Supplementary Table S1. Clinical information of the GBM patients and raw data from major assays

| Pt | Sex | Age | IDH1 mutation | MGMT promotor methylation | EGFR amplification | Pre-operative steroid treatmentC | HLA-A2 | HLA-A2 NY-ESO-1 dextramerA | T cell proliferation assay  (stimulation index) | | | SubgroupB |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| anti-PD-1 | anti-CTLA-4 | anti-PD-1 + anti-CTLA-4 |
| 1 | F | 69 | No | Yes | No | Yes | + | D |  |  |  |  |
| 2 | F | 50 | No | No | No | No | - |  |  |  |  |  |
| 3 | M | 34 | No | No | No | Yes | + |  |  |  |  |  |
| 4 | M | 60 | No | No | No | No | + |  | 1.074 |  |  | Low |
| 5 | M | 61 | No | No | No | Yes | - |  | 0.939 |  | 1.120 | Low |
| 6 | F | 75 | No | No | No | Yes | - |  |  |  |  |  |
| 7 | M | 70 | No | No | Yes | Yes | + | UD | 1.274 |  | 1.622 | High |
| 8 | M | 77 | No | Yes | No | Yes | + |  | 1.814 |  |  | High |
| 9 | M | 49 | No | No | No | Yes | + | UD | 1.108 | 1.064 | 1.196 | Low |
| 10 | M | 68 | No | Yes | No | Yes | - |  |  |  |  |  |
| 11 | M | 67 | No | No | No | No | + |  |  |  |  |  |
| 12 | M | 49 | No | No | No | Yes | - |  | 0.975 | 0.796 | 1.013 | Low |
| 13 | M | 46 | No | No | No | No | + |  |  |  |  |  |
| 14 | M | 41 | Yes | Yes | No | Yes | - |  |  |  |  |  |
| 15 | M | 58 | No | No | Yes | No | + |  |  |  |  |  |
| 16 | F | 57 | No | Yes | No | Yes | - |  |  |  |  |  |
| 17 | M | 70 | No | No | No | Yes | + |  | 0.975 |  | 0.984 | Low |
| 18 | F | 77 | No | Yes | No | Yes | + |  | 1.804 | 1.806 | 2.043 | High |
| 19 | M | 62 | No | Yes | No | Yes | + |  | 0.865 |  |  | Low |
| 20 | M | 64 | No | Yes | No | Yes | - |  |  |  |  |  |
| 21 | F | 55 | No | Yes | No | Yes | + | UD | 1.266 |  |  | High |
| 22 | F | 68 | No | No | No | Yes | - |  |  |  |  |  |
| 23 | M | 47 | No | Yes | No | Yes | + | D | 1.802 |  | 2.730 | High |
| 24 | M | 48 | No | No | No | Yes | - |  | 1.066 |  |  | Low |
| 25 | M | 43 | No | No | No | No | - |  |  |  |  |  |
| 26 | M | 73 | No | No | No | Yes | - |  | 1.070 |  |  | Low |
| 27 | M | 58 | No | No | No | No | - |  | 1.045 | 1.089 | 1.119 | Low |
| 28 | M | 59 | No | Yes | No | No | + | D | 1.148 |  |  | Low |
| 29 | M | 62 | No | No | No | No | + | UD | 1.033 |  | 0.940 | Low |
| 30 | M | 65 | No | No | No | Yes | - |  | 1.019 |  |  | Low |
| 31 | M | 26 | No | No | No | Yes | - |  |  |  |  |  |
| 32 | M | 48 | No | No | No | Yes | + | D | 1.254 |  | 1.663 | High |
| 33 | M | 68 | No | Yes | Yes | Yes | + | D | 1.513 | 1.119 | 1.481 | High |
| 34 | M | 69 | No | Yes | Yes | Yes | - |  |  |  |  |  |
| 35 | M | 60 | No | Yes | No | Yes | + | UD | 1.474 |  | 2.096 | High |
| 36 | M | 48 | No | No | No | Yes | + | UD | 1.090 |  | 1.075 | Low |
| 37 | M | 56 | No | No | No | Yes | + |  | 1.367 |  |  | High |
| 38 | F | 55 | No | No | No | No | - |  | 1.082 |  |  | Low |
| 39 | F | 54 | No | Yes | No | Yes | - |  |  |  |  |  |
| 40 | M | 63 | No | No | Yes | Yes | - |  | 1.397 |  |  | High |
| 41 | M | 70 | No | No | Yes | Yes | - |  | 1.478 |  |  | High |
| 42 | M | 62 | No | Yes | No | Yes | - |  | 0.713 | 1.823 | 1.951 | Low |
| 43 | M | 62 | No | No | No | No | + | D | 0.954 |  |  | Low |
| 44 | F | 42 | No | No | Yes | Yes | + | D | 0.961 | 0.835 | 0.952 | Low |
| 45 | M | 73 | No | No | Yes | Yes | - |  | 1.535 |  |  | High |
| 46 | M | 48 | No | No | No | No | + |  |  |  |  |  |
| 47 | M | 77 | No | No | Yes | No | - |  | 0.964 | 0.700 | 0.792 | Low |
| 48 | M | 68 | No | No | Yes | No | - |  | 1.679 |  |  | High |
| 49 | M | 74 | No | No | Yes | Yes | + | UD | 0.873 |  | 0.975 | Low |
| 50 | M | 72 | No | No | No | Yes | + | UD | 1.633 |  |  | High |
