Supplementary Table 1. Interaction between the p53 Arg72Pro polymorphism and MC1R variants on hair color and childhood sunburn reaction among controls

p53 \ MC1R	WT/WT	WT/NRHC or NRHC/NRHC	WT/RHC	RHC/RHC or NRHC/RHC
Hair color				
Arg/Arg				
Blonde or red/ Black or brown[a]	16/116	17/176	14/63	16/34
Crude OR	1.00	0.70 (0.34-1.44)	1.61 (0.74-3.52)	3.41 (1.55-7.53)
Multivariate OR[b]	1.00	0.68 (0.32-1.42)	1.40 (0.63-3.11)	2.29 (1.01-5.19)
Arg/Pro or Pro/Pro				
Blonde or red/ Black or brown[a]	11/96	13/105	15/49	15/22
Crude OR	0.83 (0.37-1.88)	0.90 (0.41-1.95)	2.22 (1.02-4.84)	4.94 (2.14-11.44)
Multivariate OR[b]	1.03 (0.45-2.39)	0.84 (0.38-1.87)	2.31 (1.03-5.18)	3.42 (1.44-8.14)

p53 \ MC1R	WT/WT	WT/NRHC or NRHC/NRHC	WT/RHC	RHC/RHC or NRHC/RHC
Sunburn reaction				
Arg/Arg				
Burn/Non-burn[a]	37/95	77/116	40/37	28/22
Crude OR	1.00	1.70 (1.06-2.75)	2.78 (1.54-4.99)	3.27 (1.66-6.42)
Multivariate OR[c]	1.00	1.87 (1.12-3.11)	2.63 (1.39-4.96)	1.88 (0.90-3.93)
Arg/Pro or Pro/Pro				
Burn/Non-burn[a]	27/80	42/76	30/34	28/9
Crude OR	0.87 (0.49-1.55)	1.42 (0.83-2.42)	2.27 (1.22-4.21)	7.99 (3.44-18.53)
Multivariate OR[c]	1.09 (0.59-2.02)	1.47 (0.83-2.60)	2.54 (1.29-5.01)	5.04 (2.01-12.65)

WT stands for consensus allele. NRHC stands for non-red hair color allele. RHC stands for red hair color allele.

Four categories of the responses to the question of childhood sunburn reaction were grouped into burn (burn, painful burn, and painful burn with blisters) and non-burn (practically none and some redness only).

[a]The number of participants does not add up to the total women because of missing genotypes.

[b]Unconditional logistic regression adjusted for natural skin color (p, interaction, 0.46).

[c]Unconditional logistic regression adjusted for natural skin color and natural hair color (p, interaction, 0.24).

Supplementary Table 2. SCC and BCC risks by p53 Arg72Pro polymorphism and hair color

SCC				
Hair color	Arg/Arg	Arg/Pro	Pro/Pro	*P*, trend
Black or dark brown				
Case/Controls[a]	60/237	50/118	6/19	
OR[b]	1.00	1.68 (1.08-2.59)	1.24 (0.47-3.23)	0.06
Light brown				
Case/Controls[a]	58/181	34/136	4/22	
OR[b]	1.26 (0.84-1.90)	0.98 (0.61-1.57)	0.70 (0.23-2.12)	0.12
Blonde or red				
Case/Controls[a]	33/68	23/53	7/5	
OR[b]	1.91 (1.15-3.16)	1.69 (0.96-2.98)	5.54 (1.70-18.09)	0.24
BCC				
Hair color	Arg/Arg	Arg/Pro	Pro/Pro	*P*, trend
Black or dark brown				
Case/Controls[a]	46/237	39/118	6/19	
OR[b]	1.00	1.72 (1.06-2.78)	1.65 (0.62-4.37)	0.04
Light brown				
Case/Controls[a]	75/181	49/136	12/22	
OR[b]	2.16 (1.42-3.27)	1.86 (1.18-2.93)	2.94 (1.35-6.39)	0.93
Blonde or red				
Case/Controls[a]	40/68	24/53	4/5	
OR[b]	3.07 (1.86-5.08)	2.36 (1.33-4.22)	4.47 (1.15-17.39)	0.94

p-value for trend was calculated across the three p53 genotypes.

[a]The number of participants does not add up to the total women because of missing genotypes.

[b]Unconditional logistic regression adjusted for the matching variables: age and race (Caucasian/missing) (interaction *p*-values for SCC and BCC were 0.46 and 0.11, respectively).

