

Wilcoxon Rank Sum Test

Supplemental Figure 1. No correlation between top TCR clonotype expansion and HPV status. (A) Numbers of all expanded clones in PBMC or TIL between HPV positive (n=6) (Patient 6, 13, 18, 19, 20, 21) and HPV negative (n=3) (patient 10, 14, 16). Expanded clones were calculated by comparing the clonal frequency of a given TCR clone between pre-PBMC vs. post-PBMC or pre-TIL vs. post-TIL. (B) Comparison of expansion rate of expanded top 20 TCR clonotypes without normalization between HPV positive (n=6) and HPV negative (n=3) in PBMC (p=0.09) or TIL (p=0.07). (C) Comparison of expansion rate of expanded top 20 TCR clonotypes between HPV positive (n=6) and HPV negative (n=3) in PBMC (p=0.43) or TIL (p=0.16) normalized by the sum of frequency of singleton clonotypes. Differences between two independent groups were calculated by Wilcoxon rank sum test.

A

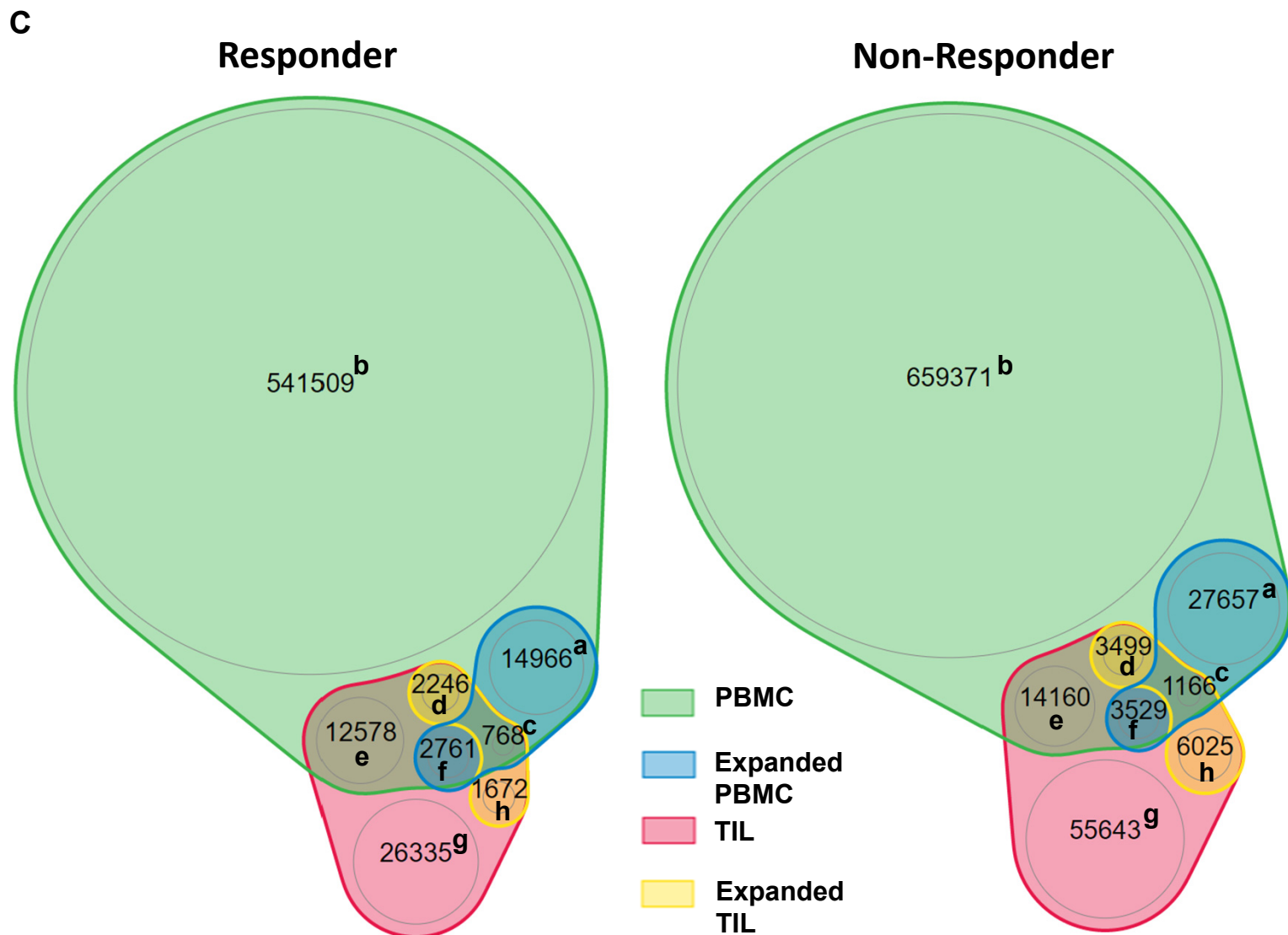
	Containing Overlapped Clones	Not containing
R	5	0
NR	9	0

