Table 1. Studies featuring NSCLC patient cohorts in which a certain peripheral blood immune cell type predicts or monitors the response to ICIs

Cell type/measure	Cell count method	ICI	Number of patients	Association with response to ICIs	Statistical test and p-value	References
ALC	Absolute cell count	Nivolumab	22	High ALC at baseline and after 6 weeks of treatment correlates with longer OS	Log-rank test (p_{T0} = 0.0059; p_{Tn} = 0.0016)	[31]
	Absolute cell count	Nivolumab Pembrolizumab Atezolizumab	79 (55%) 52 (37%) 11 (8%)	High ALC at baseline correlates with longer OS and PFS	Multivariate Cox regression (p_{OS} = 0.003, p_{PFS} = 0.023) Log-rank test (p_{OS} = 4.7x10^{-5})	[32]
	Absolute cell count	Nivolumab	134	High ALC at baseline is associated with longer OS and	Multivariate Cox regression (p_{OS} = 0.03, p_{PFS} = 0.04)	[33]
	Absolute cell count	Nivolumab Pembrolizumab Atezolizumab	174 (75%) 54 (24%) 3 (1%)	High ALC at baseline and after 1 month of treatment is associated with better objective response, OS and PFS	T-test (p_{T0} = 0.02, p_{Tn} = 0.02) Multivariate Cox regression ($p_{T0\text{-}OS}$ = 0.035, $p_{Tn\text{-}OS}$ = 0.005, $p_{T0\text{-}PFS}$ = 0.006, $p_{Tn\text{-}PFS}$ = 0.001)	[34]
ANC	Absolute cell count	Nivolumab	134	Low ANC at baseline is associated with longer OS and PFS	Multivariate Cox regression (p_{OS} = 0.03, p_{PFS} = 0.001)	[33]
	Absolute cell count	Anti-PD-1 Anti-PD-L1	88	Low ANC after 8 weeks of treatment is associated with better clinical response	T-test (p = 0.017)	[69]
	Absolute cell count	Nivolumab Pembrolizumab	146 (93%) 11 (7%)	Low ANC at baseline is associated with longer OS	Multivariate Cox regression (p = 0.02)	[70]
NLR	Absolute cell count	Anti-PD-1 Anti-PD-L1	88	Low NLR at baseline is associated with longer time to treatment discontinuation, time to disease progression and OS	Log-rank test (p_{TD} = 0.037, p_{DP} = 0.047, p_{OS} = 0.019)	[69]
	Absolute cell count	Nivolumab Pembrolizumab	146 (93%) 11 (7%)	Low NLR at baseline is associated with longer OS and PFS	Multivariate Cox regression (p_{OS} = 0.01; p_{PFS} = 0.008)	[70]
	Absolute cell count	Nivolumab	175	Low NLR at baseline is associated with longer OS and PFS	Multivariate Cox regression (p_{OS} = 0.002, p_{PFS} = 0.04) Log-rank test (p_{OS} = 0.01, p_{PFS} = 0.04)	[71]
	Absolute cell count	Nivolumab	52	Low NLR at baseline is associated with longer OS and PFS	Multivariate Cox regression (p_{OS} < 0.001, p_{PFS} = 0.007)	[72]

