SUPPLEMENTAL MATERIAL

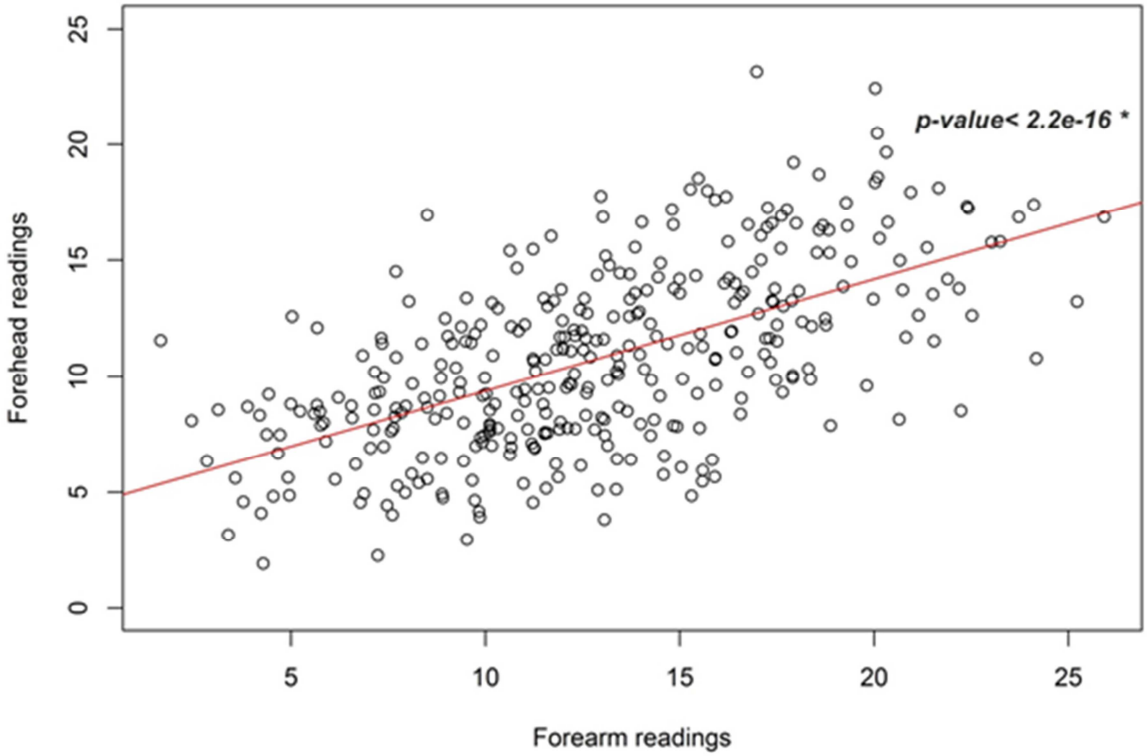

Figure S1. Intra-Individual correlation between spectrophotometer readings obtained at the forearm and forehead among 350 skin cancer screening patients enrolled in year 1 of the VIRUSCAN study**.** *The p-value was calculated using Spearman correlation, with correlation coefficient rho=0.6079.

