# **Stochastic model of vesicular stomatitis virus replication reveals mutational effects on virion production: supplementary figures.**

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A graph of a number of reaction

Description automatically generated

**S1 Fig. Simulation and Loading time of ODE Models Increases as the Number of Reactions in the Model Increase.**

A group of graphs with numbers

Description automatically generated

**S2 Fig.** **Distribution of the number of virions produced by each gene shuffled Vesicular Stomatitis Virus variant used to fit the model.** Each plot represents 10,000 simulations.

**S1 Table.** Gene Shuffled Vesicular Stomatitis Virus Variants with Associated Statistics

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variant** | **Mean Virions Produced** | **Standard Deviation** | **Percent of Infections Aborted** | **Mean/Standard Deviation** |
| NMGLP | 12365.23 | 11777.92 | 0.16 | 1.05 |
| NGMLP | 12355.23 | 11534.64 | 0.10 | 1.07 |
| NMLGP | 10742.46 | 9275.01 | 0.08 | 1.16 |
| NLMGP | 10673.82 | 9092.71 | 0.08 | 1.17 |
| NGLMP | 10629.27 | 8462.59 | 0.06 | 1.26 |
| NLGMP | 10481.59 | 8520.48 | 0.12 | 1.23 |
| NMGPL | 4294.93 | 2384.08 | 0.28 | 1.80 |
| NGMPL | 3914.32 | 2119.58 | 0.28 | 1.85 |
| NMPGL | 2516.32 | 1332.83 | 0.48 | 1.89 |
| NPMGL (WT) | 1863.50 | 995.86 | 0.52 | 1.87 |
| MNLGP | 1670.89 | 2096.34 | 1.12 | 0.80 |
| MNGLP | 1661.36 | 2123.16 | 0.76 | 0.78 |
| GNMLP | 1627.12 | 2028.92 | 0.70 | 0.80 |
| LNGMP | 1619.92 | 2053.19 | 0.96 | 0.79 |
| GNLMP | 1611.76 | 1979.64 | 0.64 | 0.81 |
| LNMGP | 1609.33 | 2001.43 | 0.82 | 0.80 |
| NGPML | 1327.77 | 544.17 | 0.32 | 2.44 |
| MNGPL | 1310.00 | 783.27 | 0.80 | 1.67 |
| GNMPL | 1205.72 | 654.81 | 0.48 | 1.84 |
| NPGML | 1013.45 | 444.63 | 0.46 | 2.28 |
| MNPGL | 787.04 | 406.83 | 0.68 | 1.93 |
| GNPML | 612.22 | 259.84 | 0.62 | 2.36 |
| PNMGL | 491.90 | 230.82 | 1.60 | 2.13 |
| MGNPL | 377.70 | 341.54 | 2.02 | 1.11 |
| GMNPL | 370.01 | 332.70 | 1.78 | 1.11 |
| PNGML | 367.13 | 145.45 | 1.02 | 2.52 |
| MPNGL | 270.29 | 183.96 | 3.16 | 1.47 |
| GPNML | 229.04 | 142.79 | 2.00 | 1.60 |
| PMNGL | 223.40 | 142.50 | 3.54 | 1.57 |
| GLNMP | 213.67 | 365.30 | 6.30 | 0.58 |
| NMLPG | 212.91 | 77.97 | 0.52 | 2.73 |
| MGNLP | 210.50 | 355.97 | 6.62 | 0.59 |
| GMNLP | 208.30 | 332.44 | 5.92 | 0.63 |
| LMNGP | 206.89 | 345.25 | 6.26 | 0.60 |
| MLNGP | 206.72 | 337.18 | 6.62 | 0.61 |
| LGNMP | 204.04 | 339.15 | 6.74 | 0.60 |
| NLMPG | 192.64 | 68.35 | 0.44 | 2.82 |
| PGNML | 192.50 | 105.70 | 2.56 | 1.82 |
| NMPLG | 161.26 | 55.34 | 0.50 | 2.91 |
| NLPMG | 131.92 | 45.03 | 0.46 | 2.93 |
| NPMLG | 109.96 | 35.92 | 0.54 | 3.06 |
| NLGPM | 101.14 | 36.52 | 0.12 | 2.77 |
| NGLPM | 100.75 | 37.00 | 0.16 | 2.72 |
| NPLMG | 99.71 | 33.72 | 0.76 | 2.96 |
| MNLPG | 95.37 | 51.24 | 1.16 | 1.86 |
| GMPNL | 94.76 | 101.16 | 6.60 | 0.94 |
| MGPNL | 92.92 | 102.26 | 6.68 | 0.91 |
