

Environment Changes Genetic Effects on Respiratory Conditions and Allergic Phenotypes

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SUPPLEMENTARY TABLES

Supplementary Table S1: Genotype frequencies, minor allele frequencies and Hardy-Weinberg Equilibrium probabilities for the SNPs in Greenlandic and Danish Inuit populations.

	Greenland				Denmark				<i>P</i>
	N	%	MAF	HWE	N	%	MAF	HWE	
<i>ADAM33</i>									
rs612709									
GG	540	87.9	A: 6.1%	0.719	548	85.2	A: 7.8%	0.576	0.161
GA	73	11.9			90	14.0			
AA	1	0.2			5	0.8			
rs528557									
CC	493	81.0	G: 10.3%	0.126	464	72.5	G: 14.7%	0.639	0.002
CG	106	17.4			164	25.6			
GG	10	1.6			12	1.9			
rs44707									
AA	276	45.3	C: 32.6%	0.927	290	45.2	C: 31.7%	0.144	0.482
AC	269	44.2			295	46.0			
CC	64	10.5			56	8.8			
rs2787094									
GG	490	80.1	C: 10.4%	0.663	489	76.0	C: 12.8%	1.000	0.157
GC	117	19.1			144	22.4			
CC	5	0.8			10	1.6			
<i>ALOX5</i>									
rs4986832									
GG	542	88.9	A: 5.8%	0.449	524	81.5	A: 9.9%	0.382	0.001
GA	65	10.7			111	17.3			
AA	3	0.5			8	1.2			
rs892690									
GG	272	45.0	A: 32.1%	0.263	212	33.3	A: 42.1%	0.935	<0.001
GA	277	45.8			312	49.1			
AA	56	9.2			112	17.6			
rs2115819									
CC	135	22.2	C: 47.1%	1.000	190	29.7	T: 44.3%	0.200	<0.001
CT	304	49.9			332	52.0			
TT	170	27.9			117	18.3			
<i>LT-α</i>									
rs2844484									
CC	440	72.5	T: 15.0%	0.634	380	59.2	T: 22.5%	0.257	<0.001
CT	152	25.0			235	36.6			
TT	15	2.5			27	4.2			
rs909253									
TT	180	29.6	C: 44.4%	0.190	200	31.2	C: 43.0%	0.172	0.761
TC	317	52.0			332	51.7			
CC	112	18.4			110	17.1			
rs1041981									
CC	183	30.0	A: 44.2%	0.251	201	31.5	A: 42.6%	0.169	0.712
CA	316	51.7			330	51.7			
AA	112	18.3			107	16.8			
<i>LTC4S</i>									
rs730012									

	Greenland				Denmark				<i>P</i>
	N	%	MAF	HWE	N	%	MAF	HWE	
AA	401	65.3	C: 18.6%	0.110	409	63.6	C: 20.6%	0.398	0.080
AC	198	32.3			203	31.6			
CC	15	2.4			31	4.8			
<i>NOS1</i>									
rs7977109									
AA	226	36.9	G: 40.5%	0.154	227	35.3	G: 39.9%	0.411	0.246
AG	278	45.3			319	49.6			
GG	109	17.8			97	15.1			
<i>ORMDL3</i>									
rs12603332									
CC	176	29.2	T: 46.7%	0.462	200	31.3	T: 44.6%	0.523	0.587
CT	291	48.3			308	48.2			
TT	136	22.5			131	20.5			
rs4065275									
GG	174	29.7	A: 45.1%	0.739	200	32.5	A: 42.4%	0.509	0.372
GA	295	50.3			309	50.2			
AA	117	20.0			106	17.2			
<i>TBXA2R</i>									
rs4523									
TT	264	43.6	C: 33.7%	0.785	242	37.7	C: 39.5%	0.247	0.008
TC	275	45.4			292	45.6			
CC	67	11.0			107	16.7			
<i>TNF-α</i>									
rs1799964									
TT	228	37.4	C: 38.4%	0.609	297	46.3	C: 31.2%	0.270	0.001
TC	295	48.3			289	45.0			
CC	87	14.3			56	8.7			
rs1800630									
CC	424	69.4	A: 16.6%	0.885	449	69.8	A: 16.7%	0.395	0.746
CA	171	28.0			173	26.9			
AA	16	2.6			21	3.3			
rs1800629									
GG	570	93.1	A: 3.5%	0.534	560	87.1	A: 6.6%	1.000	0.002
GA	41	6.7			81	12.6			
AA	1	0.2			2	0.3			

MAF: minor allele frequency; HWE: Hardy-Weinberg Equilibrium. *P* values were calculated using Chi-square test.

