

Supplementary Materials for the manuscript entitled

Roma Socioeconomic Status Has Higher Impact On Smoking Behaviour Than Genetic Susceptibility

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Table 1: Hardy- Weinberg equilibrium for Hungarian Roma

CHR	SNP	Gene	A1	A2	GENO	p-value
2	rs10490162	NRXN1	C	T	3/66/327	1
4	rs3762611	GABRB1	A	G	21/105/272	0.0186
5	rs2673931	TRPC7	C	T	80/207/112	0.4204
10	rs4142041	CTNNA3	G	A	50/176/171	0.6586
15	rs2036534	AGPHD1	C	T	25/143/230	0.6823
15	rs16969968	CHRNA5	A	G	48/166/184	0.2586
15	rs578776	CHRNA3	A	G	74/171/148	0.05945
21	rs6517442	KCNJ6	C	T	47/186/166	0.7415
23	rs2235186	MAOA	A	G	43/147/105	0.5423

Table 2: Smoking status among both populations based on gender.

Gender	HR		HG		OR	95% CI
	SM %	NSM %	SM %	NSM %		
Males	16.5	9.8	15.8	29.3	1.892	1.588 - 2.255
Females	48.7	25.0	17.0	37.9	2.054	1.475 - 2.860

SM= smokers; NSM= non-smokers

Table 3: Differences in risk allele frequencies between study populations.

SNP	Gene	Risk Allele	Frequency		χ^2	p-value	OR	ADJ-p*
			HR	HG				
rs10490162	NRXN1	T	0.91	0.89	1.518	0.218	1.232	0.249
rs2673931	TRPC7	T	0.54	0.62	10.240	0.001	0.720	0.005
rs4142041	CTNNA3	G	0.35	0.39	2.366	0.124	0.851	0.165
rs2036534	AGPHD1	T	0.77	0.80	3.046	0.081	0.807	0.129
rs16969968	CHRNA5	A	0.33	0.36	1.064	0.302	0.896	0.302
rs578776	CHRNA3	G	0.60	0.74	35.270	<0.0001	0.524	<0.0001
rs6517442	KCNJ6	C	0.35	0.29	5.681	0.017	1.295	0.030
rs2235186	MAOA	A	0.40	0.32	9.239	0.002	1.429	0.006

Bold font highlights significant differences; * adjustable p-value

Table 4: Risk allele differences for males of both populations.

SNP	Risk Allele	Frequency		χ^2	p-value	OR	ADJ-p ¹
		HR	HG				
rs10490162	T	0.90	0.91	0.221	0.638	0.871	0.729
rs2673931	T	0.50	0.62	7.553	0.006	0.613	0.048
rs4142041	G	0.34	0.40	2.040	0.153	0.768	0.245
rs2036534	T	0.75	0.78	0.457	0.499	0.870	0.666
rs16969968	A	0.34	0.34	0.004	0.949	0.988	0.949
rs578776	G	0.62	0.71	5.354	0.021	0.650	0.055
rs6517442	C	0.39	0.30	4.415	0.036	1.476	0.071
rs2235186	A	0.44	0.30	5.877	0.015	1.882	0.055

Bold fonts highlight significant differences. Legend: ¹ adjusted p-value.

Table 5: Risk allele differences for females of both populations.

SNP	Risk Allele	Frequency		χ^2	p-value	OR	ADJ- p^1
		HR	HG				
rs10490162	T	0.91	0.88	3.759	0.053	1.498	0.084
rs2673931	T	0.55	0.62	4.493	0.034	0.760	0.084
rs4142041	G	0.36	0.39	0.767	0.381	0.891	0.381
rs2036534	T	0.77	0.82	4.113	0.043	0.723	0.084
rs16969968	A	0.33	0.37	1.621	0.203	0.844	0.232
rs578776	G	0.59	0.76	32.280	<0.0001	0.452	<0.0001
rs6517442	C	0.34	0.29	2.534	0.111	1.245	0.149
rs2235186	A	0.39	0.33	4.718	0.030	1.336	0.084

Bold fonts highlight significant differences. Legend: ¹ adjusted p-value.

