

Table legends

Table S1. Count of somatic mutations in GEL, ICGC and Hartwig cohorts. Overall count of single nucleotide variants (SNV), double nucleotide variants (DNV) small insertion and deletions (Indels), and rearrangements (Rearr), across the GEL, ICGC and Hartwig cohorts, along with the number of samples used. For the GEL cohort, we indicate the proportion of samples that had PCR cycles in the library preparation.

Table S2. GEL high quality filters for samples. Filters used to select high quality samples in the GEL cohort.

Table S3. Number of samples used for SBS analysis in each cohort and in each organ.

Table S4. Number of samples used for DBS analysis in each cohort and in each organ.

Table S5. Mapping of organ names used in this study to organ/tissue/study organization of the GEL, ICGC and Hartwig cohorts.

Table S6. Full list of samples from GEL, ICGC and Hartwig. Summary of all samples used in this study with the corresponding organ. We also indicate which samples were used for the common signature extraction of SBSs and DBSs.

Table S7. SBS mutational catalogs. SBS mutational catalogs of all samples analyzed in this study.

Table S8. SBS mutational catalogs. DBS mutational catalogs of all samples analyzed in this study.

Table S9. Organ-specific SBS signatures.

Table S10. Organ-specific DBS signatures.

Table S11. Number of common and rare SBS signatures extracted in each cohort and each organ.

Table S12. Number of common and rare DBS signatures extracted in each cohort and each organ.

Table S13. Clustering of all organ-specific SBS signatures.

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Table S15. SBS distinct patterns. Obtained as the average of the clusters obtained clustering all organ-specific SBS signatures (table S13).

Table S16. DBS distinct patterns. Obtained as the average of the clusters obtained clustering all organ-specific DBS signatures (table S14).

Table S17. SBS distinct patterns info table. Annotation of SBS distinct patterns into recurrent, mixed and singleton, with corresponding reference signature name.

Table S18. DBS distinct patterns info table. Annotation of DBS distinct patterns into recurrent, mixed and singleton, with corresponding reference signature name.

Table S19. SBS reference signatures info table. Summary table of all SBS reference signatures identified in this study. We report QC status, proposed etiology, transcription and replication strand bias, number of samples with the signatures and other annotations.

Table S20. DBS reference signatures info table. Summary table of all DBS reference signatures identified in this study. We report QC status, proposed etiology, number of samples with the signatures and other annotations.

Table S21. SBS reference signatures.

Table S22. DBS reference signatures.

Table S23. SBS reference signatures exposures. Number of mutations associated with each reference signature in all samples analyzed in this study.

Table S24. DBS reference signatures exposures. Number of mutations associated with each reference signature in all samples analyzed in this study.

Table S25. SBS conversion matrix. Conversion matrix mapping organ-specific SBS signatures into reference signatures.

Table S26. DBS conversion matrix. Conversion matrix mapping organ-specific DBS signatures into reference signatures.

Table S27. Examples of trinucleotide mutational catalogs from GEL, ICGC and Hartwig cohorts.

Table S28. MBD4 and OGG1 G308E driver mutations occurring in samples in GEL.

Table S29. Substitution and indels driver mutations for selected signatures and genes

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Table S31. HRDetect input features and scores for the GEL cohort.

Table S32. Transcription and Replication strand bias of SBS reference signatures in the GEL cohort.

Table S33. SBS common and rare signatures to be used with FitMS. Common and rare signatures are provided for each organ analyzed in this study.