

Table S3: List and size of the cohorts investigated in this study from GTEx and TCGA databases

| SYSTEM | ORGAN | Acronym | Size | | | Pairwise comparison (p-value) for HEMO | | | Pairwise comparison (p-value) N vs T for other HERV-env | | | | |
|---------------|---------------|-------------|---|---|-----------------------|--|--|----------------------------|---|---------------------------------------|--------------------------------------|--|--------------------------------------|
| | | | N | C | T | N vs T | C vs T | N vs C | ERVW-1 | ERVFRD-1 | ERVV-2 | ERV3-1 | |
| RESPIRATORY | HEAD & NECK | GTEx | na | | | | | | | | | | |
| | | TCGA | HNSC | Head and Neck Squamous Cell Carcinoma | 44 | 491 | na | < 0.0001 | na | na | na | na | na |
| | LUNG | GTEx | 374 | | | | | | | | | | |
| | | TCGA | LUAD LUSC | Lung Adenocarcinoma Lung Squamous Cell Carcinoma | 58 51 | 511 490 | < 0.0001 < 0.0001 | 0.0736 < 0.0001 | 0.0322 0.6701 | < 0.0001 < 0.0001 | < 0.0001 < 0.0001 | < 0.0001 < 0.0001 | 0.4803 < 0.0001 |
| ENDOCRINE | PLEURA | GTEx | na | | | | | | | | | | |
| | | TCGA | MESO | Mesothelioma | na | 87 | na | na | na | na | na | na | na |
| FEMALE | ADRENAL GLAND | GTEx | 159 | | | | | | | | | | |
| | | TCGA | PCPG ACC | Pheochromocytoma and Paraganglioma Adrenocortical Carcinoma | 3 | 181 79 | < 0.0001 0.0034 | 0.0008 na | 0.3753 na | < 0.0001 < 0.0001 | < 0.0001 0.7812 | 0.6742 0.7382 | < 0.0001 < 0.0001 |
| | THYROID | GTEx | 361 | | | | | | | | | | |
| | | TCGA | THCA | Thyroid Carcinoma | 57 | 510 | < 0.0001 | < 0.0001 | 0.0002 | < 0.0001 | < 0.0001 | 0.0346 | < 0.0001 |
| MALE | BREAST | GTEx | 218 | | | | | | | | | | |
| | | TCGA | BRCA | Breast Invasive Carcinoma | 98 | 1086 | < 0.0001 | 0.0017 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | 0.001 |
| | OVARY | GTEx | 108 | | | | | | | | | | |
| | | TCGA | OV | Ovarian Serous Cystadenocarcinoma | na | 420 | 0.0393 | na | na | < 0.0001 | 0.0003 | < 0.0001 | 0.3697 |
| | UTERUS | GTEx | 90 | | | | | | | | | | |
| | | TCGA | UCEC UCS | Uterine Corpus Endometrial Carcinoma Uterine Carcinosarcoma | 35 | 529 57 | < 0.0001 na | < 0.0001 na | < 0.0001 na | < 0.0001 < 0.0001 | < 0.0001 < 0.0001 | < 0.0001 < 0.0001 | < 0.0001 < 0.0001 |
| HEMATOLOGICAL | CERVIX | GTEx | 11 | | | | | | | | | | |
| | | TCGA | CESC | Cervical Squamous Cell Carcinoma | 3 | 303 | < 0.0001 | 0.0010 | 0.4835 | < 0.0001 | < 0.0001 | 0.9601 | 0.0003 |
| | PROSTATE | GTEx | 119 | | | | | | | | | | |
| | | TCGA | PRAD | Prostate Adenocarcinoma | 51 | 478 | < 0.0001 | 0.0005 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | 0.0553 |
| DIGESTIVE | TESTIS | GTEx | 150 | | | | | | | | | | |
| | | TCGA | TGCT | Testicular Germ Cell Tumors | na | 203 | 0.0804 | na | na | 0.8722 | 0.0159 | 0.6814 | < 0.0001 |
| | THYMUS | GTEx | na | | | | | | | | | | |
| | | TCGA | THYM | Thymoma | 2 | 120 | na | 0.0740 | na | na | na | na | na |
| URINARY | LYMPH NODES | GTEx | na | | | | | | | | | | |
| | | TCGA | DLBCL | Diffuse Large B-cell Lymphoma | na | 48 | na | na | na | na | na | na | na |