Figure S2

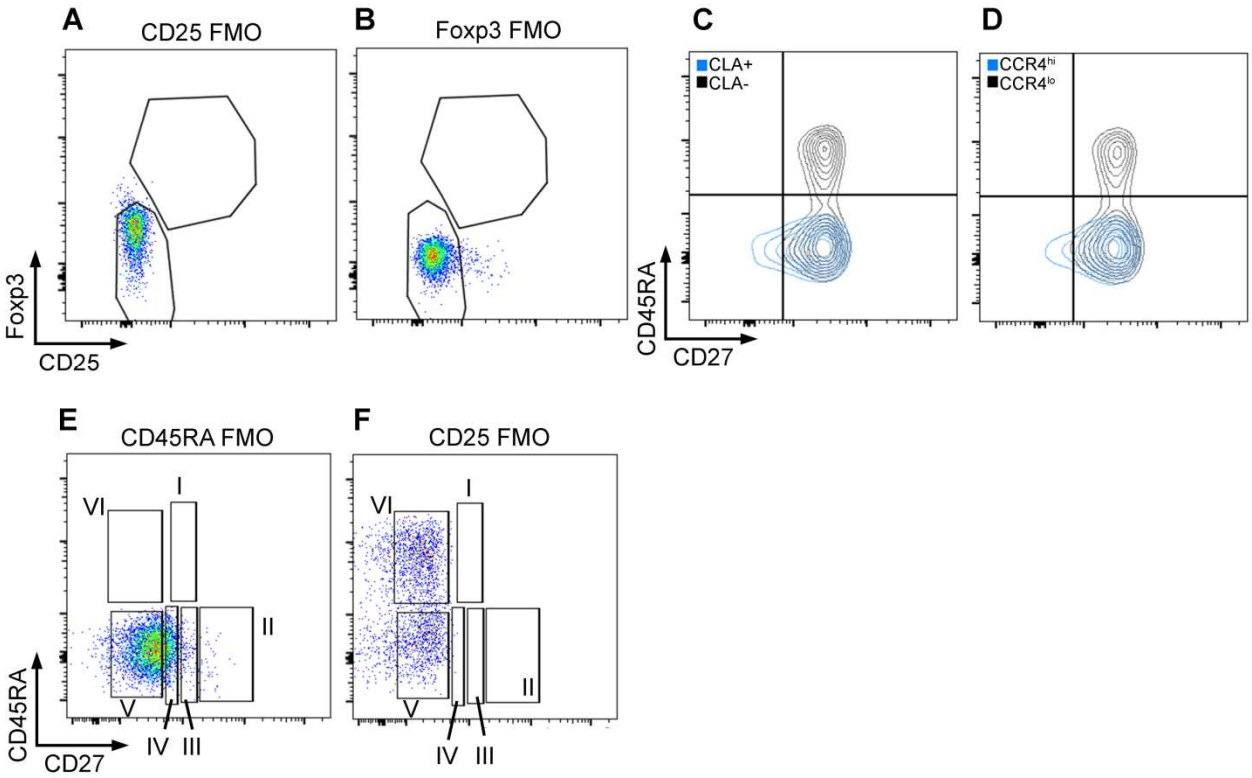

Fig S2. PBMCs were gated first on viability and on CD3 and CD4 positivity. (**A-B**) CD25 and Foxp3 flourescence-minos-one (FMO) control samples used to define $CD25^{+}$ $Foxp3^{+}$ Treg populations, (**C-D**) CLA^{+} and $CCR4^{hi}$ Th $CD4^{+}$ T cells were confirmed to be $CD45RA^{-}$ with mixed expression of CD27, (**E-F**) CD45RA and CD25 FMO control samples used to defined Group I-VI.

Table S1 Circulating regulatory T (Treg) cell phenotypes and questionnaire factors.

		Treg cell phenotypes							
		$CD45RA^+/CD27^+$ Treg		$CD45RA^-/CD27^-$ Treg		CLA^+ Treg		$CCR4^{hi}$ Treg	
	n (%)	Mean (SD)[1]	*p*-value[2]	Mean (SD)[1]	*p*-value[2]	Mean (SD)[1]	*p*-value[2]	Mean (SD)[1]	*p*-value[2]
Reaction to 1 hour of sun exposure									
No change	11 (3.2)	15.6 (17.8)		14.9 (7.6)		53.8 (12.6)		79.1 (10.8)	
Tans without sunburn	68 (19.7)	10.8 (9.4)	0.28	13.5 (7.9)	0.54	55.5 (12.2)	0.65	81.8 (10.1)	0.31
Mild sunburn with tan	150 (43.4)	10.1 (6.8)	0.27	13.2 (6.6)	0.57	57.5 (9.7)	0.24	83.2 (7.8)	0.14
Sunburn without blisters	100 (28.9)	10.0 (9.7)	0.08	13.7 (5.8)	0.99	59.3 (11.2)	0.05	83.4 (8.4)	0.05
Blistering sunburn	17 (4.9)	8.4 (6.0)	0.06	18.3 (10.7)	0.15	56.5 (16.5)	0.27	82.0 (9.2)	0.17
Ever had a job working in the sun									
No	249 (72.0)	10.5 (9.1)		13.5 (6.9)		57.7 (11.2)		82.5 (8.5)	
Yes	97 (28.0)	9.7 (7.7)	0.90	14.2 (7.3)	0.89	57.0 (11.1)	0.07	83.6 (9.0)	0.90
Years of job in the sun									
No	249 (72.4)	10.5 (9.1)		13.5 (6.9)		57.7 (11.2)		82.5 (8.5)	
Less than 5	52 (15.1)	10.4 (9.3)	0.95	14.3 (7.5)	0.81	55.2 (11)	0.01	82.2 (9.2)	0.19
6 to 10	10 (2.9)	10.2 (7.1)	0.62	14.7 (7.3)	0.98	61.5 (13.8)	0.73	85.2 (11.1)	0.50
more than 10	33 (9.6)	7.9 (4.4)	0.28	14.1 (7.1)	0.89	58.9 (10)	0.92	85.5 (7.9)	0.18
Ever had a blistering sunburn									
No	93 (26.9)	10.0 (8.6)		13.6 (6.4)		57.6 (11.2)		82.9 (9.5)	
Yes	253 (73.1)	10.4 (8.8)	0.43	13.8 (7.2)	0.94	57.4 (11.2)	0.89	82.7 (8.3)	0.80
Age of first blistering sunburn									
Less than or equal to 10	74 (34.7)	10.3 (11.0)		14.4 (7.5)		58.7 (11.6)		83.1 (8.1)	
Between 11 to 20	109 (51.2)	10.1 (6.4)	0.62	13.6 (7.0)	0.66	56.7 (10.6)	0.34	82.5 (8.6)	0.86
Above 20	30 (14.1)	10.8 (11.3)	0.85	11.7 (4.7)	0.26	58.0 (9.9)	0.91	82.6 (7.4)	0.97
Blistering sunburn frequency in last year									
None	321 (93.0)	10.3 (8.3)		13.6 (6.8)		57.3 (11.1)		82.7 (8.7)	

