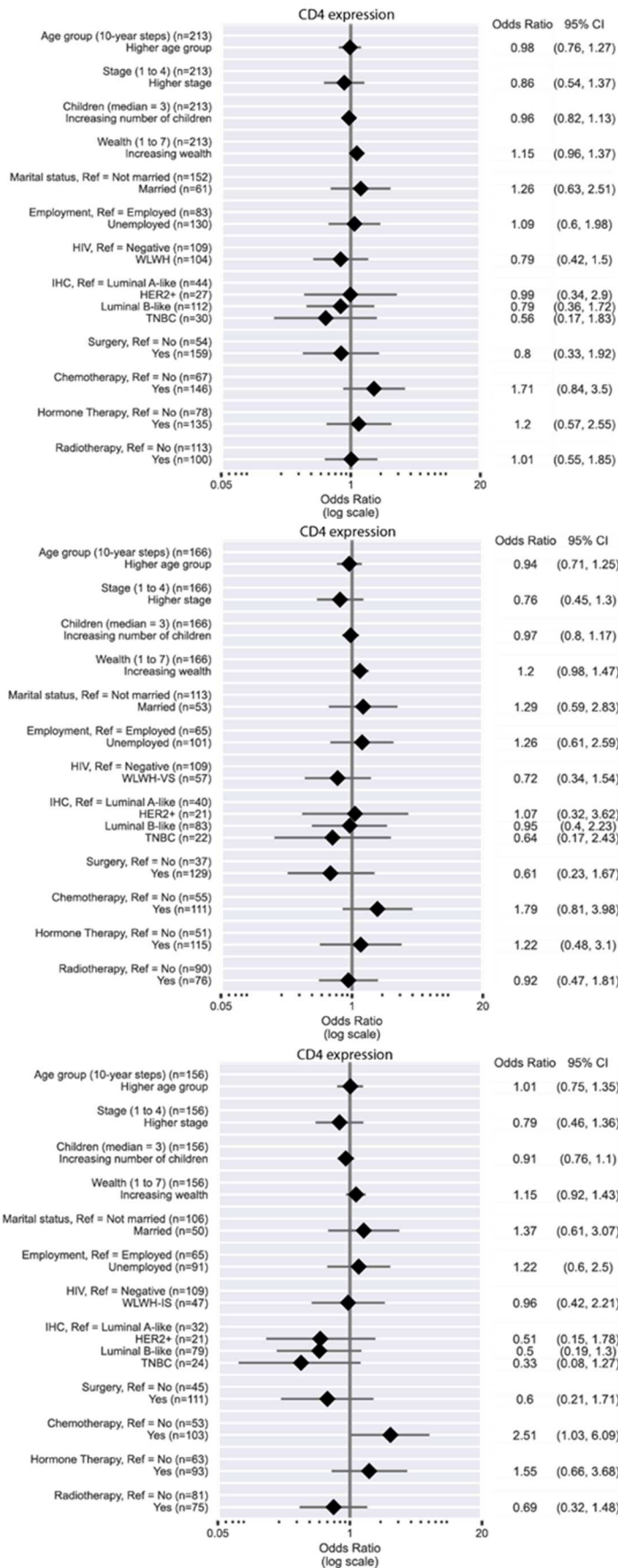


## **Supplementary Files**

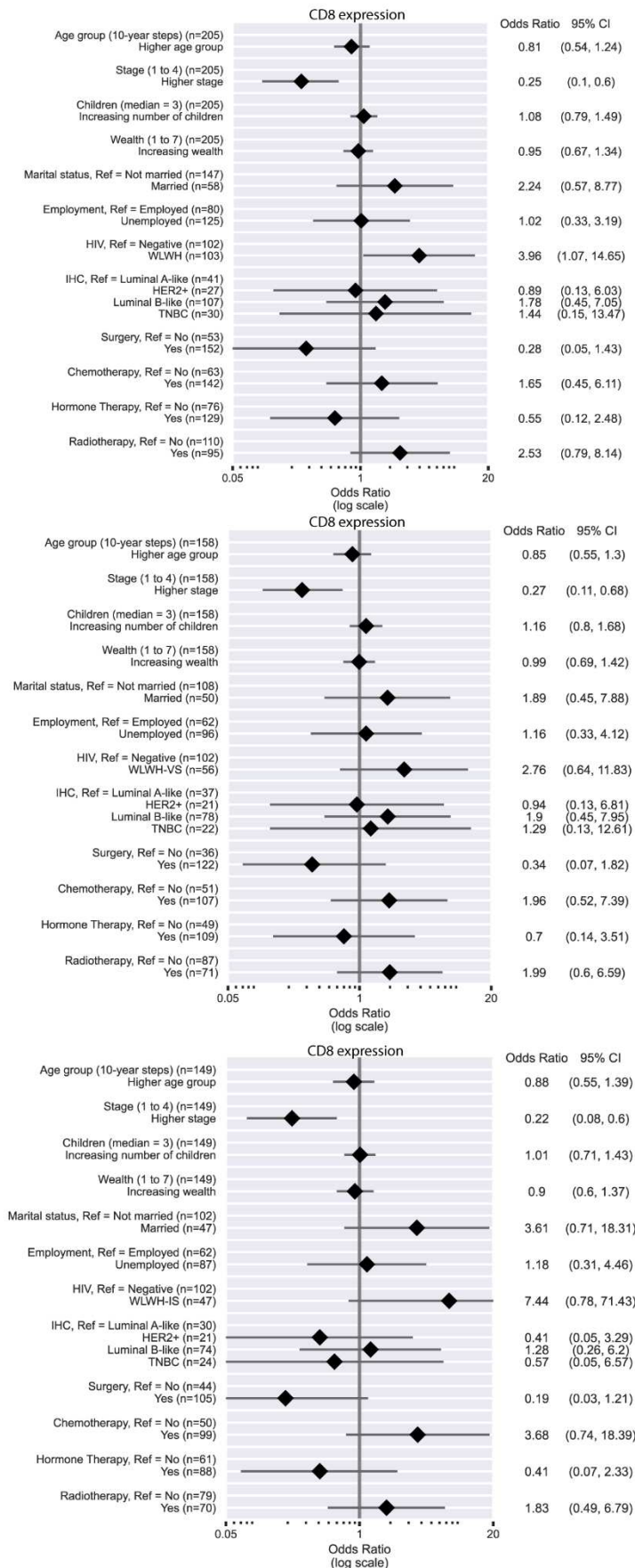
### **HIV status alters immune cell infiltration and activation profile in women with breast cancer**

