|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Wild Type** | **Mutant** | **Type** | **Average Δ (DMSO - Perturbation) fitness** | **Relative E1 reactivity** |
| Gln2 | Aspartate | Polar to negative | -0.46 | 1.06 |
| Val5 | Aspartate | Hydrophobic to negative | -0.20 | 0.00 |
| Lys6 | Proline | Positive to proline | -0.35 | 0.08 |
| Thr7 | Methionine | Polar to hydrophobic | -0.41 | 1.01 |
| Thr7 | Glutamine | Polar to negative | -0.25 | 1.02 |
| Leu8 | Tyrosine | Hydrophobic to aromatic | -0.25 | 0.84 |
| Leu8 | Histidine | Hydrophobic to positive | -0.28 | 0.66 |
| Leu8 | Aspartate | Hydrophobic to negative | -0.72 | 0.21 |
| Thr12 | Valine | Polar to hydrophobic | -0.39 | 0.95 |
| Ile13 | Tyrosine | Hydrophobic to aromatic | -0.31 | 0.95 |
| Val26 | Arginine | Hydrophobic to positive | -0.31 | 0.09 |
| Lys27 | Serine | Positive to polar | -0.30 | 0.55 |
| Ile30 | Glycine | Hydrophobic to glycine | -0.28 | 0.46 |
| Asp32 | Phenylalanine | Negative to aromatic | -0.26 | 1.00 |
| Asp32 | Isoleucine | Negative to hydrophobic | -0.29 | 0.99 |
| Glu34 | Leucine | Glycine to hydrophobic | -0.32 | 1.03 |
| Pro37 | Tyrosine | Proline to aromatic | -0.31 | 0.96 |
| Gln41 | Proline | Polar to proline | -0.24 | 0.42 |
| Arg42 | Cystine | Positive to cystine | -0.27 | -0.13 |
| Arg42 | Proline | Positive to proline | -0.23 | 0.31 |
| Leu43 | Tyrosine | Hydrophobic to aromatic | -0.32 | 0.87 |
| Gly47 | Phenylalanine | Glycine to aromatic | -0.38 | 0.14 |
| Gly47 | Threonine | Glycine to polar | -0.21 | 0.47 |
| Gln49 | Tyrosine | Polar to aromatic | -0.28 | -0.61 |
| Leu50 | Glycine | Hydrophobic to glycine | -0.40 | 0.15 |
| Asp58 | Tyrosine | Negative to aromatic | -0.26 | 0.94 |
| Asp58 | Proline | Negative to proline | -0.30 | 0.52 |
| Ile61 | Tyrosine | Hydrophobic to aromatic | -0.36 | 0.20 |
| Ile61 | Glycine | Hydrophobic to glycine | -0.26 | 0.06 |
| Ile61 | Lysine | Hydrophobic to positive | -0.28 | -0.02 |
| Thr66 | Tyrosine | Polar to aromatic | -0.37 | 0.93 |
| Thr66 | Isoleucine | Polar to hydrophobic | -0.24 | 0.94 |
| Thr66 | Arginine | Polar to positive | -0.24 | 0.98 |
| Leu67 | Glycine | Hydrophobic to glycine | -0.21 | 0.90 |
| Leu69 | Arginine | Hydrophobic to positive | -0.27 | 0.94 |
| Val70 | Tyrosine | Hydrophobic to aromatic | -0.25 | -0.07 |
| Leu71 | Serine | Hydrophobic to polar | -0.22 | 1.02 |
| Arg74 | Isoleucine | Positive to hydrophobic | -0.37 | 1.00 |
| Gly75 | Phenylalanine | Glycine to aromatic | -0.41 | 0.11 |
| Gly75 | Valine | Glycine to hydrophobic | -0.26 | 0.11 |
| Gly75 | Asparagine | Glycine to polar | -0.24 | 0.17 |