More than once	24 (7.0)	10.7 (13.9)	0.57	15.4 (8.9)	0.37	59.2 (12.1)	0.34	83.7 (8.3)	0.48
Natural skin tone[3]									
Lighter	175 (50.0)	10.3 (9.3)		13.5 (6.4)		58.2 (10.2)		83.3 (7.8)	
Darker	175 (50.0)	10.4 (8.0)	0.70	13.9 (7.4)	0.55	56.9 (12.1)	0.42	82.2 (9.3)	0.82

[1]SD=Standard deviation

[2]*p*-values were calculated using linear regression, adjusted for age (categorical) and sex with transformed Treg data as follows: CD45RA+/CD27+ Treg (8th root), $CD45RA^-/CD27^-$ Treg (4th root), CLA^+ Treg and $CCR4^{hi}$ Treg (4th power).

[3]Natural skin tone based on median spectrophotometer readings in the axilla, as defined in *Materials and Methods.*

Table S2 Quartiles of total Tregs, CLA^+ and $CCR4^{hi}$ Tregs and UV spectrophotometer readings in all individuals and stratified by natural skin tone.

	Average UV spectrophotometer reading								
	All (n=350)			Lighter skin[1] (n=175)			Darker skin (n=175)		
Treg cell phenotypes[2]	n	Mean (SD)[3]	OR (95%CI)[4]	n	Mean (SD)	OR (95%CI)	n	Mean (SD)	OR (95%CI)
Total Treg									
Q1	88	11.74 (3.92)	1.0 (ref.)	43	13.28 (4.05)	1.0 (ref.)	45	10.28 (3.21)	1.0 (ref.)
Q2	87	11.89 (3.86)	1.00 (0.89-1.11)	42	13.34 (4.11)	0.96 (0.81-1.12)	45	10.54 (3.09)	1.05 (0.87-1.26)
Q3	88	12.35 (4.00)	0.99 (0.89-1.10)	47	13.14 (3.98)	0.93 (0.80-1.08)	41	11.44 (3.87)	1.04 (0.88-1.23)
Q4	87	11.26 (3.69)	0.89 (0.79-0.99)	43	12.85 (3.59)	0.86 (0.72-1.02)	44	9.70 (3.11)	0.84 (0.68-1.02)
		P-trend: 0.07			P-trend: 0.11			P-trend: 0.23	
CLA^+ Treg									
Q1	92	11.25 (3.47)	1.0 (ref.)	38	12.38 (3.75)	1.0 (ref.)	54	10.46 (3.05)	1.0 (ref.)
Q2	84	11.52 (4.15)	1.02 (0.92-1.14)	45	13.06 (4.19)	1.03 (0.87-1.21)	39	9.75 (3.38)	0.93 (0.78-1.10)
Q3	86	11.85 (3.61)	1.00 (0.89-1.12)	51	12.80 (3.63)	0.96 (0.80-1.13)	35	10.47 (3.15)	0.92 (0.76-1.12)
Q4	88	12.63 (4.15)	1.07 (0.97-1.19)	41	14.40 (3.91)	1.16 (0.99-1.37)	47	11.08 (3.76)	1.00 (0.85-1.17)
		P-trend: 0.25			P-trend: 0.13			P-trend: 0.89	
$CCR4^{hi}$ Treg									
Q1	89	11.09 (3.77)	1.0 (ref.)	40	12.93 (4.13)	1.0 (ref.)	49	9.59 (2.65)	1.0 (ref.)
Q2	89	11.57 (3.83)	1.06 (0.95-1.18)	44	12.64 (3.75)	1.00 (0.85-1.18)	45	10.51 (3.65)	1.13 (0.95-1.35)
Q3	85	11.86 (3.96)	0.99 (0.89-1.11)	47	12.77 (3.92)	0.92 (0.78-1.08)	38	10.73 (3.75)	1.05 (0.86-1.27)
Q4	87	12.75 (3.81)	1.07 (0.97-1.18)	44	14.26 (3.74)	1.08 (0.94-1.26)	43	11.21 (3.26)	1.08 (0.90-1.30)
		P-trend: 0.61			P-trend: 0.42			P-trend: 0.84	

[1]Natural skin tone based on median spectrophotometer readings in the axilla, as defined in *Materials and Methods*.
[2]Tregs were categorized into quartiles using cut-offs as the following:
Total Treg: 2.73-4.01-5.28, CLA^+ Treg: 50-57.8-65.58, $CCR4^{hi}$ Treg: 77.9-84.2-89.2
[3]SD=standard deviation
[4]Odds ratios (OR) and 95% confidence intervals (CI) for average spectrophotometer reading were calculated using logistic regression, comparing each risk group to the reference group Q1
[5]*p*-trend was calculated using ordinal logistic regression