Marcus Bauer<sup>1,2\*</sup>, Pablo Santos<sup>2</sup>, Andreas Wilfer<sup>1,3</sup>, Eunice van den Berg<sup>4</sup>, Annelie Zietsman<sup>5</sup>, Martina Vetter<sup>6</sup>, Sandy Kaufhold<sup>6</sup>, Claudia Wickenhauser<sup>1</sup>, Isabel dos-Santos-Silva<sup>7</sup>, Wenlong Carl Chen<sup>8,9,10</sup>, Herbert Cubasch<sup>11</sup>, Nivashini Murugan<sup>11</sup>, Valerie McCormack<sup>12</sup>, Maureen Joffe<sup>8,13</sup>, Barbara Seliger<sup>14,15,16\*</sup>, Eva Kantelhardt<sup>2,6</sup>

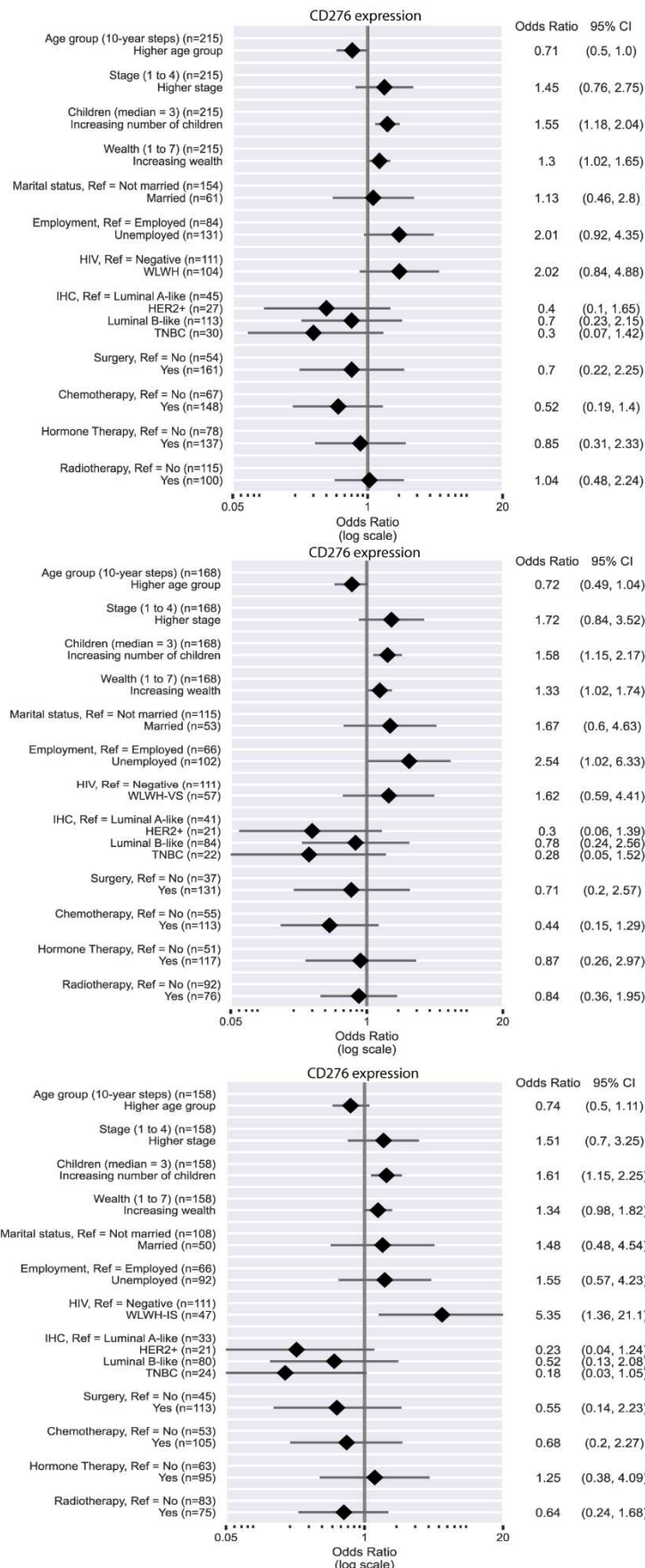
\*First author and corresponding author



**Supplementary Figure 1: HIV and CD4 mRNA expression.** Association between HIV status and CD4 RNA expression in WLWH - VS and WLWH - IS versus HIV negative BC patients in a multivariate analysis, depicted as a forest plot.