Supplementary Table S2: Mean lung function parameters (FEV1 and FVC) and 95% CI for the 18 SNP genotypes for Inuit residing in Greenland and Denmark.

		Greenland			Denmark		
		N	Mean (95% CI)	P	N	Mean (95% CI)	P
ADAM33 rs612709							
FEV1 (L)	GG	538	3.15 (3.07-3.24)		527	3.08 (3.00-3.15)	
	GA	73	3.16 (2.94-3.38)	0.668	85	3.23 (3.02-3.43)	0.590
	AA	1	1.55 (-)	-	5	2.68 (1.69-3.67)	0.201
Overall P				0.668			0.371
FVC (L)	GG	532	3.98 (3.88-4.08)		510	3.83 (3.74-3.92)	
	GA	73	3.93 (3.67-4.19)	0.333	86	3.96 (3.71-4.20)	0.077
	AA	1	2.40 (-)	-	5	3.44 (2.32-4.56)	0.291
Overall P				0.333			0.236
rs528557							
FEV1 (L)	CC	491	3.15 (3.06-3.24)		447	3.05 (2.97-3.12)	
	CG	106	3.14 (2.96-3.33)	0.412	156	3.24 (3.09-3.39)	0.520
	GG	10	3.29 (2.66-3.92)	0.475	12	3.02 (2.59-3.44)	0.711
Overall P				0.572			0.745
FVC (L)	CC	485	3.98 (3.87-4.08)		432	3.78 (3.69-3.88)	
	CG	106	3.92 (3.70-4.15)	0.127	155	4.00 (3.82-4.19)	0.258
	GG	10	4.08 (3.37-4.79)	0.260	12	3.80 (3.31-4.28)	0.453
Overall P				0.183			0.370
rs44707							
FEV1 (L)	AA	275	3.23 (3.11-3.35)		276	3.05 (2.95-3.15)	
	AC	268	3.06 (2.94-3.18)	0.058	285	3.15 (3.04-3.26)	0.783
	CC	64	3.25 (3.04-3.46)	0.913	54	2.98 (2.76-3.20)	0.589
Overall P				0.146			0.782
FVC (L)	AA	274	4.04 (3.89-4.18)		270	3.79 (3.67-3.91)	
	AC	263	3.88 (3.73-4.02)	0.105	277	3.90 (3.77-4.03)	0.956
	CC	64	4.10 (3.83-4.37)	0.806	52	3.73 (3.46-3.99)	0.576
Overall P				0.199			0.850
rs2787094							
FEV1 (L)	GG	488	3.16 (3.07-3.24)		468	3.06 (2.98-3.13)	
	GC	117	3.16 (2.98-3.34)	0.787	139	3.24 (3.09-3.39)	0.043
	CC	5	2.74 (1.63-3.85)	0.217	10	2.83 (2.27-3.39)	0.189
Overall P				0.456			0.045
FVC (L)	GG	482	3.98 (3.87-4.09)		454	3.81(3.71-3.91)	
	GC	117	3.98 (3.76-4.20)	0.650	138	3.96 (3.79-4.14)	0.249
	CC	5	3.53 (2.23-4.83)	0.243	9	3.52 (2.72-4.32)	0.045
Overall P				0.466			0.058
ALOX5 rs4986832							
FEV1 (L)	GG	540	3.16 (3.08-3.25)		503	3.06 (2.98-3.13)	
	GA	65	3.09 (2.82-3.36)	0.391	106	3.26 (3.09-3.44)	0.730
	AA	3	2.60 (-)	0.095	8	3.16 (2.59-3.72)	0.206
Overall P				0.177			0.412
FVC (L)	GG	535	3.99 (3.89-4.09)		491	3.80 (3.71-3.89)	
	GA	64	3.87 (3.55-4.18)	0.223	103	4.02 (3.80-4.24)	0.785
	AA	3	3.48 (-)	0.130	7	3.99 (3.13-4.85)	0.319
Overall P				0.158			0.593
rs892690							
FEV1 (L)	GG	271	3.21 (3.09-3.32)		208	3.11(2.99-3.23)	