P=1
Fisher Exact Test

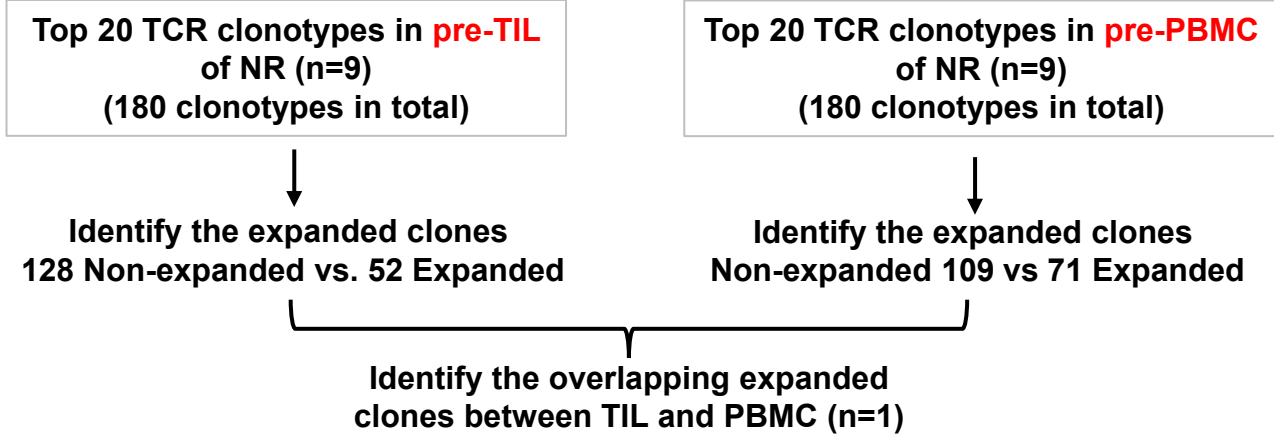
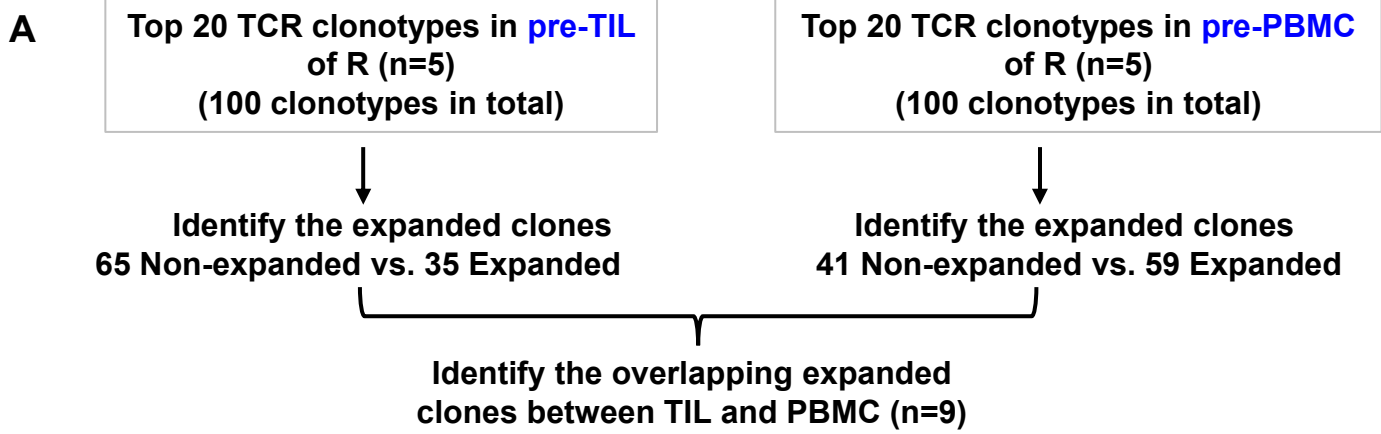
B

