | 14.3 -   | 121.4 - | 0.9 -    |
| P8  | 0   | EPLARLEL      | 14.3 -   | 87.7 - | 1.5 -    |
| P8  | 13  | Blank         | 23.6 -   | 633.2 - | 1.5 -    |
| P8  | 13  | EPLARLEL      | 14.3 -   | 267.2 - | 2.0 -    |
**Supplementary Table 4.** Overview of multiplex cytokine data (Granzyme B, sFAS and IL-2, quantified as pg/ml) from peptide stimulations.

| ID | Day | Stimulant     | B  | SD | sFas | SD | IL-2 | SD |
|----|-----|---------------|----|----|------|----|------|----|
| C1 | 0   | Blank         | 12,1| -  | 0,0  | -  | 0,1  | -  |
| C1 | 0   | LLNATIAEV     | 21,5| -  | 0,0  | -  | 0,5  | -  |
| C1 | 13  | Blank         | 632,2| -  | 0,0  | -  | 3,2  | -  |
| C1 | 13  | LLNATIAEV     | 846,5| -  | 558,9| -  | 3,6  | -  |
| C3 | 0   | Blank         | 88,0| -  | 438,4| -  | 1,0  | -  |
| C3 | 0   | LLNATIAEV     | 74,6| -  | 0,0  | -  | 1,0  | -  |
| C7 | 0   | Blank         | 59,8| 3,0| 3105,3| 328,1| 0,0  | 0,0 |
| C7 | 0   | LLNATIAEV     | 54,3| 6,2| 3072,9| 187,7| 0,5  | 0,4 |
| C7 | 13  | Blank         | 1558,7| 120,9| 2159,0| 146,9| 37,0 | 1,6 |
| C7 | 13  | LLNATIAEV     | 1455,8| 97,4| 2089,6| 147,6| 28,8 | 0,4 |
| P2 | 0   | Blank         | 64,1| -  | 313,3| -  | 1,4  | -  |
| P2 | 0   | LLNATIAEV     | 70,7| -  | 313,3| -  | 1,4  | -  |
| P2 | 13  | Blank         | 1584,6| -  | 313,3| -  | 2,7  | -  |
| P2 | 13  | LLNATIAEV     | 1531,5| -  | 902,7| -  | 2,3  | -  |
| P3 | 16  | Blank         | 110,7| 10,7| 1590,8| 458,6| 0,5  | 0,4 |
| P3 | 16  | LLNATIAEV     | 125,5| 2,9| 2009,0| 841,8| 1,7  | 0,4 |
| P4 | 0   | Blank         | 6,9 | 0,3| 2364,4| 339,1| 0,0  | 0,0 |
| P4 | 0   | EPLARLEL      | 11,3| 1,9| 2603,8| 191,5| 0,5  | 0,4 |
| P4 | 13  | Blank         | 3318,2| 716,4| 2633,6| 621,8| 1,7  | 0,4 |
| P4 | 13  | EPLARLEL      | 3401,8| 432,5| 2804,0| 474,5| 1,4  | 0,0 |
| P5 | 0   | Blank         | 21,0| -  | 31,1 | -  | 1,0  | -  |
| P5 | 0   | LLNATIAEV     | 18,7| -  | 902,7| -  | 1,0  | -  |
| P5 | 13  | Blank         | 1284,8| -  | 676,0| -  | 1,8  | -  |
| P5 | 13  | LLNATIAEV     | 989,0| -  | #NUM| -  | 1,0  | -  |
| P7 | 0   | Blank         | 77,1| 2,7| 3001,1| 753,3| 0,2  | 0,0 |
| P7 | 0   | LLNATIAEV     | 75,3| 0,1| 3693,7| 597,1| 0,0  | 0,0 |
| P7 | 13  | Blank         | 492,6| 17,1| 1772,1| 301,4| 0,2  | 0,0 |
| P7 | 13  | LLNATIAEV     | 354,9| 23,5| 2397,2| 483,7| 0,5  | 0,4 |
| P8 | 0   | Blank         | 13,7| -  | 1773,7| -  | 2,4  | -  |
| P8 | 0   | EPLARLEL      | 12,6| -  | 1915,1| -  | 1,4  | -  |
| P8 | 13  | Blank         | 146,0| -  | 2806,4| -  | 0,8  | -  |
| P8 | 13  | EPLARLEL      | 128,6| -  | 1631,0| -  | 1,4  | -  |
Supplementary Table 5. Overview of multiplex cytokine data (IL-4, IL-5 and IL-6, quantified as pg/ml) from peptide stimulations.

