

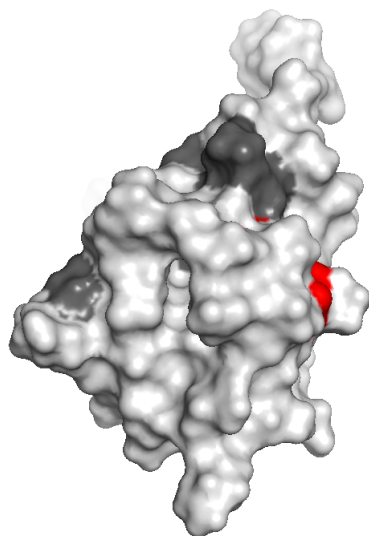
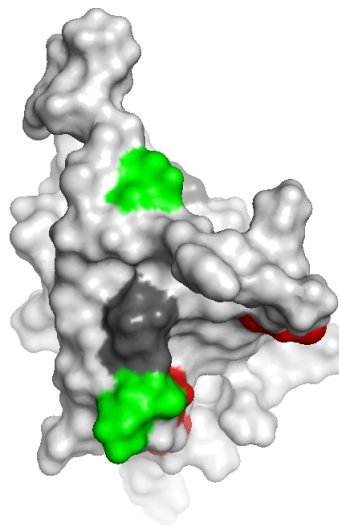
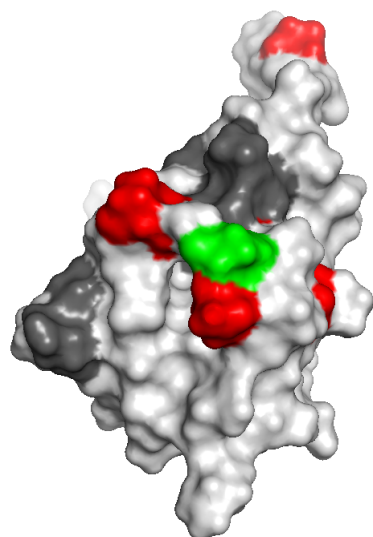
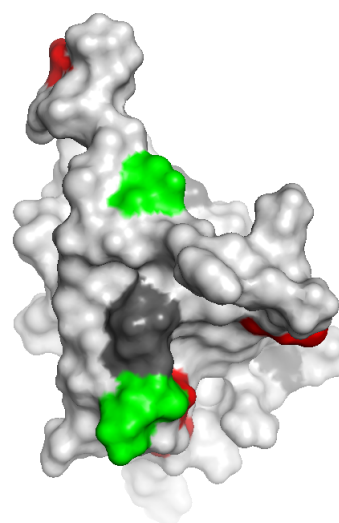
A**B****C****D**

Figure S1. Surface plots of activities of synonymous variants in Tat. Surface maps show Tat structure (PDBID: 1TIV) with a 180° rotation. **A,B:** Stringent selection for variant activities that have a majority of replicate measures in different variants for the same position or in different cell lines. **C,D:** Non-stringent selection for variant activities that have a majority of replicate measures in different variants for the same position or in different cell lines, but includes variants that only have a single measure. Key: grey = wild type activity; green = GOF activity; and red = LOF activity