	Overlapped Expanded Clones	Others
R	768	602067
NR	1166	769884

P=0.0002
Chi-square Test



Supplemental Figure 2. Overlapping expanded TCR clonotypes between PBMC and TIL counting all TCR clonotypes. (A) Number of responders (n=5) or non-responders (n=9) containing or not containing an overlapping expanded TCR clonotype. Statistical difference was calculated with Fisher Exact Test ($p=1$). (B) Number of overlapping expanded vs. others in all TCR clonotypes of responders (n=5) vs. non-responders (n=9). Others are counted as follows: the total number of TCR clonotypes in PBMC and TIL of responders or non-responders minus the number of clonotypes in category of c, d, e, and f and the number of clonotypes in c. Statistical difference was calculated with Chi-square test ($p=0.0002$). (C) Number of TCR clonotypes in responders vs. non-responders distributed into 8 different categories (a-h) for expanding or overlapping conditions between PBMC and TIL. Annotation: (a) PBMC Expanded alone; (b) PBMC Nonexpanded; (c) PBMC Expanded & TIL Expanded; (d) PBMC Nonexpanded & TIL Expanded; (e) PBMC Nonexpanded & TIL Nonexpanded; (f) PBMC Expanded & TIL Nonexpanded; (g) TIL Nonexpanded; (h) TIL Expanded alone.



B

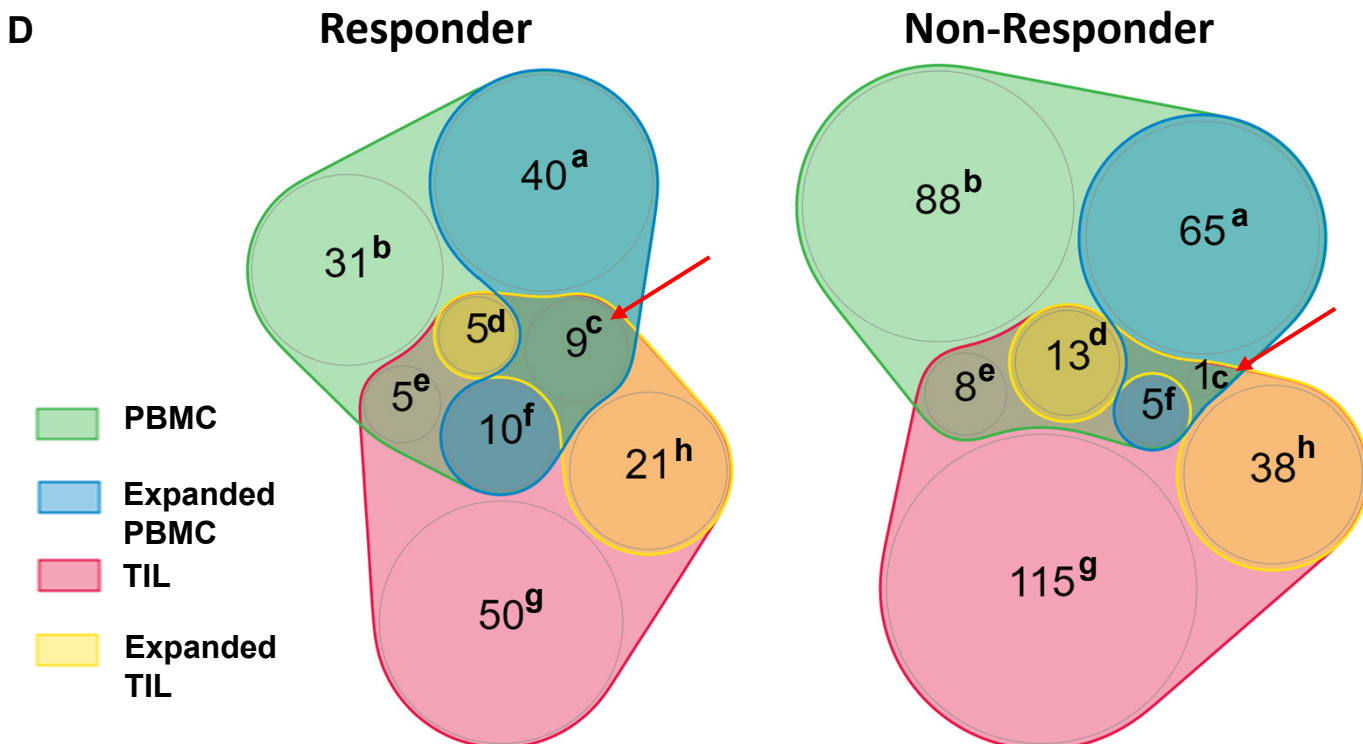
	Containing Top 20 Overlapped Clones	Not containing
R	3	2
NR	1	8

