## Supplementary Materials

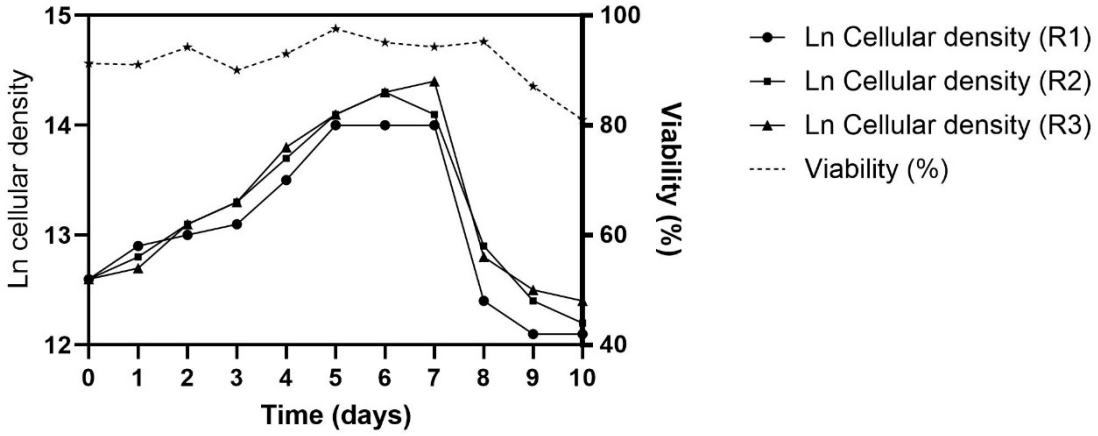



**Figure S1**. Growth and Viability of Sf9 Cells: Time vs. Log Cell Density.

**Table S1.** Growth kinetics results of Sf9 cells using GraphPad Prism (9.5.0)

| **Exponential growth with log(population)** | | | |
|---|---|---|---|
| **Best-fit values** | **Sf9 (R1)** | **Sf9(R2)** | **Sf9(R3)** |
| logY0 | 12.24 | 12.36 | 12.31 |
| k | 0.32 | 0.33 | 0.36 |
| Doubling time (hours) | 50.73 | 49.44 | 46.2 |

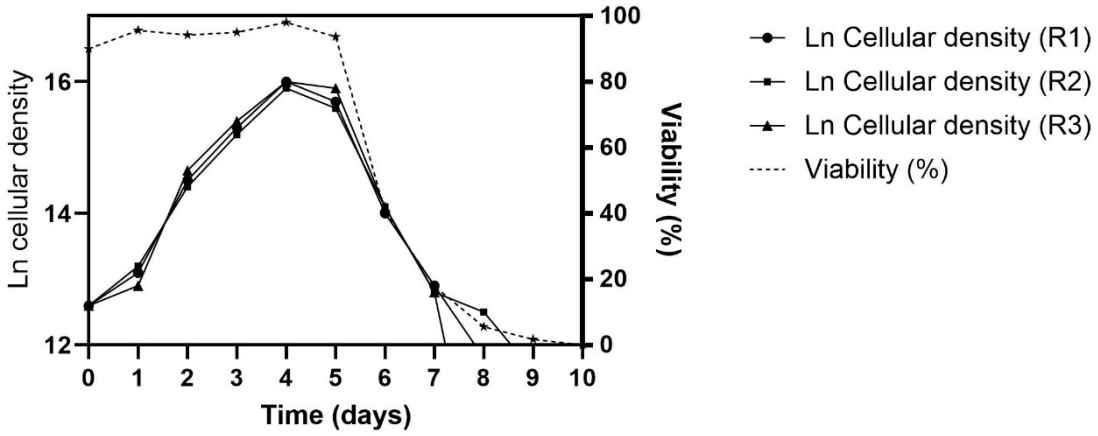



**Figure S2.** Growth and Viability of High Five™ Cells: Time vs. Log Cell Density

**Table S2.** Growth kinetics results of High Five™ cells using GraphPad Prism (9.5.0)

| **Exponential growth with log(population)** | | | |
|---|---|---|---|
| **Best-fit values** | **High Five™ (R1)** | **High Five™ (R2)** | **High Five™ (R3)** |
| logY0 | 12.74 | 12.78 | 12.69 |
| k | 0.72 | 0.68 | 0.75 |
| Doubling time (hours) | 23.13 | 24.58 | 22.11 |

**Table S3.** Cell Viability and Density Results of P2-BV

| | Initial conditions | 4 days post-infection | | |
|---|---|---|---|---|
| | | Control | PEF 2023-2235 | PEF 2023-2236 |
| Cellular viability* | 95% | 23.24% | 29.56% | 31.02% |
| Cellular density* | $2.0 \times 10^6$ | $4.07 \times 10^5$ | $4.46 \times 10^5$ | $4.76 \times 10^5$ |