| ID | Day | Stimulant     | IL-4 SD | IL-5 SD | IL-6 SD |
|----|-----|---------------|---------|---------|---------|
| C1 | 0   | Blank         | 0,3     | 0,0     | 1,0     |
| C1 | 0   | LLNATIAEV     | 0,3     | 0,0     | 4,9     |
| C1 | 13  | Blank         | 9,0     | 4,7     | 6,0     |
| C1 | 13  | LLNATIAEV     | 7,6     | 5,0     | 7,9     |
| C3 | 0   | Blank         | 2,4     | 0,2     | 281,7   |
| C3 | 0   | LLNATIAEV     | 2,4     | 0,0     | 321,4   |
| C7 | 0   | Blank         | 2,9     | 0,0     | 126,2   | 7,0     |
| C7 | 0   | LLNATIAEV     | 2,9     | 0,2     | 141,8   | 10,1    |
| C7 | 13  | Blank         | 73,8    | 0,0     | 146,3   |
| C7 | 13  | LLNATIAEV     | 57,3    | 0,9     | 0,3     | 0,2     |
| P2 | 0   | Blank         | 1,1     | 0,2     |         |
| P2 | 0   | LLNATIAEV     | 1,1     | 0,2     | 206,7   |
| P2 | 13  | Blank         | 7,6     | 19,9    | 324,4   |
| P2 | 13  | LLNATIAEV     | 9,0     | 21,0    | 22,8    |
| P3 | 16  | Blank         | 1,5     | 0,1     | 6,3     | 0,2     |
| P3 | 16  | LLNATIAEV     | 12,8    | 0,0     | 73,8    | 3,2     |
| P4 | 0   | Blank         | 1,5     | 0,3     | 4,7     | 0,4     |
| P4 | 0   | EPLARLEL      | 2,2     | 0,4     | 36,6    | 4,0     |
| P4 | 13  | Blank         | 6,3     | 2,5     | 6,1     | 0,2     |
| P4 | 13  | EPLARLEL      | 6,3     | 2,9     | 38,3    | 1,0     |
| P5 | 0   | Blank         | 2,4     | 0,0     | 12,1    |
| P5 | 0   | LLNATIAEV     | 3,7     | 0,0     | 68,2    |
| P5 | 13  | Blank         | 11,6    | 10,7    | 19,7    |
| P5 | 13  | LLNATIAEV     | 5,0     | 10,7    | 18,3    |
| P7 | 0   | Blank         | 2,2     | 0,0     | 77,5    | 5,7     |
| P7 | 0   | LLNATIAEV     | 3,6     | 0,3     | 119,5   | 11,2    |
| P7 | 13  | Blank         | 3,6     | 6,3     | 2,1     | 0,6     |
| P7 | 13  | LLNATIAEV     | 4,3     | 6,3     | 2,2     | 0,1     |
| P8 | 0   | Blank         | 2,2     | 0,3     | 161,1   |
| P8 | 0   | EPLARLEL      | 0,8     | 0,3     | 168,8   |
| P8 | 13  | Blank         | 6,3     | 1,1     | 0,6     |
| P8 | 13  | EPLARLEL      | 4,9     | 1,1     | 0,6     |
Supplementary Table 6. Overview of multiplex cytokine data (sFasL, MIP1a and MIP1b, quantified as pg/ml) from peptide stimulations.

