**Supplementary Table 1**. Verification of mutagenic plasmid library composition.

Primers used for site-directed mutagenesis were designed by randomizing the nucleotide sequence encoding the 4G2 selectant NWDPTQFPGK (AAC TGG GAC CCG ACC CAG TTC CCC GGC AAG). Each of the thirty nucleotide positions in the mutagenic library was weighted for 76% chance of resembling the original nucleotide, or 8% chance of each other nucleotide. Percent occurrence of nucleotides was determined by deep sequencing of the plasmid library.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Nucleotide position | Percent occurrence of nucleotides at each position: | | | |
| **A** | **G** | **C** | **T** |
| 1 (A) | 78.716 | 7.047 | 6.139 | 8.098 |
| 2 (A) | 78.768 | 7.612 | 6.360 | 7.260 |
| 3 (C) | 8.965 | 7.408 | 75.114 | 8.513 |
| 4 (T) | 9.081 | 7.037 | 8.014 | 75.868 |
| 5 (G) | 10.541 | 73.913 | 6.826 | 8.721 |
| 6 (G) | 10.177 | 73.874 | 6.927 | 9.022 |