	Absolute cell count	Nivolumab Pembrolizumab	17 (49%) 18 (51%)	Low NLR after treatment is associated with longer OS at baseline and with better clinical response	Univariate Cox regression (p_{OS} = 0.03) Log-rank test (p_{OS} = 0.017) ANOVA (p_{CR} = 0.019)	[73]
	Absolute cell count	Nivolumab Pembrolizumab	31 (57%) 23 (43%)	Low NLR after 6 weeks of treatment is associated with longer OS and PFS	Multivariate Cox regression (p_{OS} = 0.003, p_{PFS} < 0.001) Log-rank test (p_{OS} < 0.001, p_{PFS} < 0.001)	[75]
	Absolute cell count	Nivolumab	101	Low NLR after 2 and 4 weeks of treatment is associated with longer PFS	Log-rank test (p_{T2} = 0.0053, p_{T4} = 0.0052)	[76]
dNLR	Absolute cell count	Pembrolizumab	221	Low dNLR at baseline in responders, and it is associated with longer OS and PFS	T-test (p < 0.001) Log-rank test (p_{OS} < 0.001, p_{PFS} < 0.001)	[74]
AMC	Absolute cell count	Nivolumab Pembrolizumab	146 (93%) 11 (7%)	Low AMC at baseline is associated with longer PFS	Multivariate Cox regression (p = 0.02)	[70]
PD-1$^+$ CD8$^+$ T cells	Flow cytometry	Nivolumab	31	Higher percentage of PD-1$^+$ CD8$^+$ T cells in responders, and it correlates with longer OS and PFS	Mann-Whitney U test (p < 0.01) Log-rank test (p_{OS} =0.005, p_{PFS} = 0.009)	[38]
	Flow cytometry	Nivolumab Pembrolizumab	25 (32%) 54 (68%)	Higher fold-change in the percentage of proliferating PD-1$^+$ CD8$^+$ T cells between baseline and 1 week after treatment is associated with a better durable clinical benefit (DCB), OS and PFS	T-test (p = 0.001) Multivariate Cox regression (p_{OS} = 0.007, p_{PFS} < 0.001) Log-rank test (p_{OS} =0.037, p_{PFS} = 0.002)	[39]
CD137$^+$ CD8$^+$ T cells	Flow cytometry	Nivolumab Pembrolizumab	109	Higher percentage of CD137$^+$ CD8$^+$ T cells at baseline in responders, and it is associated with longer OS and PFS	T-test (p = 0.02) Log-rank test (p_{OS} = 0.00052, p_{PFS} = 0.0031)	[41]
CD45RA$^+$ CCR7$^-$ CD8$^+$ T cells	Flow cytometry	Nivolumab	71	Higher frequency of CD45RA$^+$ CCR7$^-$ CD8$^+$ T cells before and after treatment in responders	Mann-Whitney U test (p_{T0} < 0.05, p_{Tn} < 0.05)	[42]
CX3CR1$^+$ CD8$^+$ T cells	Flow cytometry	Nivolumab Pembrolizumab	2 (6%) 34 (94%)	Higher increase in CX3CR1$^+$ CD8$^+$ T cells frequency between baseline and 12 weeks after treatment in responders, and it correlates with longer OS and PFS	Mann-Whitney U test (p < 0.0001) Log-rank test (p_{OS} =0.0136, p_{PFS} = 0.0033)	[44]
Central memory to effector CD8$^+$ T cell ratio	Flow cytometry	Nivolumab	22	High central memory to effector CD8$^+$ T cell ratio at baseline correlates with longer PFS	Mann-Whitney U test (p < 0.05)	[43]

Central memory to effector $CD4^+$ T cell ratio	Flow cytometry	Nivolumab	22	High central memory to effector $CD4^+$ T cell ratio at baseline correlates with longer PFS	Mann-Whitney U test ($p < 0.05$)	[43]
$CD27^-$ $CD28^-$ $CD4^+$ T cells	Flow cytometry	Nivolumab Pembrolizumab Atezolizumab	8 (16%) 22 (43%) 21 (41%)	Higher percentage of $CD27^-$ $CD28^-$ $CD4^+$ T cells before and after treatment in responders, and it is associated with a longer PFS	Mann-Whitney U test ($p_T < 0.001$) Log-rank test (p_{PFS} =0.001)	[51]
$PD\text{-}1^+$ $CD4^+$ T cells	Flow cytometry	Nivolumab Pembrolizumab Atezolizumab	5 (23%) 11 (50%) 6 (27%)	High percentage of $PD\text{-}1^+$ $CD4^+$ T cells (not clear at what timepoint) is associated with longer PFS	Log-rank test ($p = 0.034$)	[50]
$CD62L^{low}$ $CD4^+$ Th1 cells	Flow cytometry	Nivolumab	126	Higher percentage of $CD62L^{low}$ $CD4^+$ Th1 cells at baseline in responders	T-test ($p < 0.0001$)	[52]
Tregs	Flow cytometry	Nivolumab	126	Lower percentage of Tregs at baseline in responders	T-test ($p = 0.034$)	[52]
	Flow cytometry	Nivolumab Pembrolizumab Atezolizumab	16 (22%) 31 (42%) 27 (36%)	Decreasing percentage of Tregs after treatment in responders	Paired t-test ($p = 0.034$)	[54]
	Flow cytometry	Nivolumab Pembrolizumab	132	Higher percentage of Tregs after treatment in responders, and it is associated with longer OS and PFS	T-test ($p = 0.008$) Log-rank test ($p_{OS} = 0.01$, $p_{PFS} = 0.008$)	[55]
$PD\text{-}1^+$ Tregs	Flow cytometry	Nivolumab Pembrolizumab Atezolizumab	16 (22%) 31 (42%) 27 (36%)	Decreasing percentage of $PD\text{-}1^+$ Tregs after treatment in responders	Paired t-test ($p < 0.001$)	[54]
Treg to $Lox\text{-}1^+$ gMDSC ratio	Flow cytometry	Nivolumab	63	Higher Treg to $Lox\text{-}1^+$ gMDSC ratio after treatment in responders, and it is associated with a longer PFS	$p_T = 0.0011$ (statistical test not clear) Log-rank test ($p_{PFS} = 0.0079$)	[85]
NK cell to $Lox\text{-}1^+$ gMDSC ratio	Flow cytometry	Nivolumab	62	Higher NK cell to $Lox\text{-}1^+$ gMDSC ratio after treatment in responders, and it is associated with a longer OS and PFS	T-test ($p_{NK} < 0.0001$) Log-rank test ($p_{OS} = 0.012$, $p_{PFS} < 0.0001$) ROC curve analysis (AUC = 0.866; $p < 0.0001$)	[61]
NK cells	Flow cytometry	Nivolumab	31	Higher number of NK cells at baseline in responders, and it is associated with	Mann-Whitney test ($p_{NK} < 0.01$) Log-rank test (p_{OS} =0.014,	[38]