Table 6: Genotype by smoking behaviours in general population (n=412)

SNPs	Genotype	Smoking Behaviors				p-value
		HSM ^a	MSM ^b	FSM ^c	NSM ^d	
rs10490162-T	C C	0.0	0.5	0.0	1.0	0.455
	T C	1.2	2.2	0.0	15.6	
	T T	10.8	11.2	1.7	55.7	
rs16969968-A	A A	1.7	1.0	0.0	8.0	0.094
	G A	7.6	7.6	1.2	32.9	
	G G	2.7	5.4	0.5	31.5	
rs2036534-T	C C	0.0	0.2	0.0	3.2	0.144
	C T	2.9	3.9	0.7	25.7	
	T T	9.0	9.5	1.0	43.8	
rs2235186-A	A A	3.9	2.2	0.0	12.5	0.001
	A G	2.0	4.2	1.5	18.6	
	G G	5.9	7.6	0.2	41.6	
rs2673931-T	C C	1.0	3.2	0.2	9.6	0.144
	C T	7.6	5.1	1.0	34.6	
	T T	3.2	5.6	0.5	28.4	
rs4142041-G	A A	5.9	5.2	0.2	23.7	0.476
	A G	4.7	6.9	1.2	39.0	
	G G	1.5	2.0	0.2	9.4	
rs578776-G	A A	0.2	0.5	0.0	5.7	0.546
	G A	4.7	5.5	1.2	28.0	
	G G	7.2	7.9	0.5	38.5	
rs6517442-C	C C	1.0	1.7	0.0	5.9	0.052
	T C	3.7	5.1	0.0	32.7	
	T T	7.3	7.1	1.7	33.9	

Legend: ^a Heavy Smoker, ^b Moderate Smoker, ^c Former Smoker, ^d Never smoker. Bold font means statistically significant at (0.001) level. Risk allele is written besides each SNP.

Table 7: Genotype by smoking behaviours in the Roma population (n=402)

SNPs	Genotype	Smoking Behaviors				p-value
		HSM ^a	MSM ^b	FSM ^c	NSM ^d	
rs10490162-T	C C	0.5	0.3	0.0	0.0	0.763
	T C	6.8	2.8	0.8	6.3	
	T T	30.8	16.2	2.8	32.8	
rs16969968-A	A A	3.5	2.3	0.3	6.0	0.407
	G A	15.8	8.8	2.3	14.8	
	G G	19.1	8.0	1.3	17.8	
rs2036534-T	C C	3.0	0.8	0.0	2.5	0.880
	C T	14.3	7.3	1.0	13.3	
	T T	20.9	11.1	2.8	23.1	
rs2235186-A	A A	10.5	2.8	1.0	7.8	0.356
	A G	14.3	8.0	1.5	13.3	
	G G	13.5	8.3	1.3	17.8	
rs2673931-T	C C	8.3	3.5	1.0	7.3	0.891
	C T	18.5	10.0	2.0	21.3	
	T T	11.5	5.5	0.8	10.3	
rs4142041-G	A A	15.9	8.3	2.3	16.6	0.418
	A G	16.1	9.6	1.0	17.6	
	G G	6.0	1.0	0.5	5.0	
rs578776-G	A A	7.1	2.5	0.8	8.4	0.533
	G A	18.3	8.7	1.0	15.5	
	G G	13.0	7.6	1.8	15.3	
rs6517442-C	C C	4.5	1.3	0.5	5.5	0.439
	T C	17.5	10.0	2.5	16.5	
	T T	16.3	7.8	0.8	16.8	

Legend: ^a Heavy Smoker, ^b Moderate Smoker, ^c Former Smoker, ^d Never smoker. Risk allele is written besides each SNP.