Supplementary Table 3. SCC and BCC risks by p53 Arg72Pro polymorphism and MC1R variants

P53 MC1R	SCC		
	Arg/Arg	Arg/Pro	Pro/Pro
WT/WT			
Case/Controls[a]	27/135	20/92	2/15
Multivariate OR[b]	1.00	1.08 (0.57-2.05)	0.66 (0.14-3.05)
Multivariate OR[c]	1.00	1.18 (0.62-2.26)	0.79 (0.17-3.71)
WT/NRHC or NRHC/NRHC			
Case/Controls[a]	54/196	36/102	7/18
Multivariate OR[b]	1.38 (0.83-2.31)	1.76 (1.01-3.10)	1.89 (0.72-4.97)
Multivariate OR[c]	1.40 (0.83-2.35)	1.80 (1.02-3.19)	1.97 (0.74-5.23)
WT/RHC			
Case/Controls[a]	38/78	21/55	2/9
Multivariate OR[b]	2.49 (1.41-4.39)	1.93 (1.00-3.70)	1.05 (0.21-5.16)
Multivariate OR[c]	2.40 (1.35-4.30)	1.94 (1.00-3.77)	1.02 (0.21-5.08)
RHC/RHC or NRHC/RHC			
Case/Controls[a]	27/50	24/35	4/3
Multivariate OR[b]	2.73 (1.45-5.11)	3.44 (1.77-6.70)	7.31 (1.53-35.00)
Multivariate OR[c]	2.38 (1.24-4.58)	2.88 (1.45-5.73)	6.74 (1.37-33.21)

P53 MC1R	BCC		
	Arg/Arg	Arg/Pro	Pro/Pro
WT/WT			
Case/Controls[a]	27/135	26/92	3/15
Multivariate OR[b]	1.00	1.42 (0.78-2.60)	0.99 (0.27-3.65)
Multivariate OR[c]	1.00	1.54 (0.83-2.83)	0.97 (0.26-3.67)
WT/NRHC or NRHC/NRHC			
Case/Controls[a]	64/196	32/102	9/18
Multivariate OR[b]	1.64 (0.99-2.70)	1.57 (0.88-2.78)	2.56 (1.04-6.34)
Multivariate OR[c]	1.63 (0.98-2.72)	1.53 (0.85-2.74)	2.83 (1.13-7.09)
WT/RHC			
Case/Controls[a]	31/78	29/55	5/9
Multivariate OR[b]	2.01 (1.12-3.63)	2.60 (1.41-4.79)	2.89 (0.90-9.33)
Multivariate OR[c]	1.87 (1.03-3.40)	2.28 (1.22-4.25)	2.44 (0.75-8.02)
RHC/RHC or NRHC/RHC			
Case/Controls[a]	23/50	15/35	3/3
Multivariate OR[b]	2.36 (1.24-4.51)	2.13 (1.02-4.43)	5.08 (0.97-26.61)
Multivariate OR[c]	1.86 (0.95-3.65)	1.64 (0.76-3.53)	3.75 (0.70-20.05)

p-value for trend was calculated across the three p53 genotypes.

WT stands for consensus allele. NRHC stands for non-red hair color allele. RHC stands for red hair color allele.

[a]The number of participants does not add up to the total women because of missing genotypes.

[b]Unconditional logistic regression adjusted for the matching variables: age and race (Caucasian/missing) (interaction *p*-values for SCC and BCC were 0.75 and 0.96, respectively).

[c]Unconditional logistic regression adjusted for the matching variables, natural skin color, natural hair color (interaction *p*-values for SCC and BCC were 0.94 and 0.88, respectively).

Supplementary Table 4. SCC and BCC risks by p53 Arg72Pro polymorphism and constitutional susceptibility score

	SCC			
Constitutional susceptibility score	Arg/Arg	Arg/Pro	Pro/Pro	*P*, trend
Low				
Case/Controls[a]	22/160	16/93	4/20	
Multivariate OR[b]	1.00	1.25 (0.63-2.51)	1.43 (0.45-4.59)	0.33
Medium				
Case/Controls[a]	51/156	28/110	4/14	
Multivariate OR[b]	2.41 (1.40-4.18)	1.90 (1.03-3.50)	2.04 (0.62-6.78)	0.39
High				
Case/Controls[a]	80/178	67/106	9/13	
Multivariate OR[b]	3.42 (2.03-5.77)	4.79 (2.78-8.25)	5.25 (2.00-13.75)	0.07
	BCC			
Constitutional susceptibility score	Arg/Arg	Arg/Pro	Pro/Pro	*P*, trend
Low				
Case/Controls[a]	25/167	21/95	4/24	
Multivariate OR[b]	1.00	1.50 (0.79-2.82)	1.12 (0.36-3.50)	0.46
Medium				
Case/Controls[a]	55/153	37/111	7/14	
Multivariate OR[b]	2.42 (1.43-4.09)	2.21 (1.26-3.87)	3.37 (1.23-9.19)	0.83
High				
Case/Controls[a]	83/174	55/103	12/9	
Multivariate OR[b]	3.20 (1.95-5.26)	3.62 (2.12-6.20)	10.01 (3.78-26.52)	0.05

p-value for trend was calculated across the three p53 genotypes.
[a]The number of participants does not add up to the total women because of missing genotypes.
[b]Unconditional logistic regression adjusted for the matching variables: age and race (Caucasian/missing) (interaction *p*-values for SCC and BCC were 0.50 and 0.51, respectively).