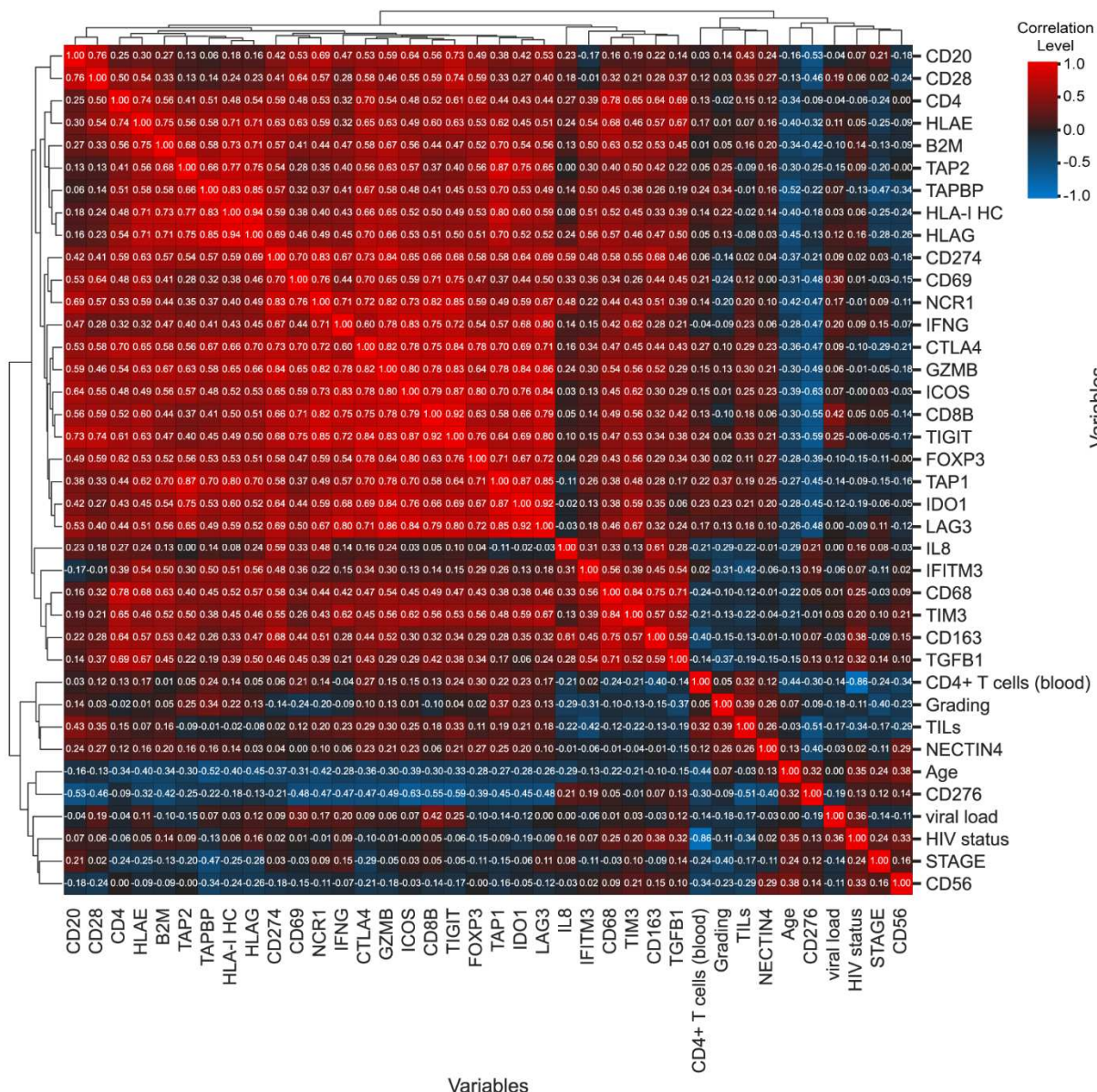


**Supplementary Figure 2: HIV and CD8 mRNA expression.** Association between HIV status and CD8 RNA expression in WLWH - VS and WLWH - IS versus HIV negative BC patients in a multivariate analysis, depicted as a forest plot.

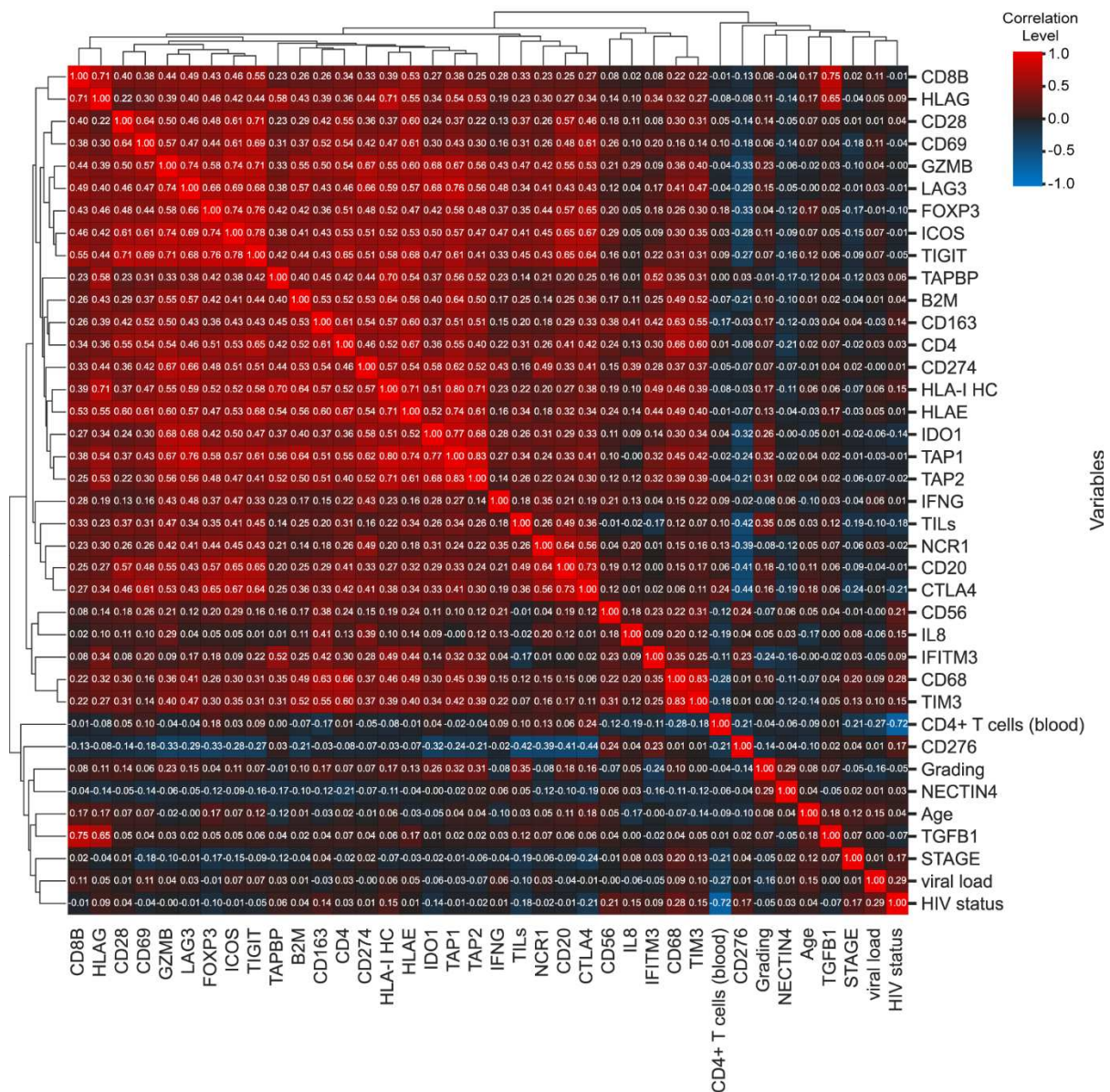


**Supplementary Figure 3: HIV and CD276 mRNA expression.** Association between HIV status and CD276 RNA expression in WLWH - VS and WLWH - IS versus HIV negative BC patients in a multivariate analysis, depicted as a forest plot.