| LNMPG | 92.57 | 47.51 | 0.90 | 1.95 |
| MPGNL | 91.02 | 89.32 | 6.78 | 1.02 |
| GPMNL | 88.54 | 87.78 | 6.32 | 1.01 |
| PMGNL | 82.81 | 76.20 | 7.86 | 1.09 |
| PGMNL | 81.27 | 72.54 | 7.20 | 1.12 |
| NLPGM | 77.44 | 28.14 | 0.22 | 2.75 |
| NGPLM | 77.33 | 27.89 | 0.14 | 2.77 |
| MNPLG | 76.82 | 38.75 | 1.70 | 1.98 |
| LNPMG | 68.78 | 32.47 | 0.92 | 2.12 |
| NPLGM | 59.61 | 21.77 | 0.22 | 2.74 |
| NPGLM | 59.15 | 22.16 | 0.44 | 2.67 |
| LNGPM | 49.83 | 24.26 | 0.54 | 2.05 |
| GNLPM | 49.62 | 24.27 | 0.84 | 2.04 |
| PNMLG | 46.12 | 21.22 | 1.80 | 2.17 |
| PNLMG | 41.37 | 19.01 | 1.74 | 2.18 |
| LMNPG | 40.37 | 27.72 | 2.68 | 1.46 |
| MLNPG | 39.73 | 28.25 | 3.34 | 1.41 |
| GNPLM | 39.16 | 18.82 | 0.78 | 2.08 |
| LNPGM | 38.99 | 18.77 | 0.96 | 2.08 |
| LGMNP | 31.96 | 63.81 | 23.12 | 0.50 |
| MLGNP | 30.43 | 61.71 | 24.32 | 0.49 |
| GMLNP | 29.75 | 59.00 | 24.22 | 0.50 |
| MPNLG | 29.38 | 18.65 | 4.72 | 1.58 |
| LMGNP | 29.20 | 59.28 | 24.40 | 0.49 |
| LPNMG | 28.91 | 17.82 | 3.28 | 1.62 |
| MGLNP | 28.81 | 55.61 | 24.68 | 0.52 |
| GLMNP | 28.62 | 55.44 | 23.70 | 0.52 |
| GLNPM | 24.69 | 15.69 | 3.46 | 1.57 |
| LGNPM | 24.63 | 15.60 | 3.40 | 1.58 |
| PNLGM | 24.42 | 12.29 | 1.48 | 1.99 |
| PMNLG | 24.05 | 14.85 | 5.36 | 1.62 |
| PNGLM | 24.05 | 12.10 | 1.50 | 1.99 |
| PLNMG | 23.12 | 13.85 | 4.20 | 1.67 |
| MLPNG | 16.99 | 13.44 | 8.58 | 1.26 |
| GPNLM | 16.89 | 10.87 | 5.00 | 1.55 |
| LPNGM | 16.71 | 10.62 | 4.58 | 1.57 |
| LMPNG | 16.47 | 13.26 | 8.74 | 1.24 |
| MPLNG | 15.12 | 11.78 | 10.22 | 1.28 |
| LPMNG | 14.46 | 11.29 | 9.64 | 1.28 |
| PLNGM | 13.22 | 8.60 | 6.28 | 1.54 |
| PGNLM | 13.08 | 8.56 | 6.40 | 1.53 |
| PMLNG | 12.83 | 9.74 | 11.22 | 1.32 |
| PLMNG | 12.74 | 9.61 | 10.80 | 1.33 |
| LGPNM | 11.00 | 8.77 | 12.42 | 1.25 |
| GLPNM | 10.78 | 8.88 | 13.38 | 1.21 |
| GPLNM | 9.33 | 7.54 | 14.98 | 1.24 |
| LPGNM | 9.15 | 7.47 | 15.10 | 1.22 |
| PLGNM | 7.61 | 6.38 | 17.84 | 1.19 |
| PGLNM | 7.56 | 6.25 | 18.36 | 1.21 |
| PLMGN | 1.19 | 1.51 | 84.28 | 0.79 |
| PMGLN | 1.19 | 1.51 | 84.66 | 0.78 |
| PGMLN | 1.16 | 1.51 | 85.26 | 0.76 |
| PMLGN | 1.15 | 1.46 | 85.08 | 0.79 |
| PLGMN | 1.14 | 1.45 | 85.32 | 0.78 |
| PGLMN | 1.12 | 1.41 | 85.00 | 0.79 |
| MPGLN | 0.99 | 1.36 | 86.68 | 0.73 |
| LPMGN | 0.98 | 1.37 | 87.08 | 0.72 |
| LPGMN | 0.97 | 1.39 | 86.26 | 0.70 |
| GPMLN | 0.96 | 1.35 | 86.90 | 0.71 |
| MPLGN | 0.96 | 1.36 | 87.58 | 0.70 |
| GPLMN | 0.95 | 1.29 | 86.60 | 0.73 |
| LMPGN | 0.81 | 1.27 | 88.58 | 0.63 |
| LGPMN | 0.77 | 1.16 | 88.80 | 0.67 |
| GLPMN | 0.77 | 1.20 | 89.46 | 0.64 |
| MGPLN | 0.76 | 1.21 | 89.86 | 0.63 |
| MLPGN | 0.76 | 1.20 | 90.34 | 0.64 |
| GMPLN | 0.74 | 1.15 | 90.68 | 0.65 |
| MGLPN | 0.64 | 1.09 | 90.62 | 0.58 |
| LMGPN | 0.63 | 1.07 | 91.34 | 0.59 |
| MLGPN | 0.62 | 1.14 | 91.68 | 0.54 |
| GMLPN | 0.61 | 1.02 | 91.04 | 0.60 |
| GLMPN | 0.61 | 1.09 | 91.38 | 0.57 |
| LGMPN | 0.60 | 1.01 | 91.68 | 0.59 |