| ID | Day | Stimulant   | sFasL | SD | MIP1a | SD | MIP1b | SD |
|----|-----|-------------|-------|----|-------|----|-------|----|
| C1 | 0   | Blank       | 6,6   | -  | 47,2  | -  | 130,8 | -  |
| C1 | 0   | LLNATIAEV   | 14,9  | -  | 110,9 | -  | 225,7 | -  |
| C1 | 13  | Blank       | 60,4  | -  | 3127,0| -  | 1858,0| -  |
| C1 | 13  | LLNATIAEV   | 83,0  | -  | 2713,8| -  | 2079,9| -  |
| C3 | 0   | Blank       | 6,6   | -  | 3912,0| -  | 2535,0| -  |
| C3 | 0   | LLNATIAEV   | 5,4   | -  | 3982,1| -  | 2159,0| -  |
| C7 | 0   | Blank       | 2,2   | 0,0| 2902,0| 111,3| 277,0 | 11,7|
| C7 | 0   | LLNATIAEV   | 8,8   | 11,0| 3207,1| 187,8| 425,9 | 14,8|
| C7 | 13  | Blank       | 19,8  | 0,7| 507,0  | 4,5 | 829,1 | 36,3|
| C7 | 13  | LLNATIAEV   | 9,6   | 1,4| 390,8  | 13,6| 638,7 | 21,1|
| P2 | 0   | Blank       | 10,2  | -  | 2745,1| -  | 2561,3| -  |
| P2 | 0   | LLNATIAEV   | 22,8  | -  | 3755,3| -  | 3578,3| -  |
| P2 | 13  | Blank       | 48,8  | -  | 1159,7| -  | 1526,7| -  |
| P2 | 13  | LLNATIAEV   | 57,2  | -  | 1144,9| -  | 1549,6| -  |
| P3 | 16  | Blank       | 4,4   | 1,6| 167,0  | 10,4| 320,1 | 17,7|
| P3 | 16  | LLNATIAEV   | 11,6  | 1,4| 472,1  | 16,9| 807,2 | 14,4|
| P4 | 0   | Blank       | 0,0   | -  | 352,6  | 18,3| 554,7 | 5,0 |
| P4 | 0   | EPLARLEL    | 8,1   | 2,2| 925,6  | 152,8| 922,1 | 143,0|
| P4 | 13  | Blank       | 17,4  | 2,7| 2196,0 | 485,4| 1026,3| 56,1|
| P4 | 13  | EPLARLEL    | 28,1  | 4,5| 2986,1 | 180,7| 1405,7| 20,9|
| P5 | 0   | Blank       | 11,4  | -  | 1017,2 | -  | 1222,1| -  |
| P5 | 0   | LLNATIAEV   | 17,2  | -  | 3022,1 | -  | 2239,0| -  |
| P5 | 13  | Blank       | 138,9 | -  | 1774,8| -  | 3339,6| -  |
| P5 | 13  | LLNATIAEV   | 107,2 | -  | 489,1  | -  | 3154,8| -  |
| P7 | 0   | Blank       | 0,0   | 0,0| 3522,0 | 44,6| 881,0 | 38,9|
| P7 | 0   | LLNATIAEV   | 1,0   | 0,0| 3731,7 | 123,2| 1297,4| 18,7|
| P7 | 13  | Blank       | 13,6  | 1,3| 546,2  | 0,6 | 399,1 | 24,8|
| P7 | 13  | LLNATIAEV   | 26,3  | 3,3| 532,2  | 18,3| 1470,5| 90,5|
| P8 | 0   | Blank       | 1,0   | -  | 21,4   | -  | 90,2  | -  |
| P8 | 0   | EPLARLEL    | 4,4   | -  | 20,4   | -  | 102,4 | -  |
| P8 | 13  | Blank       | 0,0   | -  | 9,4    | -  | 56,6  | -  |
| P8 | 13  | EPLARLEL    | 0,0   | -  | 9,4    | -  | 65,4  | -  |
**Supplementary Table 7.** Overview of multiplex cytokine data (TNFa and Perforin, quantified as pg/ml) from peptide stimulations.