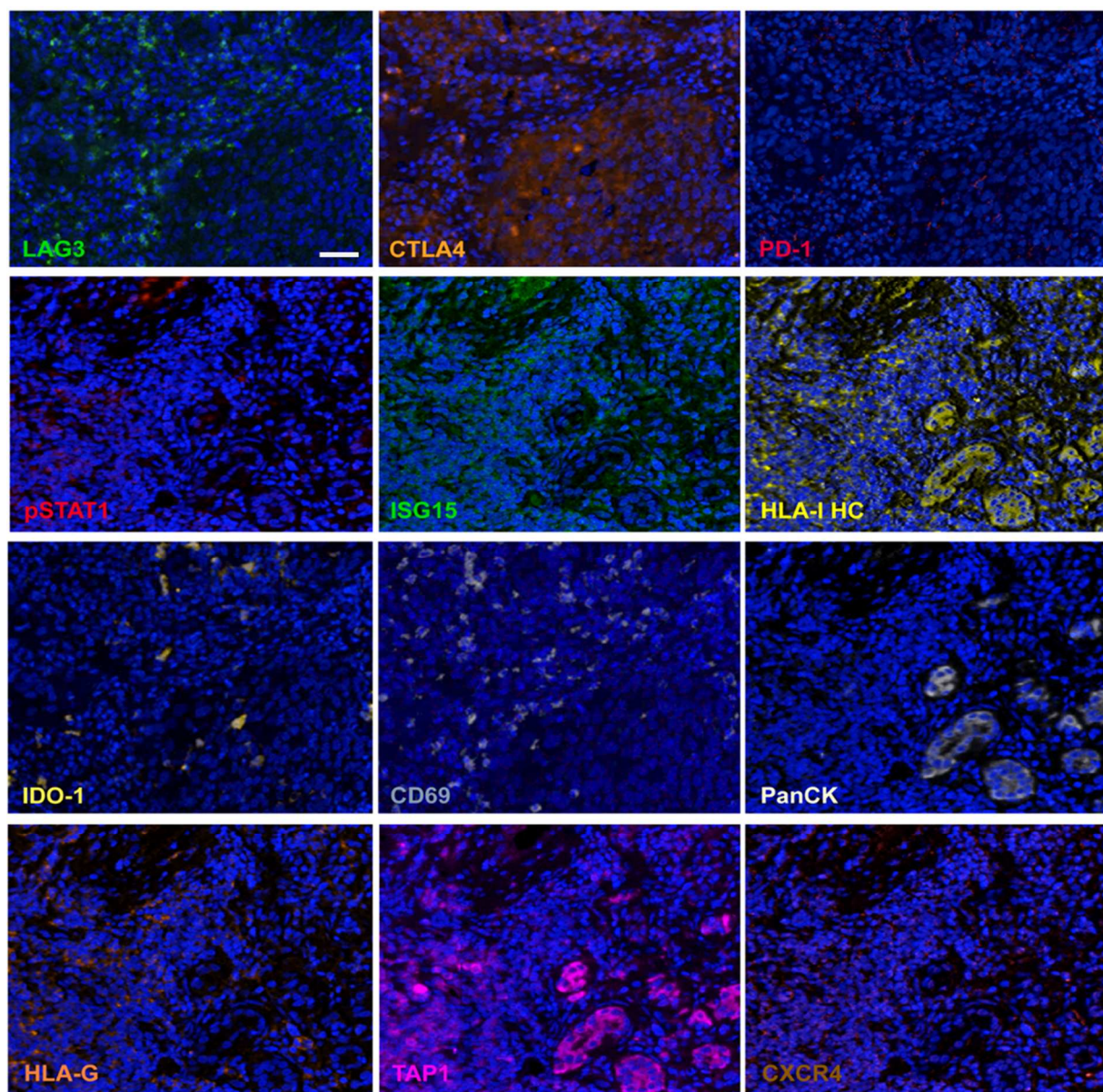


**Supplementary Figure 4: Correlation of factors in the TME including all BC samples.** Correlation map of selected immune genes in all patients, irrespective of the HIV status. The correlation values are shown in different colors with red tiles denote a positive correlation, while blue tiles correspond to a negative correlation.

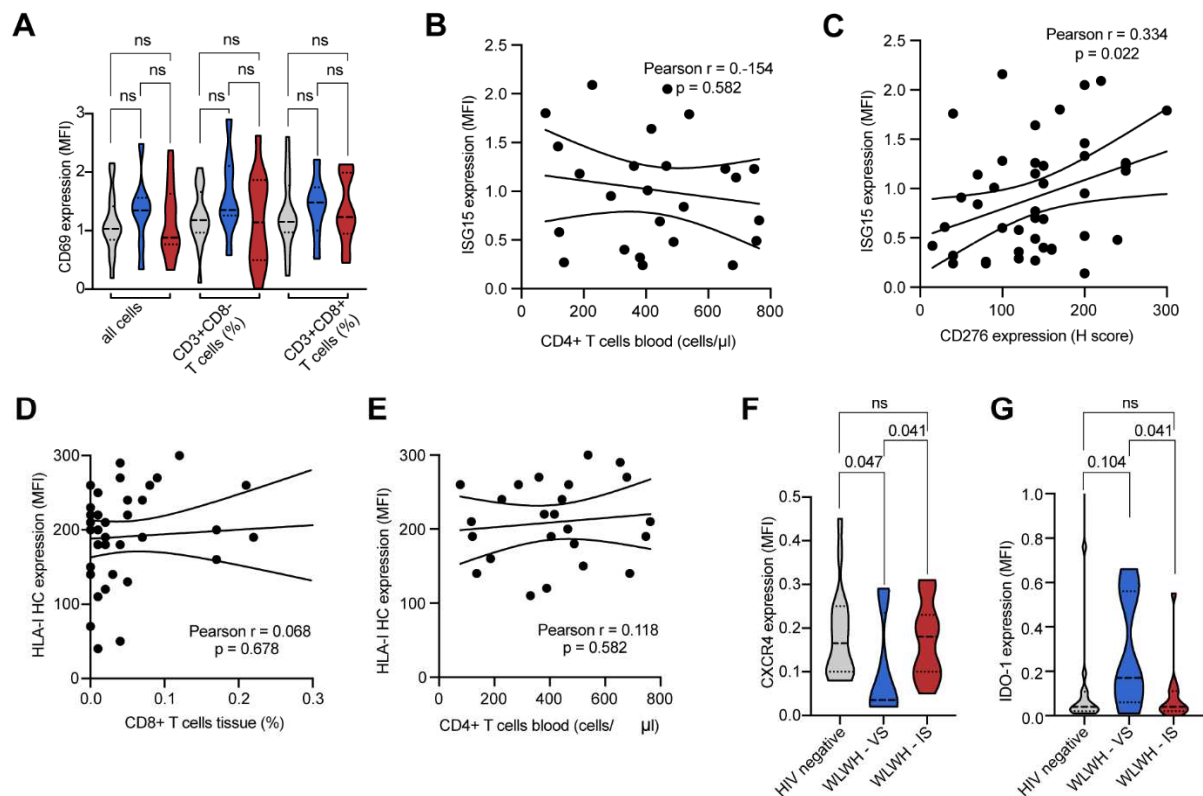


**Supplementary Figure 5: Correlation of factors in the TME of WLWH.** Correlation map of selected immune genes in WLWH. The correlation values are shown in different colors with red tiles denote a positive correlation, while blue tiles correspond to a negative correlation.