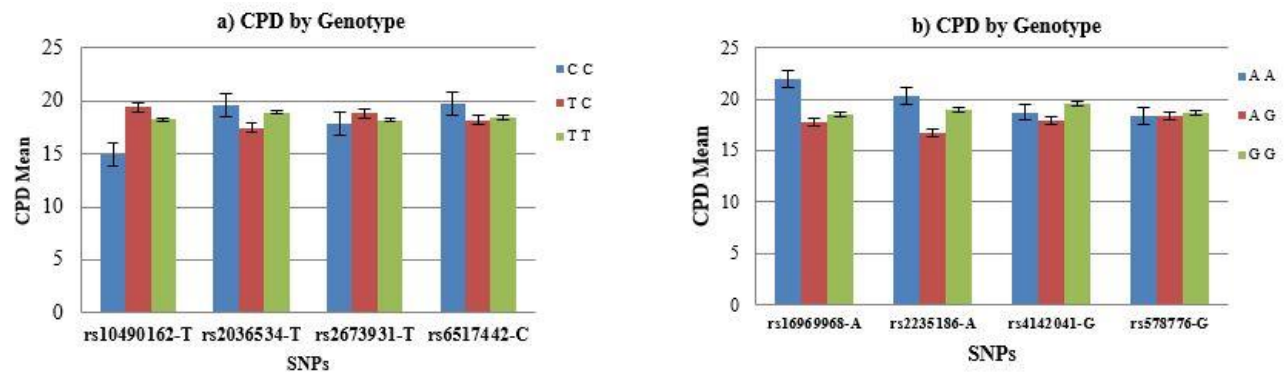


Figure 1: Cigarette per day (CPD) by genotype in the whole study sample. Risk allele is written beside each SNP