| ID | Day | Stimulant   | TNFa | SD | Perforin | SD |
|----|-----|-------------|------|----|----------|----|
| C1 | 0   | Blank       | 6,7  | 415,2 | 13,5     | 460,6 | 889,8 |
| C1 | 13  | LLNATIAEV   | 142,0| 898,9 | 119,3    | 1085,6| 106,5 |
| C3 | 0   | Blank       | 177,3| 106,5 | 193,8    | 86,3  |
| C7 | 0   | Blank       | 644,9| 76,1  | 520,8    | 85,7  | 2,6   |
| C7 | 13  | Blank       | 39,0 | 448,5 | 19,8     | 85,7  | 6,2   |
| P2 | 0   | LLNATIAEV   | 32,1 | 433,9 | 0,1      | 6,2   |
| P2 | 13  | Blank       | 526,2| 1183,5| 0,4      | 6,2   |
| P2 | 13  | LLNATIAEV   | 184,0| 1303,7| 0,1      | 6,2   |
| P3 | 16  | Blank       | 47,9 | 143,3 | 2,8      | 22,1  |
| P3 | 16  | LLNATIAEV   | 309,0| 20,1  | 7,0      | 190,8 | 2,4   |
| P4 | 0   | Blank       | 65,0 | 261,7 | 2,5      | 20,1  |
| P4 | 0   | EPLARLEL    | 102,7| 280,6 | 11,7     | 19,9  |
| P4 | 13  | Blank       | 89,7 | 518,7 | 4,0      | 20,0  |
| P4 | 13  | EPLARLEL    | 138,9| 554,0 | 0,1      | 13,9  |
| P5 | 0   | Blank       | 94,8 | 174,2 | -        | -     |
| P5 | 0   | LLNATIAEV   | 293,1| 152,0 | -        | -     |
| P5 | 13  | Blank       | 76,1 | 367,2 | -        | -     |
| P5 | 13  | LLNATIAEV   | 27,9 | 3139,8| -        | -     |
| P7 | 0   | Blank       | 388,9| 205,6 | 31,3     | 13,9  |
| P7 | 0   | LLNATIAEV   | 544,8| 258,7 | 6,2      | 6,7   |
| P7 | 13  | Blank       | 58,8 | 300,8 | 0,3      | 13,1  |
| P7 | 13  | LLNATIAEV   | 51,9 | 404,6 | 4,7      | 18,7  |
| P8 | 0   | Blank       | 23,0 | 352,5 | -        | -     |
| P8 | 0   | EPLARLEL    | 24,4 | 361,5 | -        | -     |
| P8 | 13  | Blank       | 7,0  | 162,3 | -        | -     |
| P8 | 13  | EPLARLEL    | 5,7  | 155,4 | -        | -     |
**Supplementary Table 8.** Peptide information for REVEAL® MHC peptide binding assay (Module 1).

| ID | Peptide Sequence |
|----|------------------|
| 1  | GEPLARLE         |
| 2  | EPLARLEL         |
| 3  | PLARLELF         |
| 4  | LARLELFV         |
| 5  | ARLELFVV         |
| 6  | RLELFVVVL        |
| 7  | LELFVVVT         |
| 8  | ELFVVVTTR        |
| 9  | LFVVVLTRL        |
| 10 | FVVLRLLL         |
| 11 | VVVLRLLQ         |
| 12 | GEPLARLEL        |
| 13 | EPLARLELF        |
| 14 | PLARLELFV        |
| 15 | LARLELFVV        |
| 16 | ARLELFVVVL       |
| 17 | RLELFVVVT        |
| 18 | LELFVVVTTR       |
| 19 | ELFVVVLTRL       |
| 20 | LFVVVLTRL        |
| 21 | FVVLRLLQ         |
**Supplementary Table 9.** B*08:01 Binding Data from REVEAL® MHC peptide binding assay (Module 2).