P=0.095 Fisher Exact Test

C

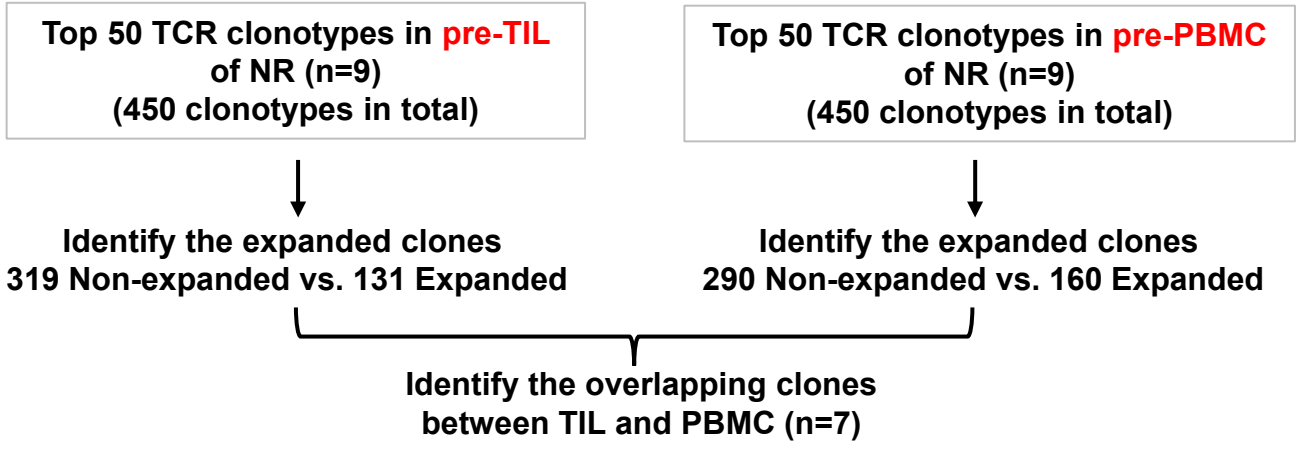
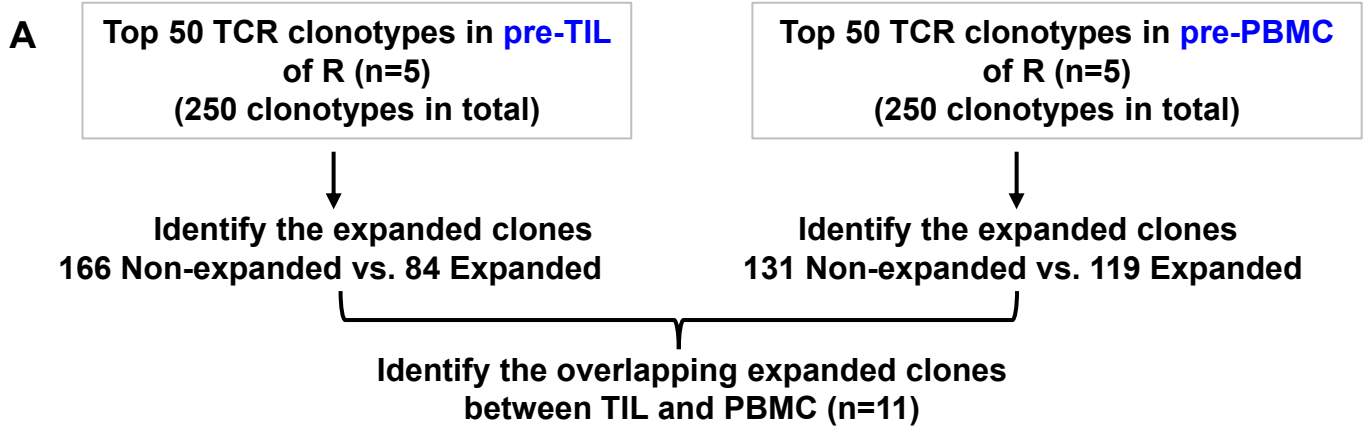
	Overlapped Expanded top 20 Clones	Others
R	9	162
NR	1	332