		Greenland			Denmark		
		N	Mean (95% CI)	P	N	Mean (95% CI)	P
Overall P	GA	276	3.07 (2.95-3.19)	0.311	297	3.07 (2.98-3.17)	0.905
	AA	56	3.30 (3.04-3.56)	0.965	105	3.10 (2.93-3.28)	0.997
FVC (L)				0.561			0.991
Overall P	GG	270	4.06 (3.91-4.20)		201	3.89 (3.75-4.04)	
	GA	272	3.85 (3.71-4.00)	0.159	291	3.80 (3.67-3.92)	0.298
rs2115819	AA	56	4.15 (3.83-4.47)	0.950	102	3.85 (3.65-4.06)	0.651
FEV1 (L)				0.347			0.582
Overall P	TT	170	3.24 (3.10-3.38)		111	3.06 (2.90-3.23)	
	CT	302	3.12 (3.00-3.23)	0.511	319	3.15 (3.05-3.24)	0.720
FVC (L)	CC	135	3.11 (2.94-3.28)	0.355	183	3.04 (2.91-3.16)	0.731
Overall P				0.640			0.929
Overall P	TT	170	4.07 (3.90-4.25)		110	3.82 (3.62-4.02)	
	CT	298	3.92 (3.78-4.07)	0.566	309	3.90 (3.78-4.02)	0.477
LT-α rs2844484	CC	133	3.94 (3.75-4.14)	0.412	178	3.78 (3.62-3.93)	0.647
FEV1 (L)				0.705			0.776
Overall P	CC	439	3.16 (3.07-3.25)		361	2.99 (2.90-3.08)	
	CT	151	3.11(2.94-3.27)	0.952	228	3.22 (3.11-3.34)	0.036
FVC (L)	TT	15	3.38 (2.80-3.95)	0.247	27	3.36 (2.99-3.74)	0.581
Overall P				0.510			0.109
Overall P	CC	435	3.98 (3.87-4.09)		353	3.72 (3.61-3.82)	
	CT	150	3.92 (3.71-4.12)	0.932	220	3.99 (3.85-4.13)	0.041
rs909253	TT	14	4.39 (3.68-5.10)	0.212	27	4.20 (3.73-4.68)	0.470
FEV1 (L)				0.458			0.115
Overall P	TT	180	3.23 (3.07-3.39)		193	3.09 (2.97-3.22)	
	TC	315	3.18 (3.07-3.29)	0.641	318	3.14 (3.04-3.23)	0.086
FVC (L)	CC	112	2.94 (2.78-3.10)	0.492	105	2.95 (2.79-3.10)	0.970
Overall P				0.513			0.158
Overall P	TT	178	4.13 (3.94-4.32)		189	3.83 (3.68-3.98)	
	TC	313	3.98 (3.85-4.11)	0.619	310	3.90 (3.78-4.02)	0.081
rs1041981	CC	110	3.67 (3.47-3.87)	0.146	101	3.67 (3.48-3.85)	0.703
FEV1 (L)				0.335			0.193
Overall P	CC	183	3.22 (3.07-3.38)		194	3.10 (2.98-3.23)	
	CA	314	3.19 (3.08-3.30)	0.546	316	3.13 (3.04-3.23)	0.112
FVC (L)	AA	112	2.92 (2.76-3.08)	0.449	102	2.94 (2.78-3.10)	0.928
Overall P				0.401			0.183
Overall P	CC	181	4.12 (3.93-4.31)		190	3.84 (3.69-3.99)	
	CA	312	3.99 (3.86-4.12)	0.735	308	3.90 (3.78-4.02)	0.095
LTC4S rs730012	AA	110	3.65 (3.44-3.85)	0.134	98	3.66 (3.47-3.85)	0.755
FEV1 (L)				0.292			0.217
Overall P	AA	399	3.12 (3.02-3.22)		391	3.09 (3.00-3.17)	
	AC	198	3.22 (3.09-3.35)	0.479	196	3.09 (2.97-3.20)	0.326
FVC (L)	CC	15	3.14 (2.68-3.60)	0.839	30	3.24 (2.92-3.56)	0.893
Overall P				0.772			0.592
Overall P	AA	396	3.94 (3.82-4.06)		382	3.84 (3.73-3.95)	
	AC	195	4.04 (3.87-4.20)	0.608	190	3.82 (3.69-3.96)	0.259