| Peptide ID | Peptide Sequence | REVEAL® Score at 0 h |
|------------|------------------|----------------------|
| 1          | GEPLARLE         | 0,3                  |
| 2          | EPLARLEL         | 78,0                 |
| 3          | PLARLELF         | 0,2                  |
| 4          | LARLELFV         | 0,2                  |
| 5          | ARLELFVV         | 0,2                  |
| 6          | RLELFVVL         | 0,1                  |
| 7          | LEVFVVLT         | 0,1                  |
| 8          | ELFVVLTR         | 0,2                  |
| 9          | LFVVLTRL         | 0,4                  |
| 10         | FVVLTRL         | 32,3                 |
| 11         | VVTLRLQ         | 0,1                  |
| 12         | GEPLARLELF      | 1,8                  |
| 13         | EPLARLELF       | 82,7                 |
| 14         | PLARLELFV       | 0,1                  |
| 15         | LARLELFVV       | 5,1                  |
| 16         | ARLELFVVVL      | 0,3                  |
| 17         | RLELFVVLT       | 0,0                  |
| 18         | LEVFVVLTR       | 0,1                  |
| 19         | ELFVVLTRL       | 0,1                  |
| 20         | FVVLTRLQ        | 0,2                  |
| **Positive Control** |                  | 100,0               |
Supplementary Table 10. ProVE® Pentamer Library Analysis from REVEAL® MHC peptide binding assay (Module 3).

| Peptide I.D. | Peptide Sequence | Concentration (µg/ml) | Volume (µl) | Approximate µl needed per test (0.5 µg/test) |
|--------------|------------------|-----------------------|-------------|---------------------------------------------|
| 2            | EPLARLEL         | 213.19                | 360         | 2,35                                        |
| 13           | EPLARLELF        | 234.56                | 360         | 2,13                                        |
| Positive Control |             |                       |             | Passed                                      |
**Supplementary Table 11.** Summary of the binding and rate data for peptides passing the ProImmune REVEAL® MHC peptide binding assay.

| Peptide ID | Peptide Sequence | REVEAL® Score | Off-rate $T_{1/2}$ (h) | Quick Score |
|------------|------------------|---------------|-------------------------|-------------|
| 2          | EPLARLEL         | 78,00         | 62,12 $\dagger$        | 4,85        |
| 13         | EPLARLELF        | 82,70         | 6,93                    | 0,57        |
| Positive Control | ~       | 100,00        | > 120,00 $\dagger$ +/- 0,00 | 12,00       |
**Supplementary Table 12.** Additional HLA class I molecules predicted to bind ARLELFVVL and their frequencies in patients and controls.

| HLA-Alleles  | Frequencies (%)<sup>1</sup> |  | Frequencies (%)<sup>2</sup> |  |
|--------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
|              | AAD Controls                 | AAD Controls                 | AAD Controls                 | AAD Controls                 |
| HLA-A*3207   | ND ND                        | ND ND                        | ND ND                        | ND ND                        |
| HLA-B*1402   | 0.6 2.1                      | 0.4 1.3                      | 0.4 1.3                      | 0.4 1.3                      |
| HLA-B*2705   | 5.7 7.2                      | 5.4 5.7                      | 5.4 5.7                      | 5.4 5.7                      |
| HLA-B*2720   | ND ND                        | ND ND                        | ND ND                        | ND ND                        |
| HLA-B*3801   | 0.5 0.7                      | 0.0 0.5                      | 0.0 0.5                      | 0.0 0.5                      |
| HLA-B*3901   | 2.2 1.5                      | 0.5 0.6                      | 0.5 0.6                      | 0.5 0.6                      |
| HLA-B*4002   | NA NA                        | 0.7 1.6                      | 0.7 1.6                      | 0.7 1.6                      |
| HLA-B*4801   | 0.4 0.2                      | 0.1 0.1                      | 0.1 0.1                      | 0.1 0.1                      |
| HLA-B*7301   | ND 0.1                       | ND ND                        | ND ND                        | ND ND                        |
| HLA-C*0401   | NA NA                        | 2.9 8.9                      | 2.9 8.9                      | 2.9 8.9                      |
| HLA-C*0602   | NA NA                        | 1.6 6.7                      | 1.6 6.7                      | 1.6 6.7                      |
| HLA-C*0702   | NA NA                        | 14.5 15.7                    | 14.5 15.7                    | 14.5 15.7                    |

<sup>1</sup> Frequencies taken from Skinningsrud et al (1).

