

## **Description of Additional Supplementary Files:**

**Supplementary Data 1:** Datasets used for reconstruction of SBS and DBS mutational spectra.

**Supplementary Data 2:** SBS spectra calculated from the 84 bacterial clades.

**Supplementary Data 3:** Datasets used for NMF signature extraction.

**Supplementary Data 4:** Bacteria SBS signatures and the datasets they were extracted from.

**Supplementary Data 5:** Association of SBS mutations with pathogen niche.

**Supplementary Data 6:** Accession numbers of samples used in mutational spectrum datasets.

**Supplementary Data 7:** Modelling of DNA polymerase III subunits in *Pseudomonas aeruginosa* and *Burkholderia cenocepacia*.

**Supplementary Data 8:** Summary of comparisons of linear models incorporating genus with linear models including genus and niche.