P=0.0004 Fisher Exact Test



Supplemental Figure 3A-D

Supplemental Figure 3. Overlapping expanded top 20 TCR clonotypes between TIL and PBMC. **(A)** Scheme for identification and comparison of overlapping expanded top 20 TCR clonotypes based on their ranking in pre-TIL and pre-PBMC. **(B)** Number of responders (n=5) or non-responders (n=9) containing or not containing an overlapping expanded top 20 TCR clonotype. Statistical difference was calculated with Fisher Exact Test (p= 0.095). **(C)** Number of overlapping expanded vs. others in top 20 TCR clonotypes of responders (n=5) vs. non-responders (n=9). Others are counted as follows: the total number of top 20 TCR clonotypes in PBMC and TIL of responders (n=200) or non-responders (n=360) minus the number of clonotypes in category of c, d, e, and f and the number of clonotypes in category of c. Statistical difference was calculated with Fisher Exact Test (p=0.0004). **(D)** Number of TCR clonotypes in responders vs. non-responders distributed into 8 different categories **(a-h)** for expanding or overlapping conditions between PBMC and TIL. Annotation: **(a)** PBMC Expanded alone; **(b)** PBMC Nonexpanded; **(c)** PBMC Expanded & TIL Expanded; **(d)** PBMC Nonexpanded & TIL Expanded; **(e)** PBMC Nonexpanded & TIL Nonexpanded; **(f)** PBMC Expanded & TIL Nonexpanded; **(g)** TIL Nonexpanded; **(h)** TIL Expanded alone.