<sup>2</sup> Frequencies taken from Eriksson et al (2)
Accompanying table to Figure 1. Dextramer frequencies expressed as % of total CD8+ T cells

| Subjects | A2*LLNATIAEV | A2*LLNATIAEV | B8*EPLARLEL | B8*EPLARLEL |
|----------|--------------|--------------|-------------|-------------|
| C1       | 0.009        | 2.508        | -           | -           |
| C2       | -            | -            | 0           | 0.009       |
| C3       | 0.004        | 0.006        | -           | -           |
| C4       | -            | -            | 0.002       | 0.007       |
| C5       | -            | -            | 0.002       | 0           |
| C7       | 0.003        | 0.111        | -           | -           |
| C8       | 0.007        | 0.071        | 0           | -           |
| C9       | 0.006        | 0.592        | -           | -           |
| P1       | 0.013        | 0.03         | -           | -           |
| P2       | 0.015        | 2.455        | -           | -           |
| P3       | 0.035        | 16.317       | -           | -           |
| P4       | -            | -            | 0.002       | 0.018       |
| P5       | 0.183        | 12.142       | -           | -           |
| P6       | -            | -            | 0.002       | 0.002       |
| P7       | 0.053        | 13.955       | -           | -           |
| P8       | -            | -            | 0.007       | 0.118       |
| P9       | 0.103        | -            | -           | -           |
| P10      | 0.128        | 2.63         | -           | -           |
| P11      | 0.006        | 1.399        | -           | -           |
| P12      | -            | -            | 0.008       | 0.027       |
**Accompanying table to Figure 2.** ELISPOT results expressed as IFNγ SFC per 6 x 10⁵ PBMC (Blank subtracted)

| Subjects | Day 0  | Day 13 | Day 0  | Day 13 |
|----------|--------|--------|--------|--------|
|          | LLNATIAEV | LLNATIAEV | EPLARLEL | EPLARLEL |
| C1       | 0      | 468    | -      | -      |
| C2       | -      | -      | 6.5    | 13.5   |
| C3       | 0      | -      | -      | -      |
| C4       | -      | -      | 1.5    | 0.5    |
| C5       | -      | -      | 1      | 0      |
| C7       | 4      | 0      | -      | -      |
| C8       | 0.5    | 13     | -      | -      |
| C9       | 0      | 8      | -      | -      |
| P1       | 0      | 5      | -      | -      |
| P2       | 8      | 555    | -      | -      |
| P3       | 2      | 21     | -      | -      |
| P4       | -      | -      | 0      | 10     |
| P5       | 5.5    | 455    | -      | -      |
| P6       | -      | -      | 0      | 0      |
| P7       | 19     | 1952   | -      | -      |
| P8       | -      | -      | 0      | 0      |
| P9       | 6      | -      | -      | -      |
| P10      | 185    | 239    | -      | -      |
| P11      | 1      | 0      | 3      | 0      |
| P12      | -      | -      | 0.5    | 0      |
Accompanying table to Figure 3. ELISPOT results expressed as IFNγ SFC per $6 \times 10^5$ PBMC (Blank subtracted)