				longer OS and PFS	p_{PFS} = 0.025)	
	Mass cytometry	Nivolumab Pembrolizumab	3 (33%) 6 (67%)	Higher frequency of NK cells at baseline and 6 weeks after treatment in responders	T-test (p_{T0} < 0.05, p_{Tn} < 0.05)	[60]
PD-L1$^+$ monocytes	Flow cytometry	Nivolumab Pembrolizumab	17 (49%) 18 (51%)	Low frequency of PD-L1$^+$ monocytes is associated with longer OS and PFS	Univariate Cox regression (p_{OS} = 0.01, p_{PFS} = 0.015) Log-rank test (p_{OS} = 0.004, p_{PFS} = 0.007)	[78]
mMDSCs	Flow cytometry	Nivolumab Pembrolizumab	17 (49%) 18 (51%)	High percentage of mMDSCs is associated with longer OS at baseline and better clinical response after treatment	Univariate Cox regression (p_{OS} = 0.039) Log-rank test (p_{OS} = 0.02) ANOVA (p_{CR} = 0.028)	[73]
	Flow cytometry	Nivolumab	61	Lower frequency of mMDSCs after treatment in responders, and it is associated with longer OS and PFS	Mann-Whitney U test (p_{mMDSC} < 0.05) Univariate Cox regression (p_{OS} = 0.001, p_{PFS} = 0.002)	[81]
	Flow cytometry	Nivolumab Pembrolizumab	132	Low frequency of mMDSCs at baseline is associated with longer OS and PFS	Log-rank test (p_{OS} = 0.03, p_{PFS} = 0.01)	[82]
	Flow cytometry	Nivolumab Pembrolizumab Atezolizumab Combination	3 (14%) 5 (23%) 10 (45%) 4 (18%)	Low frequency of mMDSCs at baseline in responders, and it is associated with longer OS and PFS	Mann-Whitney U test (p = 0.045) Univariate Co regression (p_{OS} = 0.042, p_{PFS} = 0.046) Log-rank test (p_{OS} = 0.042, p_{PFS} = 0.046)	[83]
gMDSCs	Flow cytometry	Nivolumab Pembrolizumab	132	Low frequency of gMDSCs at baseline is associated with longer OS and PFS	Log-rank test (p_{OS} = 0.04, p_{PFS} = 0.03)	[82]
	Flow cytometry	Nivolumab	53	High frequency of gMDSCs at baseline is associated with better clinial response, longer PFS and OS	Mann-Whitney U test (p_{gMDSC} = 0.02) Multivariate Cox regression (p_{OS} = 0.01, p_{PFS} = 0.003)	[84]
PD-L1$^+$ cDC1 mDCs	Flow cytometry	Nivolumab Pembrolizumab	17 (49%) 18 (51%)	Low frequency of PD-L1$^+$ cDC1 mDCs is associated with longer OS and PFS	Log-rank test (p_{OS} = 0.035, p_{PFS} = 0.031)	[78]
PD-L1$^+$ pDCs	Flow cytometry	Nivolumab Pembrolizumab	17 (49%) 18 (51%)	Low frequency of PD-L1$^+$ pDCs is associated with longer OS and PFS	Univariate Cox regression (p_{OS} = 0.005, p_{PFS} = 0.004) Log-rank test (p_{OS} = 0.001, p_{PFS} = 0.001)	[78]

DCs	Flow cytometry	Nivolumab	17 (49%)	High percentage of DCs at baseline and after treatment is associated with longer OS at baseline and better clinical response	Univariate Cox regression (p_{OS} = 0.015) Log-rank test (p_{OS} = 0.005) ANOVA ($p_{T0\text{-}CR}$ = 0.009, $p_{Tn\text{-}CR}$ = 0.001)	[73]
		Pembrolizumab	18 (51%)			