

## Supporting Information:

**Table S1.** Fluorochrome, antigens, and antibody clones.

Fluorochrome	Tube 1	Tube 2
FITC	kappa (RAHK)/ CD8 (B9.11)	CD103 (2G5)
PE	lambda (RAHL)/ CD7 (8H8.1)	CD43 (DFT1)
ECD	CD23 (9P25)	CD25 (B1.49.9)
PC5.5	CD79b (CB3.1) /CD4 (13B8.2)	CD10 (ALB1)
PC7	CD5 (BL1a)	CD200 (OX-104)
APC	CD38 (LS198-4-3)	
APC-A700	CD19 (J3.119)	CD11c (BU15)
APC-A750	CD20 (B9E9)/ CD3 (UCHT1)	CD20 (B9E9)
Pacific blue	FMC7 (FMC7) /CD2 (39C1.5)	IgM (SA-DA4)
Krome Orange	CD45 (J33)	CD19 (J3.119)

**Table S2.** IPI prediction of the XAI populations.

	IPI≥4 (high)	IPI≤1 (low)			ROC		
	Mean (%)	Mean (%)	SE of Difference	p-value (MWU test)	AUC	95%CI	p-value
<b>CD38+</b>	<b>41.35</b>	<b>21.36</b>	<b>7.55</b>	<b>0.0056</b>	<b>0.66</b>	<b>0.57-0.76</b>	<b>0.0018</b>
<i>eAI-populations</i>							
<b>T1C0011</b>	<b>2.49</b>	<b>1.69</b>	<b>0.93</b>	<b>0.0212</b>	<b>0.67</b>	<b>0.53-0.80</b>	<b>0.0219</b>
T1C0012	1.69	1.44	0.54	0.5321	0.55	0.40-0.69	0.5281
<b>T1C0016</b>	<b>5.37</b>	<b>12.50</b>	<b>2.42</b>	<b>0.0008</b>	<b>0.74</b>	<b>0.63-0.84</b>	<b>0.0010</b>
T1C0017	7.03	4.74	1.92	0.4278	0.56	0.41-0.07	0.4237
T1C0019	5.17	6.48	1.52	0.1839	0.60	0.45-0.74	0.1815
<b>T1C0020</b>	<b>0.42</b>	<b>0.15</b>	<b>0.14</b>	<b>0.0080</b>	<b>0.69</b>	<b>0.55-0.83</b>	<b>0.0086</b>
<b>T1C0023</b>	<b>4.30</b>	<b>0.48</b>	<b>0.77</b>	<b>0.0046</b>	<b>0.70</b>	<b>0.55-0.86</b>	<b>0.0051</b>
T2C0001	4.01	5.01	1.98	0.9892	0.50	0.36-0.65	0.9868
T2C0002	3.05	0.93	0.97	0.3466	0.57	0.41-0.73	0.3429
<b>T2C0004</b>	<b>8.12</b>	<b>1.78</b>	<b>1.84</b>	<b>0.0029</b>	<b>0.71</b>	<b>0.58-0.85</b>	<b>0.0033</b>
T2C0009	0.57	1.17	0.42	0.1602	0.60	0.47-0.73	0.1584
T2C0010	0.28	0.32	0.19	0.9169	0.51	0.36-0.66	0.9146
T2C0014	11.27	10.34	2.71	0.8283	0.52	0.37-0.66	0.8238
<b>T2C0018</b>	<b>4.71</b>	<b>2.27</b>	<b>0.99</b>	<b>0.0030</b>	<b>0.71</b>	<b>0.60-0.82</b>	<b>0.0034</b>
T2C0020	4.34	2.00	0.89	0.2346	0.59	0.44-0.73	0.2317
T2C0021	3.16	3.20	1.06	0.9586	0.50	0.36-0.65	0.9572
T2C0028	1.24	0.42	0.22	0.4348	0.56	0.39-0.72	0.4309

**Table S3.** Multicollinearity analysis of the four-factor model.

Multicollinearity	Variable	VIF	R2 with other variables
$\beta_0$	Intercept		
$\beta_1$	IPI	1.212	0.1746
$\beta_2$	T1C0016	1.039	0.03745
$\beta_3$	T1C0023	1.154	0.1333
$\beta_4$	CD38	1.054	0.05092

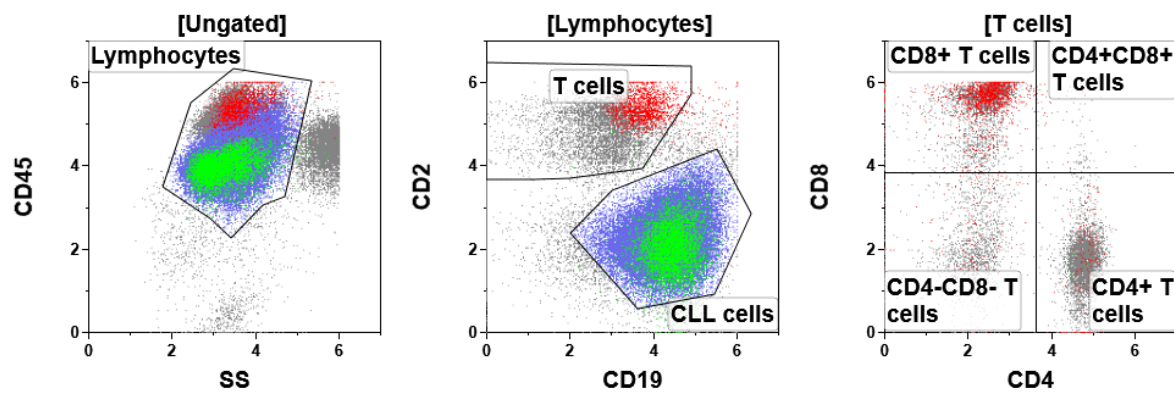


Figure S1. T1C0023 (CD8+ T cells).

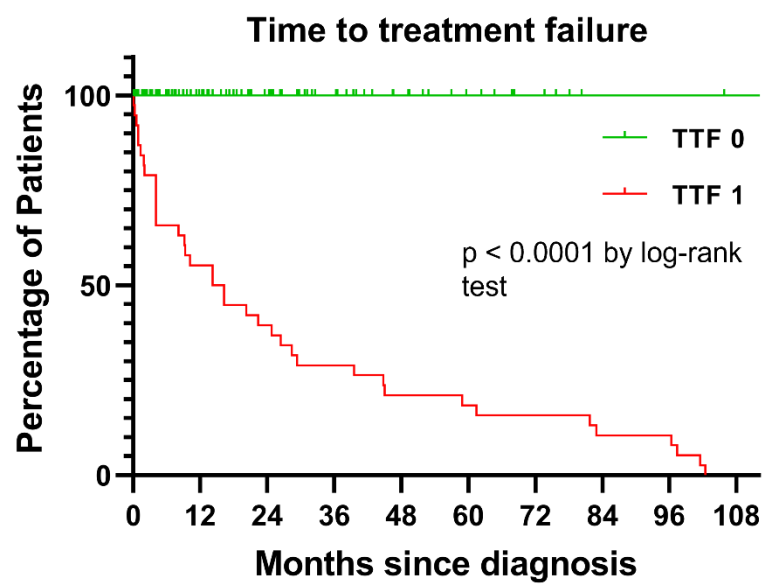


Figure S2. Kaplan-Meier curve .