* The data correspond to the average of four repetitions

**Table S4.** Densitometry Analysis of Prot_689

| Lane | Band No. | Mol. Wt. (KDa) | Relative Front | Adj. Volume (Int) | Volume (Int) | Rel. Quant. |
|---|---|---|---|---|---|---|
| 1 | 1 | 216 | 0.00 | 12675 | 2854605 | 0.00 |
| 1 | 2 | 132 | 0.08 | 1176565 | 20860905 | 0.03 |
| 1 | 3 | 78 | 0.14 | 5666570 | 42501550 | 0.14 |
| 1 | 4 | 45.7 | 0.41 | 5736510 | 42533985 | 0.15 |
| 1 | 5 | 32.5 | 0.53 | 2300870 | 41139930 | 0.06 |
| 1 | 6 | 18.4 | 0.83 | 4034355 | 46460765 | 0.10 |
| 1 | 7 | 7.6 | 1.00 | 2456545 | 11442665 | 0.06 |
| 3 | 1 | 44.73 | 0.42 | 15921035 | 36990915 | 0.41 |
| 3 | 2 | 40.93 | 0.45 | 15282280 | 28475590 | 0.39 |
| 3 | 3 | 35.35 | 0.50 | 4534725 | 23186475 | 0.12 |
| 4 | 1 | 44.84 | 0.42 | 23876072 | 36889380 | 0.61 |
| 4 | 2 | 40.84 | 0.45 | 23624392 | 35843544 | 0.60 |
| 4 | 3 | 35.27 | 0.50 | 6988080 | 20296452 | 0.18 |
| 5 | 1 | 44.44 | 0.42 | 27339195 | 41272725 | 0.70 |
| 5 | 2 | 40.66 | 0.45 | 23041655 | 33959380 | 0.59 |
| 5 | 3 | 34.96 | 0.51 | 12849655 | 30221100 | 0.33 |
| 6 | 1 | 44.76 | 0.42 | 35616750 | 50237460 | 0.91 |
| 6 | 2 | 40.76 | 0.45 | 39299065 | 55779815 | 1.00 |
| 6 | 3 | 35.19 | 0.50 | 6749405 | 22864140 | 0.17 |
| 11 | 1 | 47.47 | 0.39 | 159552 | 4298112 | 0.03 |
| 11 | 2 | 44.14 | 0.42 | 1024640 | 15023104 | 0.04 |

**Table S5.** Densitometry Analysis of Prot_504

| Lane | Band No. | Mol. Wt. (KDa) | Relative Front | Adj. Volume (Int) | Volume (Int) | Rel. Quant. |
|---|---|---|---|---|---|---|
| 1 | 1 | 132.00 | 0.09 | 5043168 | 40189110 | 0.09 |
| 1 | 2 | 78.00 | 0.15 | 9828702 | 60850140 | 0.18 |
| 1 | 3 | 45.70 | 0.42 | 15222324 | 76826334 | 0.29 |
| 1 | 4 | 32.50 | 0.97 | 3831204 | 68319264 | 0.07 |
| 3 | 1 | 53.17 | 0.34 | 19787560 | 43295655 | 0.37 |
| 3 | 2 | 51.08 | 0.36 | 9623770 | 23691005 | 0.18 |
| 3 | 3 | 49.41 | 0.38 | 2899260 | 18180045 | 0.05 |
| 3 | 4 | 45.58 | 0.42 | 13313300 | 40113385 | 0.25 |
| 3 | 5 | 45.2 | 0.43 | 19491225 | 41078635 | 0.37 |
| 3 | 6 | 44.14 | 0.47 | 1828320 | 13510380 | 0.03 |
| 4 | 1 | 61.60 | 0.27 | 505635 | 7196020 | 0.01 |
| 4 | 2 | 53.65 | 0.34 | 26941265 | 63478415 | 0.51 |
| 4 | 3 | 51.77 | 0.35 | 13744055 | 35960665 | 0.26 |