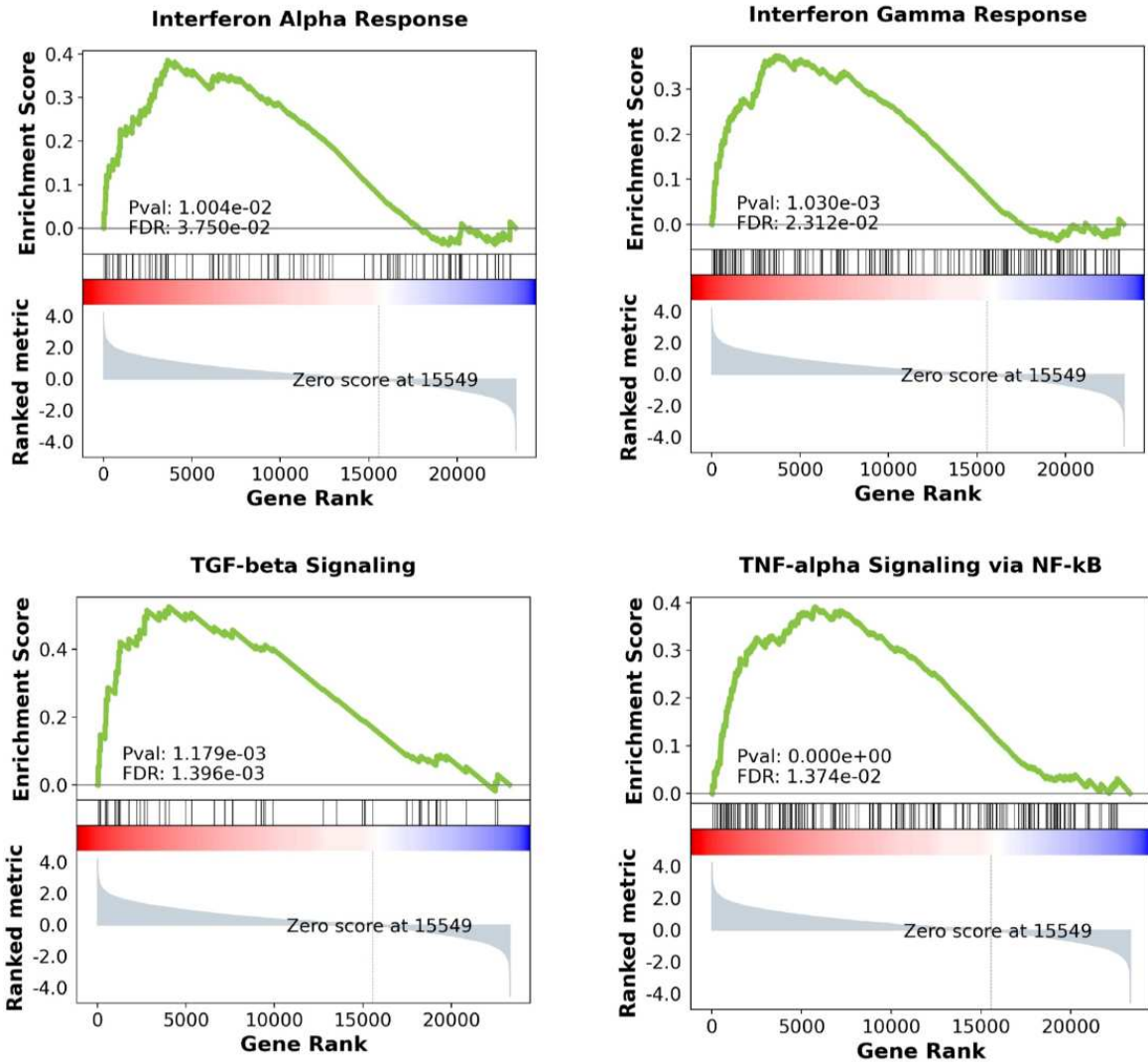


**Supplementary Figure 6: Multispectral imaging panel.** Representative pictures of staining for LAG3 (green), CTLA4 (orange), PD-1 (red), IDO-1 (yellow), CD69 (white), components of the IFN- $\gamma$  signaling pathway including pStat1 (red), ISG15 (green) as well as for HLA-I HC (yellow), HLA-G (orange), TAP1 (magenta), CXCR4 (brown) and panCK<sup>+</sup> cancer cells (grey). The scale bar depicts 50  $\mu$ m.



**Supplementary Figure 7: Expression of immune-response relevant molecules in the BC TME.** (A) The expression of CD69 on different cell populations in WLWH and HIV negative BC patients. The mean is given as a dashed line and the standard deviation is given as a dot line. Categories were compared using the Mann–Whitney U test. (B–C) Scatter plot depiction of ISG15 expression with CD4<sup>+</sup> T cells in the peripheral blood and CD276 expression in the BC tissue. The graph is overlaid with the corresponding linear regression model and associated p-values (two-sided) are given. (D–E) Scatter plot depiction of the interrelationship of HLA-I HC expression and CD3<sup>+</sup>CD8<sup>+</sup> T cells or CD4<sup>+</sup> T cells in the peripheral blood. The graph is overlaid with the corresponding linear regression model and associated p-values (two-sided) are given. (F–G) Distribution of CXCR4 and IDO-1 expression in tumor specimens of WLWH and HIV negative BC patients. The mean is given as a dashed line and the standard deviation is given as a dot line. Categories were compared using the Mann–Whitney U test and p-values are given as numbers if  $p < 0.05$ .





**Supplementary Figure 8: GSEA of the gene expression in the BC TME of WLWH versus HIV negative BC patients.** GSEA plots of immune pathways (MSigDB\_Hallmark\_2020) using GSE149156 including specimens from WLWH versus HIV negative BC patients. Abbreviations: GSEA, gene set enrichment analysis.