		Greenland			Denmark		
		N	Mean (95% CI)	P	N	Mean (95% CI)	P
Overall P	CC	15	3.89 (3.39-4.39)	0.940	29	3.94 (3.52-4.34)	0.865
				0.869			0.529
NOS1 rs7977109							
FEV1 (L)	AA	225	3.15 (3.02-3.28)		218	3.02 (2.91-3.13)	
	AG	278	3.19 (3.08-3.30)	0.967	306	3.14 (3.04-3.24)	0.523
	GG	108	3.07 (2.86-3.29)	0.303	93	3.12 (2.94-3.30)	0.870
Overall P				0.534			0.810
FVC (L)	AA	224	3.96 (3.80-4.11)		212	3.77 (3.63-3.90)	
	AG	277	4.00 (3.87-4.14)	0.912	299	3.90 (3.77-4.02)	0.728
	GG	104	3.94 (3.67-4.20)	0.695	90	3.83 (3.62-4.05)	0.736
Overall P				0.885			0.816
ORMDL3 rs12603332							
FEV1 (L)	CC	175	3.29 (3.14-3.43)		189	3.00 (2.87-3.12)	
	CT	290	3.07 (2.95-3.18)	0.007	297	3.12 (3.02-3.22)	0.241
	TT	136	3.17 (3.00-3.35)	0.180	127	3.18 (3.03-3.33)	0.374
Overall P				0.027			0.470
FVC (L)	CC	175	4.13 (3.95-4.31)		188	3.73 (3.58-3.89)	
	CT	286	3.89 (3.75-4.03)	0.010	286	3.87 (3.75-3.99)	0.321
	TT	134	3.96 (3.75-4.17)	0.091	123	3.94 (3.76-4.12)	0.645
Overall P				0.033			0.610
rs4065275							
FEV1 (L)	GG	173	3.29 (3.15-3.44)		189	2.98 (2.86-3.11)	
	GA	294	3.06 (2.95-3.17)	0.006	298	3.12 (3.02-3.22)	0.238
	AA	117	3.19 (3.01-3.38)	0.168	104	3.19 (3.03-3.36)	0.265
Overall P				0.023			0.405
FVC (L)	GG	173	4.14 (3.96-4.32)		188	3.72 (3.57-3.87)	
	GA	290	3.88 (3.74-4.02)	0.007	287	3.87 (3.75-3.99)	0.293
	AA	115	3.98 (3.75-4.20)	0.080	101	3.94 (3.74-4.14)	0.469
Overall P				0.025			0.553
TBXA2R rs4523							
FEV1 (L)	TT	263	3.21 (3.10-3.33)		232	2.99 (2.87-3.10)	
	TC	275	3.05 (2.93-3.17)	0.081	284	3.17 (3.07-3.27)	0.413
	CC	66	3.37 (3.13-3.61)	0.999	99	3.13 (2.95-3.31)	0.254
Overall P				0.183			0.486
FVC (L)	TT	263	4.05 (3.91-4.19)		226	3.75 (3.61-3.89)	
	TC	271	3.84 (3.69-3.99)	0.059	274	3.92 (3.79-4.04)	0.136
	CC	64	4.26 (3.97-4.55)	0.734	99	3.85 (3.65-4.05)	0.086
Overall P				0.162			0.160
TNF-α rs1799964							
FEV1 (L)	TT	227	3.00 (2.88-3.13)		286	3.13 (3.03-3.23)	
	CT	294	3.25 (3.13-3.37)	0.621	276	3.10 (2.99-3.21)	0.534
	CC	87	3.20 (2.99-3.42)	0.711	54	2.86 (2.65-3.07)	0.201
Overall P				0.870			0.424
FVC (L)	TT	224	3.75 (3.60-3.90)		277	3.89 (3.77-4.01)	
	CT	291	4.11 (3.97-4.25)	0.955	269	3.84 (3.71-3.97)	0.225
	CC	87	4.09 (3.84-4.35)	0.613	54	3.55 (3.31-3.78)	0.135
Overall P				0.868			0.232
rs1800630							
FEV1 (L)	CC	422	3.09 (3.00-3.19)		430	3.08 (3.00-3.16)	
	CA	171	3.29 (3.14-3.45)	0.705	167	3.12 (2.97-3.27)	0.589

