



Supplementary Figure 3. Metastasis-associated differential abundance (enrichment scores) of four specific immune cell types among three age groups.

Plots were generated using the cell type enrichment scores estimated for the 1232 primary tumor samples from the five Decipher GRID data sets. Out of 33 immune cell types, 4 specific cell types, Type 2 T helper cells (A), Conventional dendritic cells (B), CD8+ T cells (C), and CD4+ memory T cells (D), in young and middle age group (≤ 55 years) demonstrated significantly ($P < 0.05$) greater abundance of immune cells in primary tumors from patients with metastasis compared to primary tumor samples from patients without metastasis; but there were no significant differences in the old patient group (>70 years). (Statistical p-values and median differences in abundance of immune cell type between metastasis and without metastasis groups among three age groups are included in the following table).

Table specific to foot note description in Supplementary Figure 3: Statistical testing of mean difference in abundance of immune cell types between patients with and without metastasis.

| Figure Panel | Immune cell type | Young (≤ 55 years, n = 197) | | Middle (56–70 years, n = 846) | | Old (> 70 years, n = 189) | |
|--------------|------------------------------|-----------------------------------|-----------|-------------------------------|-----------|------------------------------|---------|
| | | median difference (CI) | p-value | median difference (CI) | p-value | median difference (CI) | p-value |
| A | Type 2 T-helper cells | 4.7(2.0–7.2) | < 0.001 | 1.7 (0.5–3.0) | 0.003 | -0.6 (-3.4–2.3) | 0.701 |
| B | Conventional dendritic cells | 5.5(2.1–8.6) | 0.002 | 2.3(1.1–3.6) | 0.001 | 0.16 (-2.2–2.0) | 0.302 |
| C | CD8+ T-cells | 4.5(2.1–6.9) | < 0.001 | 2.3(1.3–3.4) | < 0.001 | 1.0 (-1.1–3.1) | 0.322 |
| D | CD4+ memory T-cells | 4.1(0.5–8.3) | 0.027 | 2.6(0.9–4.2) | 0.005 | 0.01 (-3.8–4.4) | 0.981 |