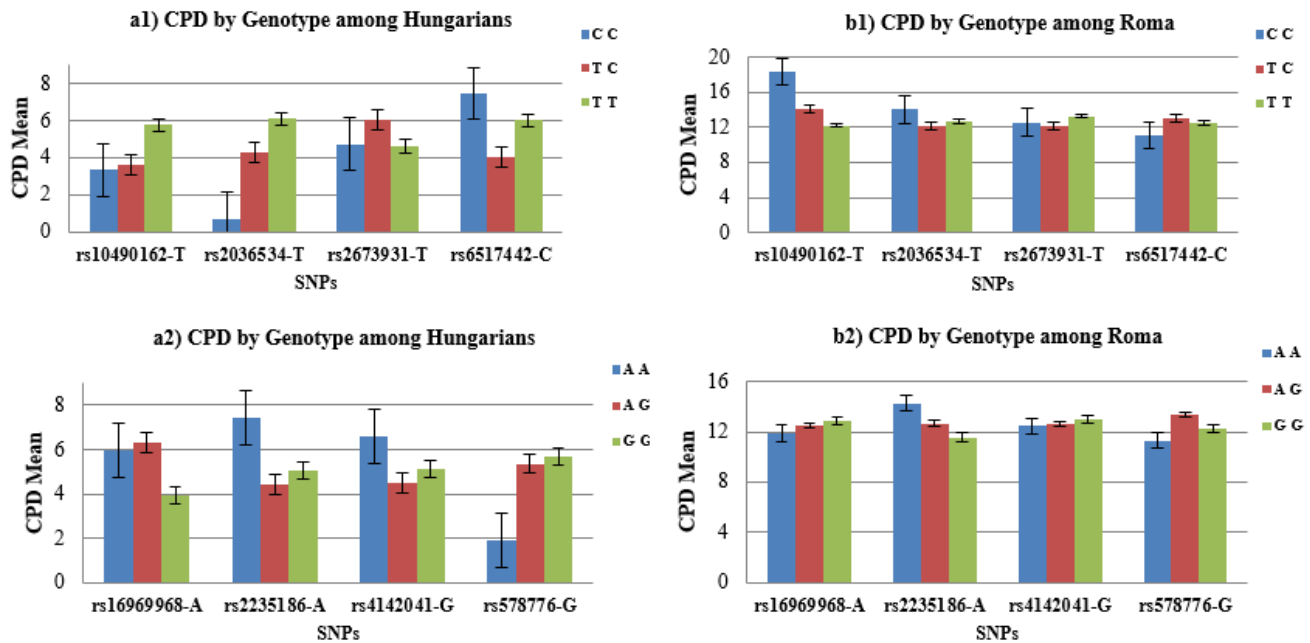


Figure 2: Cigarette per day (CPD) by genotype among HG (a1,2), (b1,2) among HR. Risk allele is written beside each SNP

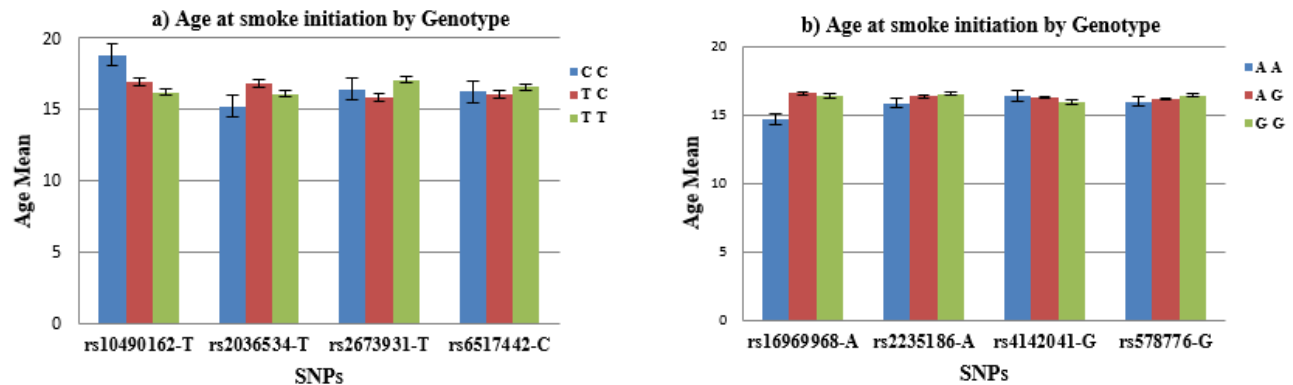


Figure 3: Age at smoking initiation by genotype. Risk allele is written beside each SNP