| 51 | M | 67 | No | Yes | No | Yes | + | UD |  |  |  |  |
| 52 | F | 74 | No | No | No | Yes | + | D | 1.024 |  | 1.017 | Low |
| 53 | F | 61 | No | No | No | Yes | - |  | 1.245 |  | 1.396 | High |
| 54 | M | 56 | No | Yes | No | Yes | + |  | 1.266 | 1.086 | 1.359 | High |
| 55 | F | 71 | No | No | No | Yes | + |  |  |  |  |  |
| 56 | M | 67 | No | No | No | Yes | + |  |  |  |  |  |
| 57 | M | 77 | No | No | Yes | No | + |  |  |  |  |  |
| 58 | M | 50 | No | No | No | Yes | + |  |  |  |  |  |
| 59 | M | 63 | No | Yes | Yes | Yes | - |  |  |  |  |  |
| 60 | F | 68 | No | No | No | Yes | - |  |  |  |  |  |
| 61 | M | 73 | No | Yes | Yes | Yes | + | UD | 1.218 |  |  | High |
| 62 | M | 25 | No | No | No | Yes | - |  | 1.147 | 1.033 | 1.292 | Low |
| 63 | F | 22 | No | No | No | Yes | - |  |  |  |  |  |
| 64 | M | 72 | No | No | Yes | No | + | D | 1.252 |  |  | High |
| 65 | F | 67 | No | No | No | Yes | + |  | 1.697 |  |  | High |
| 66 | F | 79 | Yes | Yes | No | Yes | + | D |  |  |  |  |
| 67 | M | 46 | No | No | No | Yes | + | D | 1.541 |  |  | High |
| 68 | F | 63 | No | Yes | Yes | Yes | - |  |  |  |  |  |
| 69 | M | 53 | No | Yes | No | Yes | - |  | 1.524 |  |  | High |
| 70 | F | 67 | No | Yes | No | Yes | - |  | 1.295 |  |  | High |
| 71 | M | 74 | No | Yes | No | Yes | - |  |  |  |  |  |
| 72 | M | 57 | No | No | Yes | No | + |  | 1.384 | 0.989 | 1.577 | High |
| 73 | M | 68 | No | Yes | No | Yes | + |  | 1.097 |  |  | Low |
| 74 | M | 32 | No | No | No | No | - |  | 1.468 | 1.083 | 1.348 | High |
| 75 | F | 67 | No | No | No | Yes | + |  |  |  |  |  |
| 76 | F | 54 | No | No | No | Yes | + |  | 1.190 |  |  | High |
| 77 | F | 59 | No | No | Yes | Yes | + |  | 1.187 | 1.142 | 1.235 | Low |
| 78 | F | 67 | No | Yes | Yes | No | - |  |  |  |  |  |
| 79 | M | 32 | No | Yes | No | Yes | - |  | 1.943 | 1.974 | 3.175 | High |
| 80 | M | 63 | No | Yes | Yes | No | + |  | 0.904 | 1.478 | 1.933 | Low |
| 81 | M | 67 | No | Yes | Yes | No | + |  | 0.946 | 0.834 | 1.168 | Low |
| 82 | M | 62 | No | No | Yes | Yes | - |  | 1.062 | 1.042 | 1.664 | Low |
| 83 | M | 49 | No | Yes | No | No | - |  | 1.319 | 2.169 | 2.183 | High |
| 84 | F | 60 | No | Yes | No | No | + |  | 1.353 |  |  | High |
| 85 | M | 44 | No | No | Yes | No | + |  | 1.269 |  |  | High |
| 86 | M | 75 | No | No | No | No | + |  | 0.892 | 0.929 | 1.312 | Low |
| 87 | M | 53 | No | No | No | Yes | + | UD | 0.793 | 0.825 | 1.039 | Low |
| 88 | M | 62 | No | No | No | Yes | - |  | 1.780 |  |  | High |
| 89 | M | 46 | No | No | No | Yes | - |  | 0.993 | 0.885 | 1.282 | Low |
| 90 | M | 70 | No | Yes | No | Yes | - |  | 1.880 | 1.000 | 2.307 | High |
| 91 | M | 71 | No | Yes | No | Yes | - |  | 1.033 | 1.375 | 0.735 | Low |
| 92 | F | 64 | No | Yes | No | No | - |  | 0.951 | 1.149 | 1.276 | Low |
| 93 | F | 56 | No | Yes | Yes | Yes | - |  | 0.881 | 0.954 | 0.954 | Low |
| 94 | M | 59 | No | Yes | No | No | + |  | 1.241 | 1.460 | 1.210 | High |
| 95 | F | 49 | No | No | No | No | + |  | 0.882 | 0.961 | 1.002 | Low |
| 96 | F | 61 | No | No | Yes | Yes | + |  | 1.328 | 1.145 | 1.248 | High |
| 97 | F | 62 | No | Yes | Yes | Yes | + |  |  |  |  |  |
| 98 | M | 65 | No | Yes |  | Yes | - |  | 1.448 | 1.501 | 2.151 | High |

EGFR = epidermal growth factor receptor, IDH = isocitrate dehydrogenase, MGMT = O6-methylguanine-DNA methyltransferase

AHLA-A2-restricted NY-ESO-1 epitope (NY-ESO-1157-165; SLLMWITQV); D, detected; UD, undetected.

BSubgroup ‘High’ denotes ‘Highly responding TILs’, and subgroup ‘Low’ denotes ‘Low responding TILs’.

C20 mg of dexamethasone (133 mg prednisone equivalent) daily.