**Supplementary Table 1: Genes and NCBI accession codes used for the RNA expression analysis**

| Gene name | Reference sequence  | Oligonucleotide sequence                                                                               |
|-----------|---------------------|--------------------------------------------------------------------------------------------------------|
| B2M       | NM_004048.2:235     | TACTGAAGAATGGAGAGAGAATTGAAAAAGTGGAGCATTGAGACTTGTCTTTCAGCAAGGACTGGTCTTTCTATCTCTTGACTACACTGAATTCACCCC    |
| BDCA-2    | NM_001371390        | GCCTCGCTGCTTTCTTTTCTCCAAGACGGGCTGAGGATTGTACAGCTCTAGGCGGAGTTGGGGCTCTTCGGATCGCTTAGAATTCCTCTTTGCTGCATT    |
| CCR2      | NM_001123041.2:743  | TCTGATCTGCTTTTTCTTATTACTCTCCCAATTGTGGGCTCACTCTGCTGCAATGAGTGGGTCTTTGGGAATGCAATGTGCAAATTATTCACAGGGCTGT   |
| CD11c     | NM_000887.4         | TGAGGGTACGGAGACCACAAGCAGTAGCTCCTTCGAATTGGAGATGGCACAGGAGGGCTTCAGCGCTGTGTTACACCTGATGGCCCCGTTCTGGGGGCT    |
| CD163     | NM_004244.4:1630    | CATCTGTGATTTCGGACTTCTCTCTGGAAGCTGCCACGGTCTATGCAGGGAATTACAGTGTGGCACAGTTGTCTCTATCCTGGGGGGAGCTCACTTTGGA   |
| CD19      | XM_011545981.1:713  | CACCCCAAGGGGCTAAGTCATTGCTGAGCCTAGAGCTGAAGGACGATCGCCCGGCCAGAGATATGGGGTAATGGAGACGGGCTGTGTTGTTGCCCGGG     |
| CD2       | NM_001767.2:1400    | TGGGTCTCACTACAAGCAGCCTATCTGCTTAAGAGACTCTGGAGTTTCTTATGTGCCCTGGTGGACACTTGCCACCATCCTGTGAGTAAAGTGAAATA     |
| CD20      | NM_152866.2         | CTTCTGATGATCCCAGCAGGATCTATGCACCCATCTGTGTGACTGTGTGGTACCCTCTCTGGGGAGGCATTATGTATATTATTCGGATCACTCCTGG      |
| CD21      | NM_001006658.1      | GGTGTCAAGCAAATAATATGTGGGGGCCGACACGACTACCAACCTGTGTAAGTGTTCCTCTCGAGTGTCCAGCACTTCTATGATCCACAATGGACA       |
| CD274     | NM_014143.3:49      | AGCTTCCCGAGGCTCCGCACCAGCCGCGCTTCTGTCCGCTCGAGGGCATTCCAGAAAGATGAGGATATTGTGTCTTTATATTATCATGACCTACTGGCA    |
| CD276     | NM_001024736.1:2120 | ACATTTCTTAGGGACACAGTACACTGACCACATCACCACCTCTTCTTCCAGTGTGCGTGGACCATCTGGCTGCCCTTTTTCTCCAAAAGATGCAATAT     |
| CD28      | NM_001243078.1:2065 | GCTGCTCTGTACCTTGGAGGTCCATTACATGGGAAAGTATTTTGAATGTGTCTTTGAAGAGAGCATCAGAGTTCTTAAGGGACTGGGTAAAGCCTG       |
| CD4       | NM_000616.4:975     | TGGCAGGCGGAGAGGGCTTCTCTCCAAGTCTTGATCACCTTTGACCTGAAGAACAAGGAAGTGTCTGTAAAACGGGTTACCCAGGACCCTAAGCTCC      |
| CD56      | NM_000615.5         | GGTATTTGCCTATCCAGTGCCACGATCTCATGTTTCGGGATGCCAGCTGCTGCCAAGCTCCAATTACAGCAATATCAAGATCTACAACACCCCTCT       |
| CD68      | NM_001251.2:1140    | ACCGGTCCATCTTGCTGCCTCTCATCATCGGCTGATCCTTCTTGGCCTCTCGCCCTGGTGCTTATTGCTTTCTGCATCATCCGAGAGCCCCATCCGC      |
| CD69      | NM_001781.1:460     | AGGACATGAACTTTCTAAAACGATACGCAGGTAGAGAGGAACACTGGGTTGGACTGAAAAGGAACCTGGTCACCCATGGAAGTGGTCAAATGGCAAAGA    |
| CD8B      | NM_172099.2         | TCAGCTGAGTGTGGTTGATTTCCTTCCCACCACTGCCAGCCACCAAGAAGTCCACCCTCAAGAAAGAGAGTGTGCCGTTACCCAGGCCAGAGACCCAG     |
| CTLA4     | NM_005214.3:405     | AGTCTGTGCGGCAACCTACATGATGGGAATGAGTTGACCTTCTAGATGATTCCATCTGCACGGGCACCTCCAGTGGAATCAAGTGAACCTCACTATC      |
| CXCR6     | NM_006564.1:95      | TTACCATGAAGACTATGGGTTTCAGCAGTTTCAATGACAGCAGCCAGGAGGAGCATCAAGACTTCTGCAAGTTCAGCAAGGTCTTTCTGCCCTGCATGTAC  |
| FLT3LG    | NM_001459.3:350     | CCTCCCCAGAATGGAGGCAACGCCAGAATCCAGCACCGGCCCATTTACCAACTCTGTACAAAGCCCTTGTCCCCATGAAATGTATATAAATCATCCT      |
| FOXP3     | NM_014009.3:1230    | GGGCCATCTGGAGGCTCCAGAGAAGCAGCGGACACTCAATGAGATCTACCACTGGTTCACACGATGTTTGCCTTCTTCAGAAACCATCTGCCACCTG      |
| FURIN     | NM_002569.2:3700    | GGGTCCCACTGGGAGGGGAGGCTGACATCTGTGTTTCAAGTGGGGCTGCCATGCCGGGGTTCATAGGTCACCTGGCTCTCCAAGTGCCAGAGGTGGGC     |
| GZMB      | NM_004131.3:540     | ACACTACAAGAGGTGAAGATGACAGTGCAGGAAGATCGAAAGTGCGAATCTGACTTACGCCATTATACGACAGTACCATTAGTTGTGCGTGGGGGACC     |
| HLA-I     | NM_002116.5:1000    | GGAAGAGCTCAGATAGAAAAGGAGGGAGTTACACTCAGGCTGCAAGCAGTGACAGTGCCAGGGCTCTGATGTGCCCTCACAGCTTGTAAGTGTGAGA      |
| HLA-E     | NM_005516.4:1204    | TGCTTAGGGGACTCTGGCTTCTCTTTTGCAAGGGCCTCTGAATCTGTCTGTGTCCCTGTAGCACAAATGTGAGGAGGTAGAGAAACAGTCCACCTCTG     |
| HLA-G     | NM_002127.5:289     | CGGCCCGCCGCGGGGAGCCCGCTTCATCGCCATGGGCTACGTGGACGACACGCAGTTCTGTGCGGTTTCGACAGCGACTCGGCGTGTCCGAGGATGGAGC   |
| ICOS      | NM_012092.2:640     | AACTCTGGCACCCAGGCATGAAGCAGTTGGCCAGTTTTCCTCAACTTGAAGTGAAGATTCTCTTATTTCCGGGACCACGGAGAGTCTGACTTAACTAC     |
| IDO1      | NM_002164.5:369     | CTATTATAAGATGCTCTGAAAACCTCTTCAGACACTGAGGGGCACCAGAGGAGCAGACTACAAGAATGGCACACGCTATGGAAAACCTCCTGGACAATCAGT |
| IFITM3    | NM_021034.2:477     | TGCTGATCTTCCAGGCCATGATGATAGATCAGGAGGCATCACTGAGGCCAGGAGCTGTGCCCATGACCTGTATCCCACGTACTCCAACCTTCCATTCTCGC  |
| IFNG      | NM_000619.2:970     | ATACATCCAGTTACTGCCGGTTTGAAATATGCCTGCAATCTGAGCCAGTGCTTTAATGGCATGTACAGACAGAACTTGAATGTGTGAGGTGACCCGTAT    |
| IL8       | NM_000584.2         | ACAGCAGAGCACACAAGCTTCTAGGACAAGAGCCAGGAAGAAACCACCGGAAGGAACCATCTCACTGTGTGTAACATGACTTCCAAGCTGGCCGTGGCT    |
| LAG3      | NM_002286.5:1735    | CTTTTGGTGACTGGAGCCTTTGGCTTTCACCTTTGGAGAAGACAGTGCCGACCAAGACGATTTTCTGCCTTAGAGCAAGGGATTACCCCTCCGACAGGCTC  |
| NCR1      | NM_004829.5:602     | CGATGTTTGGCTCCTATAACAACCATGCCTGGTCTTTCCCCAGTGAGCCAGTGAAGCTCCTGGTGCACAGGCACATTGAGAACCACAGCCTTGACCTG     |
| NECTIN4   | NM_030916.2:856     | GGTCAAAGGCACAACGTCCAGCCGTTCTTCAAGCACTCCCGCTCTGCTGCCGTACCTCAGAGTTCCACTTGGTGCTAGCCGCAGCATGAATGGGCAG      |
| PRF1      | NM_005041.3:2120    | ACTGTTTTTCAGGGAGGTGGCTGGGTTTACACGCTAATCCGATTACCCCTGTCCAACTGCCTAAGCCCTCCGCCATTCTCAAGCCCTGCAGTCACAGC     |
| TAP1      | NM_000593.5:2075    | GTGGCTGCAGTGGGACAAGAGCCACAGTATTTGGAAGAAGTCTTCAAGAAAATATTGCCTATGGCTGACCCAGAAGCCAATATGGAGGAATCACAG       |
| TAP2      | NM_000544.3:909     | GGCTTCTTTAAATGCCAATGTCTCTTGCGAAGCCTGGTGAAAGTGGTGGGGCTGTATGGCTTCATGCTCAGCATATCGCCTCGACTCACCTCCTTTC      |
| TAPBP     | NM_003190.4:1082    | CATGGGGCCCATGGACCGGAATGGGACCTTCTGGCTGCCTACAGTTCAACCCCTTCAGGAGGGCACCTATCTGGCCACCATACACCTGCCATACCTGCA    |
| TGFB1     | NM_000660.3:1260    | TATATGTTCTTCAACACATCAGAGCTCCGAGAAGCGGTACCTGAACCCGTGTGTCTCTCCGGGCAGAGCTGCGTCTGCTGAGGCTCAAGTTAAAGTGG     |
| TIGIT     | NM_173799.2:1968    | TGGATCTTAGAAGACTTTATCCTTCCACCATCTCTCTCAGAGGAATGAGCGGGGAGGTTGGATTACTGGTGACTGATTTCTTTCTATGGGCCAAGGAA     |
| TIM3      | NM_032782.3         | TATATGAAGTGGAGGAGCCCAATGAGTATTATTGCTATGTCAGCAGCAGGCAGCAACCCCTCACACCTTTGGGTTGTCGCTTTGCAATGCCATAGATCCA   |