|       | C12 | C13 | C14 | C15 | C16 | P13 | P14 | P15 | P16 | P17 | P18 | P19 | P20 | P21 | P22 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pep1  | 0   | 3   | 8   | 4   | 0   | 0   | 8   | 0.5 | 0   | 1   | 4   | 0   | 0   | 4   | 0   |
| Pep2  | 2   | 0   | 0   | 3   | 2   | 0   | 0.5 | 0.5 | 0   | 3   | 3   | 3   | 2   | 13  | 1   |
| Pep3  | 0   | 0   | 0   | 0   | 0   | 0   | 15.5| 0   | 0   | 7   | 3   | 0   | 0   | 0   | 2   |
| Pep4  | 0   | 0   | 0   | 1   | 8   | 12.5| 14  | 0.5 | 0   | 6   | 2   | 5   | 0   | 0   | 1   |
| Pep5  | 0   | 0   | 0   | 5   | 6   | 1.5 | 10  | 0   | 15  | 1   | 51  | 8   | 0   | 13  | 1   |
| Pep6  | 0   | 0   | 0   | 1   | 2   | 2.5 | 4.5 | 0   | 0   | 0   | 2   | 0   | 0   | 2   | 0   |
| Pep7  | 0   | 0   | 0   | 4   | 2   | 7.5 | 19.5| 0   | 0   | 3   | 1   | 5   | 0   | 16  | 3   |
| Pep8  | 0   | 0   | 0   | 1   | 5   | 1.5 | 0   | 0   | 0   | 0   | 0   | 4   | 1   | 5   | 0   |
| Pep9  | 0   | 0   | 0   | 4   | 3   | 0   | 0   | 0   | 6   | 0   | 1   | 0   | 0   | 2   | 1   |
| Pep10 | 0   | 0   | 0   | 0   | 12  | 1   | 10  | 0   | 0   | 8   | 0   | 0   | 9   | 3   |     |
| P34   | 0   | 0   | 0   | 0   | 0   | 1.5 | 10  | 1   | 48  | 0   | 60  | 9   | 16  | 0   | 0   |
Accompanying table to Figure 4. Streptamer frequencies expressed as % of total CD8+ T cells and ELISPOT results expressed as IFNγ SFC per 6 x 10⁵ PBMC (Blank subtracted)

| Streptamer frequencies       | IFNγ ELISPOT SFC |
|------------------------------|------------------|
| C7*ARLELFVVL d0             | C7*ARLELFVVL d13 | ARLELFVVL | P34 |
| C17 0.014                    | -                | 0          | 0   |
| C18 0.028                    | -                | 0          | 0   |
| C19 0.012                    | -                | 0          | 0   |
| C20 0.053                    | -                | 0          | 0   |
| C21 0.024                    | -                | 0          | 0   |
| C22 0.016                    | -                | 0          | 0   |
| C23 0.023                    | -                | 0          | 0   |
| C24 0.013                    | 0                | 0          | 0   |
| C25 0.025                    | 0.011            | 0          | 0   |
| C26 0.011                    | 0.01             | 0          | 0   |
| C27 0.018                    | 0.005            | 1          | 0   |
| C28 0.025                    | 0.052            | 0          | 0   |
| C29 0.01                      | -                | 0          | 0   |
| C30 0.019                    | -                | 0          | 0   |
| P18 0.32                     | -                | 51         | 60  |
| P19 0.14                     | 1.53             | 8          | 9   |
| P20 0.075                    | -                | 5          | 6   |
| P23 0.024                    | -                | 0          | 0   |
| P24 -                        | -                | 4          | 4   |
| P25 0.077                    | -                | 5          | 9   |
| P26 0.041                    | -                | 1          | 7   |
| P27 0.051                    | -                | 1          | 3   |
| P28 0.047                    | -                | 1          | 2   |
| P29 0.2                      | 1.35             | 5          | 26  |
| P30 0.067                    | 0.95             | 7          | 11  |
| P31 -                        | -                | 4          | 1   |
| P32 0.012                    | 0.72             | 0          | 0   |
| P33 0.017                    | 0.5              | 1          | 1   |
| P34 0.11                     | 0.63             | -          | -   |
Supplementary References

1. Skinningsrud B, Lie BA, Lavant E, Carlson JA, Erlich H, Akselsen HE, et al. Multiple loci in the HLA complex are associated with Addison's disease. J Clin Endocrinol Metab. 2011;96(10):E1703-8.

2. Eriksson D, Royvik EC, Aranda-Guillen M, Berger AH, Landegren N, Artaza H, et al. GWAS for autoimmune Addison's disease identifies multiple risk loci and highlights AIRE in disease susceptibility. Nat Commun. 2021;12(1):959.