B

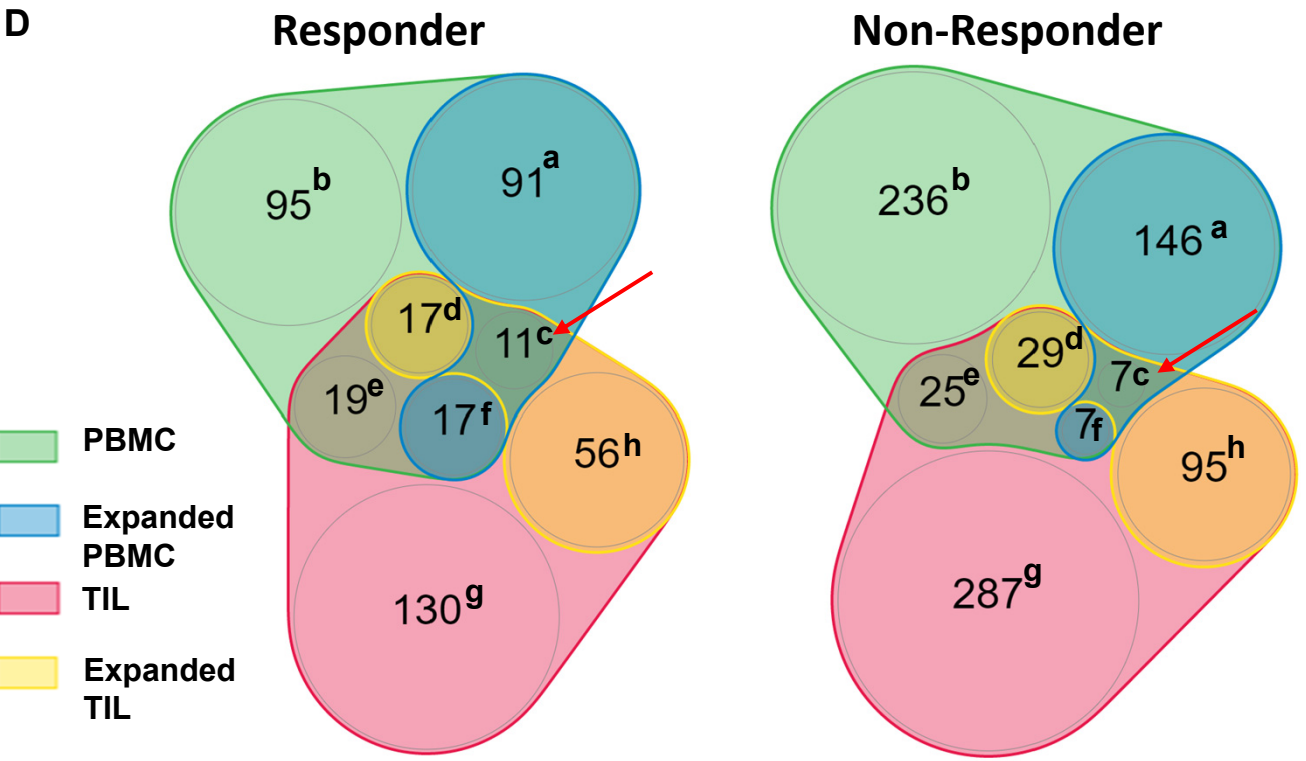
	Containing Top 20 Overlapped Clones	Not containing
R	3	2
NR	5	4

P=1 Fisher Exact Test

C

	Overlapped Expanded top 20 Clones	Others
R	11	425
NR	7	825

P=0.03 Chi-square Test



Supplemental Figure 4

Supplemental Figure 4. Overlapping expanded top 50 TCR clonotypes between TIL and PBMC. **(A)** Scheme for identification and comparison of overlapping expanded top 50 TCR clonotypes based on their ranking in pre-TIL and pre-PBMC. **(B)** Number of responders (n=5) or non-responders (n=9) containing or not containing an overlapping expanded top 50 TCR clonotype. Statistical difference was calculated with Fisher Exact Test (p=1). **(C)** Number of overlapping expanded vs. others in top 50 TCR clonotypes of responders (n=5) vs. non-responders (n=9). Others are counted as follows: the total number of top 50 TCR clonotypes in PBMC and TIL of responders (n=500) or non-responders (n=900) minus the number of clonotypes in category of c, d, e, and f and the number of clonotypes in category of c. Statistical difference was calculated with Chi-square test (p=0.03). **(D)** Number of TCR clonotypes in responders vs. non-responders distributed into 8 different categories **(a-h)** for expanding or overlapping conditions between PBMC and TIL. Annotation: **(a)** PBMC Expanded alone; **(b)** PBMC Nonexpanded; **(c)** PBMC Expanded & TIL Expanded; **(d)** PBMC Nonexpanded & TIL Expanded; **(e)** PBMC Nonexpanded & TIL Nonexpanded; **(f)** PBMC Expanded & TIL Nonexpanded; **(g)** TIL Nonexpanded; **(h)** TIL Expanded alone.