**Supplementary Table 2: 474 immune-related genes for volcano plot depiction**

| gene names |        |         |          |         |        |        |          |         |          |
|------------|--------|---------|----------|---------|--------|--------|----------|---------|----------|
| ABCA1      | CD14   | DCBLD2  | HLA-DOA  | IGSF11  | IRF9   | MET    | NRF1     | PSMD8   | SERPINB1 |
| ABI1       | CD163  | DDX60   | HLA-DPA1 | IKZF1   | IRGM   | MIP1   | NRK      | PSMD9   | SERPINB2 |
| ACVR1      | CD20   | DHX58   | HLA-DPB1 | IL10    | ISG15  | MIP2   | NSMCE2   | PSPH    | SERPINB3 |
| ACVR1B     | CD274  | DOCK1   | HLA-DQA1 | IL10RA  | ISG20  | MIP3   | OAS1     | PTEN    | SERPINB4 |
| ACVR2A     | CD276  | DOCK2   | HLA-DQB1 | IL12A   | ITGA1  | MIP4   | OAS2     | PTPN1   | SERPINB6 |
| ADAM1      | CD28   | DPP10   | HLA-DRA  | IL12B   | ITGA2  | MIP5   | OAS3     | PTPN11  | SERPINB8 |
| ADGRE1     | CD3E   | DPP7    | HLA-DRB1 | IL13RA1 | ITGA3  | MIP6   | OASL     | PTPN2   | SERPINC1 |
| ADM        | CD4    | EBI3    | HLA-DRB5 | IL15    | ITGA4  | MMP1   | OX40     | PTPN22  | SERPINE1 |
| ADORA2B    | CD40   | EFEMP1  | HLA-E    | IL15RA  | ITGA5  | MMP2   | OX40L    | PTPN6   | SIGLEC1  |
| ADRM1      | CD48   | EIF2AK2 | HLA-F    | IL17A   | ITGAV  | MMP3   | P2RY2    | RAB5A   | SIGLEC15 |
| AHR        | CD5    | EIF4E3  | HLA-G    | IL17F   | ITGB1  | MMP7   | P2RX4    | RAB9    | SIGLEC3  |
| AIRE       | CD55   | ENG     | HLA-H    | IL17RA  | ITGB2  | MMP8   | P2RX7    | RAF1    | SIGLEC6  |
| ALCAM      | CD56   | ENO1    | HLA-I HC | IL18    | ITGB3  | MMP9   | P2RY14   | RAP1A   | SIGLEC9  |
| ALOX5AP    | CD69   | ENOX1   | HLA-HB   | IL18BP  | ITGB4  | MS4A1  | PARP1    | RAP1B   | SIGLECP1 |
| AP2S1      | CD70   | EP300   | HLA-KA   | IL18R1  | ITGB5  | MS4A2  | PARP12   | RARA    | SIPA1    |
| APC        | CD74   | EPSTI1  | HLA-LA   | IL18RAP | ITGB6  | MS4A3  | PARP14   | RARB    | SLAMF1   |
| APOL6      | CD82   | EREG    | HLA-PLA  | IL1A    | ITGB7  | MS4A4A | PARP3    | RARG    | SLAMF7   |
| APLNR      | CD86   | ERI2    | HLCS     | IL1B    | ITGB8  | MS4A4E | PARP9    | RB1     | SLC11A1  |
| ARID4B     | CDKN1A | FAF1    | HLTF     | IL1F10  | ITGBL1 | MS4A6A | PAXIP1   | RELA    | SLC11A2  |
| ARID5B     | CDKN1C | FAS     | HMBOX1   | IL1R1   | JAK1   | MSR1   | PDCD1    | RELB    | SLC2A1   |
| ARL4A      | CDKN2  | FASLG   | HMMR     | IL20RB  | JAK2   | MVP    | PDCD1LG2 | RFXAP   | SLC30A1  |
| ASNS       | CDKN2A | FES     | HPGD     | IL21    | JAK3   | NAMPT  | PDGFRB   | RFXANK  | SLC38A1  |
| ATP2A2     | CDK9   | FGFR2   | HSD17B2  | IL21R   | KIF1B  | NCOA3  | PDE4B    | RFXNP   | SLC39A1  |
| ATP2B1     | CDMP2  | FKBP1A  | ICAM1    | IL22RA1 | KLF6   | NCOR2  | PIAS1    | RIPK1   | SLC39A3  |
| ATP2C1     | CDR3B  | FLT3    | ICOS     | IL22RA2 | KLRK1  | NCR1   | PIAS3    | RIPK2   | SLC39A4  |
| AUTS2      | CDX2   | FOXP3   | ICOSLG   | IL23A   | LAMP1  | NDP    | PIAS4    | RORA    | SLC4A1   |
| AXIN1      | CLEC5A | FPR1    | ID1      | IL23R   | LAMP3  | NFKB1  | PIK3CA   | RORC    | SLC4A2   |
| AXL        | CFH    | FYN     | ID2      | IL24    | LCK    | NFKB2  | PIK3CB   | RRAGD   | SLC4A3   |
| B2M        | CIITA  | GABBR1  | ID3      | IL2RB   | LIF    | NFKBIA | PIK3CD   | RRNAD1  | SLC4A4   |
| BANK1      | CLIC1  | GCH1    | IDO1     | IL2RG   | LILRB1 | NFKBIE | PIK3R1   | S100A1  | SLC6A1   |
| BATF2      | CMPK2  | GHR     | IFI16    | IL4     | LILRB2 | NFKBIZ | PIK3R2   | S100A10 | SLC7A1   |
| BEST1      | CMKLR1 | GLB1    | IFI35    | IL4R    | LILRB3 | NLRP3  | PIK3R3   | S100A11 | SLC7A11  |
| BMP2       | COL6A1 | GNLY    | IFI44    | IL6     | LILRB4 | NMI    | PIM1     | S100A12 | SLC7A2   |
| BMP6       | COL6A2 | GPR18   | IFI44L   | IL6R    | LILRB5 | NOD1   | PLA2G4A  | S100A13 |          |
| BPGM       | COL6A3 | GPR132  | IFIH1    | IL7     | LILRB6 | NOD2   | PLAUR    | S100A2  |          |
| BST2       | CX3CL1 | GPR183  | IFIT1    | IL7R    | LILRA1 | NOX1   | PML      | S100A3  |          |
| BTG1       | CXCL10 | GPRC5A  | IFIT2    | IL8     | LILRA2 | NOX2   | POMC     | S100A4  |          |
| BTG2       | CXCL11 | GSTT1   | IFIT3    | IL9     | LILRA3 | NOX3   | PPARA    | S100A6  |          |
| CACNA1S    | CXCL1  | GZMA    | IFITM1   | IL9R    | LILRA4 | NOX4   | PPARG    | S100A7  |          |
| CCL1       | CXCL2  | GZMB    | IFITM2   | INDO    | LILRA5 | NOX5   | PRKAA1   | S100A8  |          |
| CCL17      | CXCL3  | HBEGF   | IFITM3   | INHBA   | LILRA6 | NR1H2  | PRKAB1   | S100A9  |          |
| CCL2       | CXCL5  | HDAC1   | IFNA1    | IRF1    | LILRC1 | NR1H3  | PRKAB2   | SAA1    |          |
| CCL20      | CXCL6  | HIF1A   | IFNA2    | IRF2    | LILRC2 | NR2C2  | PRKCA    | SAA2    |          |
| CCL22      | CXCL8  | HIPK2   | IFNB1    | IRF3    | LRP1   | NR3C1  | PRKCQ    | SAA4    |          |
| CCL24      | CXCR3  | HLA-A   | IFNGR1   | IRF4    | LTA    | NR4A1  | PRKCH    | SAMHD1  |          |
| CCL4L1     | CXCR6  | HLA-B   | IFNGR2   | IRF5    | LYN    | NR4A2  | PRKCZ    | SELENOS |          |
| CCL5       | CXCR7  | HLA-C   | IFNL1    | IRF6    | MARCO  | NR4A3  | PROKR2   | SELE    |          |
| CCR7       | CYBB   | HLA-DMA | IFNL2    | IRF7    | MDM2   | NRAS   | PSMD5    | SELL    |          |
| CCR8       | CXXC1  | HLA-DMB | IFNL3    | IRF8    | MDM4   | NRBF2  | PSMD6    | SELP    |          |



