**Supplementary Material**

**Table S1:** Secretion of splenic cytokines after *in vitro* re-stimulus. There was no significant stimulus for the production of cytokines IL-2, IL-4, IL-10, IL-17A. Levels measured in pg.mL-1. Values express mean ± standard deviation.

|  | **24h** | | | **48h** | | | **72h** | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cytokine** | **nr** | **ENV** | **ENVNS1** | **nr** | **ENV** | **ENVNS1** | **nr** | **ENV** | **ENVNS1** |
| **IL-2** | 440.89  ± 13.51 | 447.33  ± 5.79 | 432.00  ± 13.69 | 421.77  ± 7.05 | 432.72  ± 8.21 | 419.19  ± 4.04 | 410.6  ± 10.02 | 412.80  ± 2.55 | 417.42  ± 13.12 |
| **IL-4** | 907.44  ± 0.90 | 905.87  ± 0.09 | 906.68  ± 0.88 | 905.67  ± 0.58 | 905.66  ± 0.70 | 905.60  ± 0.58 | 904.47  ± 0.55 | 904.78  ± 0.51 | 905.54  ± 0.77 |
| **IL-10** | 132.75  ± 8.02 | 117.48  ± 5.30 | 130.56  ± 4.11 | 117.31  ± 6.51 | 123.21  ± 7.85 | 121.41  ± 13.85 | 119.53  ± 12.85 | 124.0  1± 7.67 | 124.48  ± 8.65 |
| **IL-17A** | 153.59  ± 1.21 | 150.09  ± 0.96 | 152.55  ± 3.61 | 151.35  ± 1.55 | 156.86  ± 4.12 | 151.28  ± 7.68 | 145.75  ± 2.85 | 146.89  ± 1.91 | 149.45  ± 5.14 |

**Table S2:** Average weight of the mice groups throughout the immunization experiment. Values correspond to mean ± standard deviation.

| **GROUPS** | **Weight (g)** | | |
| --- | --- | --- | --- |
| **Day 1** | **Day 7** | **Day 21** |
| ***P. pastoris*:nr** | 21.66 ± 0.90 | 22.74 ± 0.99 | 23.27 ± 1.20 |
| ***P.pastoris*:ENV** | 22.06 ± 1.63 | 22.63 ± 1.77 | 23.71 ± 2.02 |
| ***P.pastoris*:ENVNS1** | 20.86 ± 0.55 | 22.03 ± 1.03 | 22.75 ± 1.01 |