| | BONE MARROW | GTEx | 102 | | | | | | | | | | |
| | | TCGA | LAML | Acute Myeloid Leukemia | na | 126 | < 0.0001 | na | na | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 |
| NERVOUS | ESOPHAGUS | GTEx | 790 | | | | | | | | | | |
| | | TCGA | ESCA | Esophageal Carcinoma | 13 | 183 | < 0.0001 | < 0.0001 | 0.1542 | 0.0109 | < 0.0001 | < 0.0001 | < 0.0001 |
| | STOMACH | GTEx | 204 | | | | | | | | | | |
| | | TCGA | STAD | Stomach Adenocarcinoma | 37 | 400 | < 0.0001 | < 0.0001 | 0.3745 | 0.1253 | < 0.0001 | < 0.0001 | < 0.0001 |
| | COLON | GTEx | 376 | | | | | | | | | | |
| | | TCGA | COAD | Colon Adenocarcinoma | 41 | 457 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 |
| | RECTUM | GTEx | na | | | | | | | | | | |
| | | TCGA | READ | Rectum Adenocarcinoma | 10 | 159 | na | < 0.0001 | na | na | na | na | na |
| | LIVER | GTEx | 136 | | | | | | | | | | |
| | | TCGA | LIHC | Liver Hepatocellular Carcinoma | 50 | 370 | < 0.0001 | 0.5852 | 0.0012 | < 0.0001 | < 0.0001 | 0.0003 | 0.5455 |
| | BILE DUCT | GTEx | na | | | | | | | | | | |
| | | TCGA | CHOL | Cholangiocarcinoma | 9 | 36 | na | < 0.0001 | na | na | na | na | na |
| SKIN | PANCREAS | GTEx | 197 | | | | | | | | | | |
| | | TCGA | PAAD | Pancreatic Adenocarcinoma | 4 | 95 | < 0.0001 | 0.7002 | 0.0444 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 |
| | KIDNEY | GTEx | 36 | | | | | | | | | | |
| | | TCGA | All KICH KIRC KIRP | Kidney Renal Cell Carcinoma Kidney Chromophobe Kidney Renal Clear Cell Carcinoma Kidney Renal Papillary Cell Carcinoma | 129 25 72 32 | 888 66 534 288 | < 0.0001 < 0.0001 < 0.0001 < 0.0001 | < 0.0001 na na na | < 0.0001 na na na | 0.2536 < 0.0001 0.001 0.2552 | 0.0019 0.9208 0.0002 0.0133 | 0.0044 0.0538 0.0084 < 0.0001 | 0.0591 0.0712 0.0155 0.0851 |
| EYE | GTEx | 11 | | | | | | | | | | | |
| | TCGA | BLCA | Bladder Urothelial Carcinoma | 19 | 410 | < 0.0001 | < 0.0001 | 0.4346 | < 0.0001 | < 0.0001 | 0.139 | 0.0265 | |
| SKIN | BRAIN | GTEx | 1409 | | | | | | | | | | |
| | | TCGA | GBM LGG | Glioblastoma Multiforme Brain Lower Grade Glioma | 5 | 154 503 | < 0.0001 < 0.0001 | 0.9278 na | 0.0457 na | < 0.0001 0.0049 | 0.6475 < 0.0001 | 0.0217 < 0.0001 | < 0.0001 < 0.0001 |
| | SKIN | GTEx | 974 | | | | | | | | | | |
| | | TCGA | SKCM | Skin Cutaneous Melanoma | 1 | 469 | < 0.0001 | na | na | < 0.0001 | 0.3519 | < 0.0001 | < 0.0001 |
| SARCOMA | GTEx | na | | | | | | | | | | | |
| | TCGA | SARC | Sarcoma | 2 | 260 | na | 0.7864 | na | na | na | na | na | |

N: Normal tissue samples from GTEx. C: Control (Normal Adjacent Tumor) tissue samples and T: Tumor tissue samples from TCGA. na: not applicable. P-values correspond to pairwise comparison between tumor (T), control (C) and normal (N) groups for HEMO and between tumor (T) and normal (N) for the 4 HERV-env genes (Mann-Whitney U-test). Cohorts are grouped according to body systems as in Fig. 1. BRCA: 1074 female and 12 male tumors samples, SKCM: 103 primary and 366 metastatic unpaired samples.