**Supplementary Table 3: Overview of antibodies applied**

| Antibody       | Clone              | Supplier                   | Catalogue number | Dilution and antigen retrieval | Previous validation    |
|----------------|--------------------|----------------------------|------------------|--------------------------------|------------------------|
| CD3            | SP7                | Labvision, Germany         | RM-9107-S        | 1:100, pH6                     | Validated for IHC, RUO |
| CD8            | SP16               | Abcam, UK                  | ab101500         | 1:100, pH6                     | Validated for IHC, RUO |
| CD69           | EPR21814           | Abcam, UK                  | ab233396         | 1:100, pH6                     | Validated for IHC, RUO |
| CD276          | SP206              | Abcam, UK                  | ab227670         | 1:100, pH6                     | Validated for IHC, RUO |
| CTLA4          | Tinto CTLA-4/CD152 | Medac, Germany             | BSB 3484         | RTU, pH9                       | Validated for IHC, IVD |
| CXCR4          | UMB2               | Abcam, UK                  | ab124824         | 1:300, pH9                     | Validated for IHC, RUO |
| ER             | 1D5                | Thermo Scientific, MA, USA | MA5-13191        | 1:250, pH6                     | Validated for IHC, RUO |
| FoxP3          | 236A/E7            | Abcam, UK                  | ab20034          | 1:100, pH9                     | Validated for IHC, RUO |
| Her2           | DG44               | DAKO, CA, USA              | SK001            | RTU, pH6                       | Validated for IHC, IVD |
| HLA-G          | 4H84               | Abcam, UK                  | ab52455          | 1:200, pH6                     | Validated for IHC, RUO |
| IDO-1          | V1NC3IDO           | Thermo Scientific, MA, USA | 14-9750-82       | 1:400, pH6                     | Validated for IHC, RUO |
| ISG-15         | ab131119           | Abcam, UK                  | ab131119         | 1:500, pH6                     | Validated for IHC, RUO |
| LAG3           | 12H6               | Leica biosystems, Germany  | PA0300-U         | RTU, pH9                       | Validated for IHC, IVD |
| MHC class I HC | HC10               | Thermo Scientific, MA, USA | MUB2037P         | 1:200, pH6                     | Validated for IHC, RUO |
| Ki67           | SP6                | Thermo Scientific, MA, USA | MA5-14520        | 1:100, pH6                     | Validated for IHC, IVD |
| Pan-CK         | AE1/AE3 & 5D3      | Zytomed, Germany           | MSK098-05        | 1:200, pH9                     | Validated for IHC, RUO |
| PD-1           | NAT105             | Zytomed, Germany           | NAT105           | 1:200, pH6                     | Validated for IHC, RUO |
| p-STAT1        | Tyr701             | Cell signaling, UK         | # 9167           | 1:50, pH6                      | Validated for IHC, RUO |
| PR             | PgR 636            | DAKO, CA, USA              | IR068            | 1:100, pH6                     | Validated for IHC, IVD |
| TAP1           | EPR26236-92        | Abcam, UK                  | ab322039         | 1:5000, pH9                    | Validated for IHC, RUO |