

Table S1. Model results for doubling the number of epitopes or variants per epitope

Epitope Configuration	Total Mutation Rate Across Epitopes (1/day)	Immunity Reduction Per Epitope Change ($1-\sigma$)	Mean Genetic Diversity π	Incidence Increase / Decrease
5x4x3x2	8×10^{-6}	13%	5.7 ± 0.1	Baseline
5x5x4x4x3x3x2x2	8×10^{-6}	13%	10 ± 4	↑
5x5x4x4x3x3x2x2	8×10^{-6}	6.5%	6 ± 1	≈
5x5x4x4x3x3x2x2	1.6×10^{-5}	6.5%	8 ± 5	≈
10x8x6x4	8×10^{-6}	13%	16 ± 15	↑
10x8x6x4	8×10^{-6}	6.5%	6 ± 1	↓
10x8x6x4	1.6×10^{-5}	6.5%	10 ± 5	↓