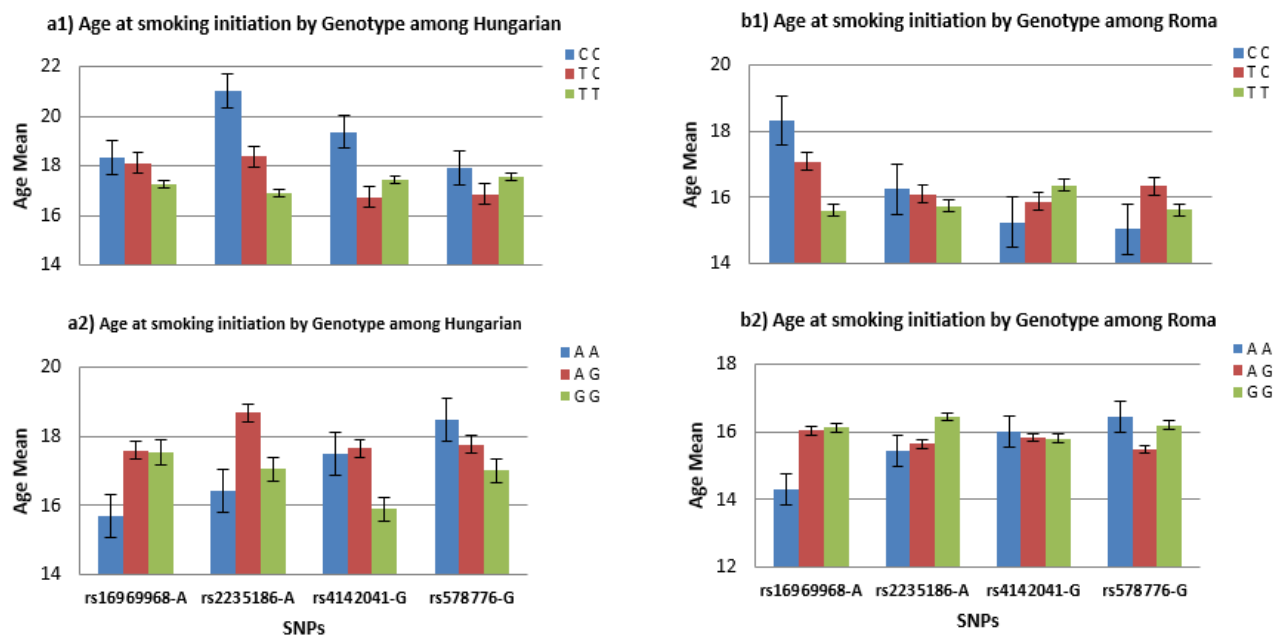


Figure4: Age at smoking initiation by genotypes among HG (a1,2), (b1,2) among HR. Risk allele is written beside each SNP