| Lane | Band No. | Mol. Wt. (KDa) | Relative Front | Adj. Volume (Int) | Volume (Int) | Rel. Quant. |
|---|---|---|---|---|---|---|
| 4 | 4 | 50.07 | 0.37 | 4349930 | 28886585 | 0.08 |
| 4 | 5 | 47.88 | 0.39 | 1859455 | 19774430 | 0.03 |
| 4 | 6 | 46.11 | 0.41 | 17698265 | 50316045 | 0.33 |
| 4 | 7 | 45.39 | 0.43 | 19614205 | 42177070 | 0.37 |
| 4 | 8 | 44.99 | 0.44 | 1350635 | 12687155 | 0.03 |
| 4 | 9 | 44.42 | 0.46 | 3670225 | 25050870 | 0.07 |
| 5 | 1 | 62.29 | 0.26 | 1714960 | 12419440 | 0.03 |
| 5 | 2 | 54.00 | 0.33 | 62441120 | 95498480 | 1.17 |
| 5 | 3 | 52.00 | 0.35 | 30574880 | 41040800 | 0.57 |
| 5 | 4 | 49.85 | 0.37 | 29331680 | 39884000 | 0.55 |
| 5 | 5 | 48.31 | 0.39 | 26460400 | 34812640 | 0.50 |
| 5 | 6 | 46.73 | 0.40 | 56132720 | 71462320 | 1.05 |
| 5 | 7 | 45.48 | 0.42 | 42652960 | 55819440 | 0.80 |
| 5 | 8 | 45.11 | 0.44 | 12349040 | 20932000 | 0.23 |
| 5 | 9 | 44.57 | 0.46 | 17721520 | 35045680 | 0.33 |
| 6 | 1 | 62.01 | 0.26 | 2771496 | 14996196 | 0.05 |
| 6 | 2 | 53.76 | 0.33 | 76422376 | 96913812 | 1.43 |
| 6 | 3 | 52.35 | 0.35 | 48208276 | 61203118 | 0.90 |
| 6 | 4 | 50.18 | 0.37 | 40501686 | 51889034 | 0.76 |
| 6 | 5 | 48.64 | 0.38 | 36684440 | 46411748 | 0.69 |
| 6 | 6 | 47.15 | 0.40 | 66937682 | 83946512 | 1.26 |
| 6 | 7 | 45.58 | 0.42 | 53287378 | 68713154 | 1.00 |
| 6 | 8 | 45.17 | 0.43 | 19302148 | 30302592 | 0.36 |
| 6 | 9 | 44.63 | 0.45 | 25955092 | 48248602 | 0.49 |
| 7 | 1 | 45.55 | 0.42 | 1280760 | 11552190 | 0.02 |
| 7 | 2 | 44.62 | 0.45 | 5850078 | 22613136 | 0.11 |
| 9 | 1 | 54.37 | 0.33 | 1446432 | 10855416 | 0.03 |
| 10 | 1 | 55.10 | 0.32 | 1615614 | 12870468 | 0.03 |
| 10 | 2 | 45.58 | 0.42 | 1639404 | 11370528 | 0.03 |
| 11 | 1 | 54.86 | 0.32 | 22450350 | 48325446 | 0.42 |
| 11 | 2 | 52.46 | 0.35 | 10978110 | 30462120 | 0.21 |
| 11 | 3 | 49.30 | 0.38 | 650130 | 9553362 | 0.01 |
| 11 | 4 | 47.36 | 0.40 | 3257670 | 20090616 | 0.06 |
| 11 | 5 | 45.66 | 0.42 | 13784004 | 33567378 | 0.26 |
| 11 | 6 | 44.75 | 0.45 | 1991418 | 15008058 | 0.04 |

**Figure S3.** Standard Curve BSA of Quantification of Purified Proteins

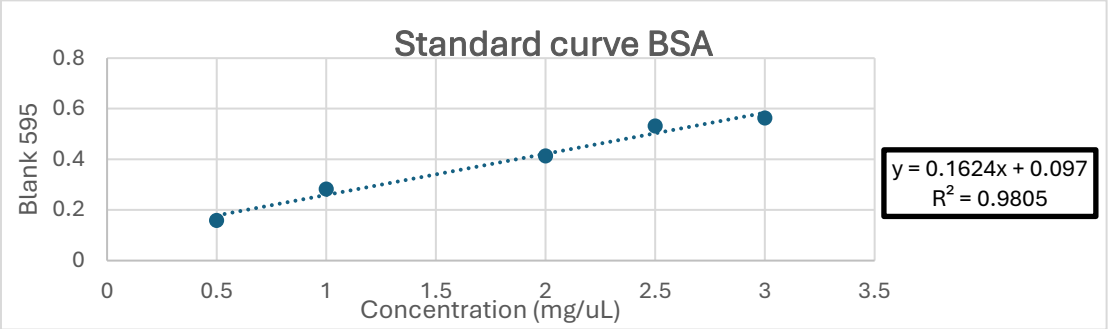



**Table S6.** Quantification of Purified Proteins Concentration by the Bradford Method

| Prot_689 | | | Prot_504 | | |
|---|---|---|---|---|---|
| # | Concentration (mg/µl) | Fractions | # | Concentration (mg/µl) | Fractions |
| 0 | 1.50 | PT | 0 | 2.08 | PT |
| 1 | 0.46 | PI1 | 1 | 1.99 | PI1 |
| 2 | 0.36 | PI2 | 2 | 0.88 | PI2 |
| 3 | 0.02 | W3 | 3 | 0.00 | W3 |
| 4 | 0.00 | W4 | 4 | 0.00 | W4 |
| 5 | 0.08 | E7 | 5 | 0.00 | W7 |
| 6 | 0.14 | E8 | 6 | 0.23 | WE8 |
| 7 | 0.36 | E9 | 7* | 0.64 | E9 |
| 8* | 0.87 | E10 | 8 | 0.49 | E10 |
| 9 | 0.00 | EW11 | 9 | 0.08 | EW11 |
| 10 | 0.00 | EW12 | 10 | 0.00 | EW12 |
| 11 | 0.00 | EW13 | 11 | 0.00 | W13 |
| 12 | 0.00 | EW14 | 12 | 0.00 | W14 |
| 13 | 0.00 | W15 | 13 | 0.00 | W15 |
| 14 | 0.00 | W16 | 14 | 0.00 | W16 |
| 15 | 0.00 | W17 | 15 | 0.00 | W17 |

*Fraction with the highest concentration of purified recombinant protein, corresponding to the eluate.

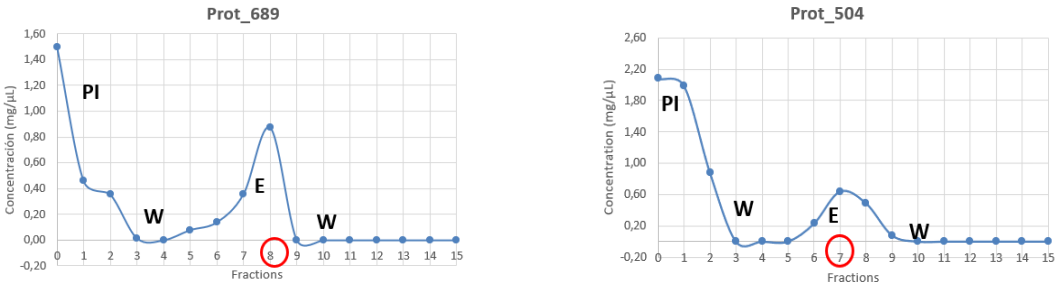
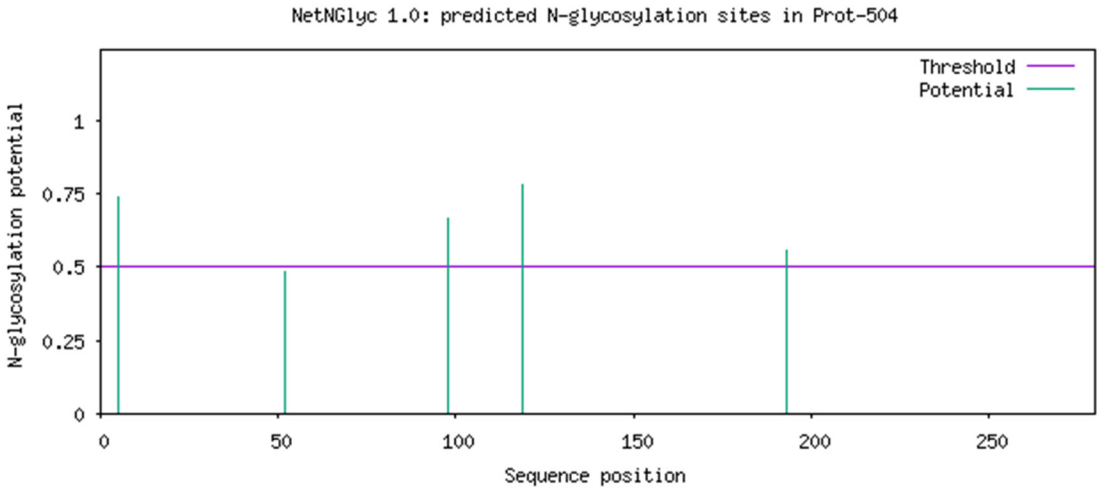



**Figure S4.** Purification Fractions Collected and Concentration Profiles. PI: Non-specific Protein. W: Wash Fraction. E: Eluted Fraction. The fraction with the highest concentration is highlighted by a red circle.




*Signal Peptide from Amino Acid 1-38

**Figure S5.** Predicted N-glycosylation Sites in Prot_504 by NetNGlyc 1.0.