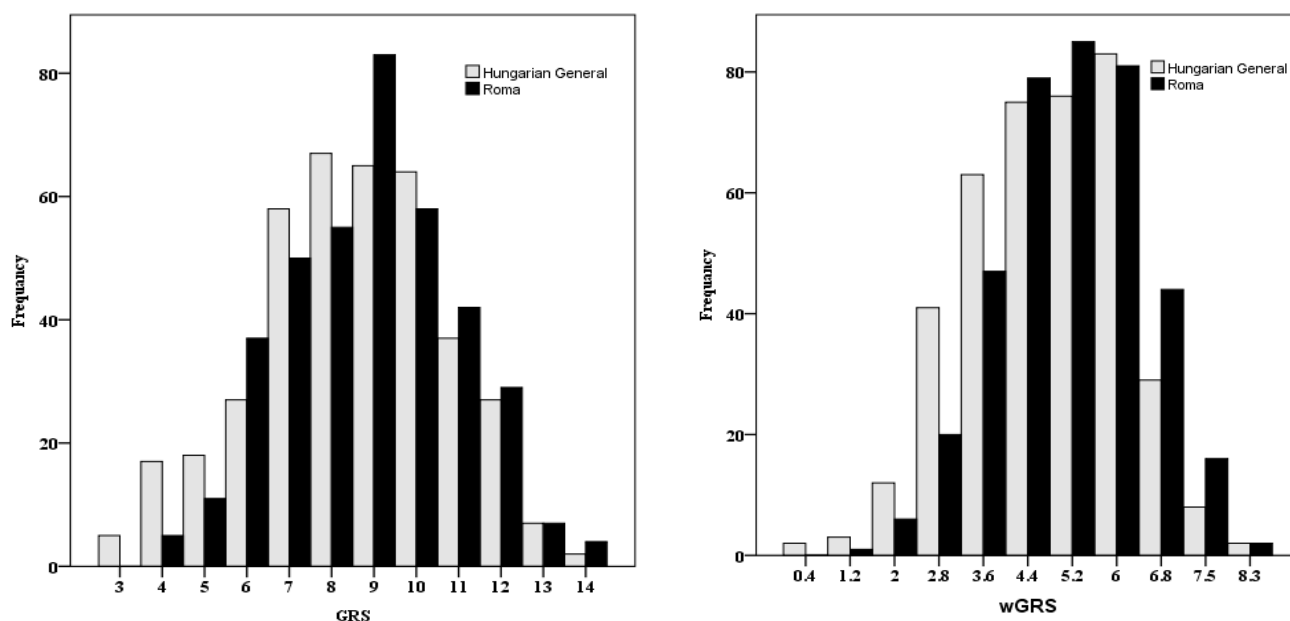


Figure5: Frequency distributions of GRS and wGRS based on populations

Table 8: GRSs and Smoking behaviours

Smoking Behaviors	Hungarian Roma (HR)						Hungarian General (HG)					
	GRS	OR	95% CI	wGRS	OR	95% CI	GRS	OR	95% CI	wGRS	OR	95% CI
Heavy Smokers	0.61	1.07	0.98-1.15	0.57	0.94	0.86-1.42	0.52	1.02	0.91-1.2	0.65	1.34	0.32-0.97
Other smokers	0.57			0.61			0.51			0.48		

Table 9: Predicted model on cigarette per day in both populations.

	Cigarette per day (CPD)							
	Model I ^a				Model I ^b			
	β	Standardized β	<i>t</i>	p-value	β	Standardized β	<i>t</i>	p-value
GRSs	-0.040	-0.007	-0.215	0.829	0.064	0.007	0.218	0.827
Population	7.665	0.330	9.275	0.000	7.625	0.329	9.172	0.000
SES	-0.055	-0.016	-0.461	0.645	-0.056	-0.016	-0.467	0.641
Gender	-2.452	-0.101	-2.927	0.004	-2.448	-0.101	-2.923	0.004
Age	-0.297	-0.033	-0.951	0.342	-0.302	-0.034	-0.969	0.333
BMI	-1.176	-0.101	-2.901	0.004	-1.175	-0.101	-2.898	0.004

Bold font highlights significant result. $R^2= .113$ Legend: a= CPD was set as a dependent variable while GRS, population, SES, gender, age and BMI were set as independent variables; b=CPD was set as a dependent variable while wGRS, population, SES, gender, age and BMI were set as independent variables. Hungarian General was set as a reference for population. $R^2= 0.051$

Table10: Regression model on age-imitation of smoking in both populations.

	Age- initiation of smoking							
	Model II ^a				Model II ^b			
	β	Standardized β	<i>t</i>	p-value	β	Standardized β	<i>t</i>	p-value
GRSs	0.068	0.016	0.462	0.645	0.028	0.004	0.121	0.904
Population	-4.054	-0.231	-6.170	0.000	-4.069	-0.232	-6.155	0.000
SES	0.019	0.007	0.204	0.839	0.020	0.008	0.212	0.832
Gender	0.031	0.002	0.047	0.963	0.030	0.002	0.045	0.964
Age	0.201	0.030	0.814	0.416	0.203	0.030	0.825	0.410
BMI	-0.702	-0.079	-2.186	0.029	-0.701	-0.079	-2.181	0.030

Bold font highlights significant result. Legend: a= Age-initiation of smoking was set as a dependent variable while GRS, population, SES, gender, age and BMI were set as independent variables; b= Age-initiation of smoking was set as a dependent variable while wGRS, population, SES, gender, age and BMI were set as independent variables. Hungarian General was set as a reference for population. $R^2= 0.051$

Table 11: Socioeconomic status according to smoking status in both population.

Socioeconomic	Hungarian Roma (HR)				Hungarian General (HG)			
	SM	NSM	χ^2	p-value	SM	NSM	χ^2	p-value
Lower	21(5.2)	0(0)	8.076	0.001	0(0)	0(0)	15.93	0.005
Upper lower	71(17.7)	35(8.7)			25(6.1)	44(10.7)		
Lower middle	121(30.1)	68(16.9)			67(16.3)	108(26.2)		
Upper middle	49(12.2)	37(9.2)			42(10.2)	108(26.2)		
Upper	0(0)	0(0)			1(0.2)	17(4.1)		

Bold font highlights significant results.