		Greenland			Denmark		
		N	Mean (95% CI)	<i>P</i>	N	Mean (95% CI)	<i>P</i>
Overall <i>P</i>	AA	16	3.28 (2.63-3.93)	0.681	20	3.11 (2.71-3.50)	0.683
				0.868			0.773
FVC (L)	CC	418	3.89 (3.78-4.00)		418	3.85 (3.75-3.94)	
	CA	169	4.17 (3.98-4.36)	0.463	163	3.82 (3.64-4.00)	0.100
	AA	16	4.24 (3.42-5.05)	0.232	20	3.90 (3.42-4.38)	0.432
Overall <i>P</i>				0.406			0.161
rs1800629 FEV1 (L)	GG	568	3.15 (3.07-3.24)		534	3.07 (3.00-3.14)	
	GA	41	3.05 (2.74-3.36)	0.414	81	3.25 (3.06-3.43)	0.888
	AA	1	2.90 (-)	-	2	3.30 (-)	-
Overall <i>P</i>				0.414			0.888
FVC (L)	GG	563	3.98 (3.88-4.08)		523	3.81(3.72-3.90)	
	GA	40	3.80 (3.42-4.18)	0.160	76	4.04 (3.81-4.28)	0.518
	AA	1	3.45 (-)	-	2	4.23 (-)	-
Overall <i>P</i>				0.160			0.518

CI: confidence interval. The associations (overall *P* value) were investigated using general linear model between SNPs and lung function, while *P* values in column were calculated for comparisons of heterozygotes and homozygotes vs reference allele respectively. All *P* values were adjusted by gender, age, height, ethnicity and smoking condition.

Supplementary Table S3: The prevalence and odds ratios of ever asthma in Inuit the 18 SNP genotypes in Greenlandic and Danish populations.

	Greenland Ever asthma					Denmark Ever asthma				
	N	n	%	OR	P	N	n	%	OR	P
ADAM33 rs612709										
GG	540	47	8.7	1.00		548	51	9.3	1.00	
GA	73	5	6.8	0.83	0.719	89	8	9.0	0.92	0.980
AA	1	0	0.0	-	-	5	0	0.0	0.00	0.999
Overall P					0.719					1.000
rs528557										
CC	493	43	8.7	1.00		465	44	9.5	1.00	
CG	106	7	6.6	0.76	0.470	162	15	9.3	0.94	0.851
GG	10	1	10.0	1.27	0.749	12	0	0.0	-	-
Overall P					0.721				0.00	0.999
rs44707										
AA	276	22	8.0	1.00		291	22	7.6	1.00	
AC	269	21	7.8	0.94	0.655	294	30	10.2	1.38	0.244
CC	64	8	12.5	2.18	0.085	55	6	10.9	1.52	0.428
Overall P					0.124					0.466
rs2787094										
GG	490	41	8.4	1.00		488	43	8.8	1.00	
GC	108	9	7.7	0.98	0.893	144	16	11.1	1.26	0.305
CC	4	1	20.0	2.72	0.395	10	0	0.0	0.00	0.999
Overall P					0.707					0.590
ALOX5 rs4986832										
GG	542	44	8.1	1.00		524	50	9.5	1.00	
GA	65	7	10.8	1.24	0.651	110	8	7.3	0.71	0.414
AA	3	1	33.3	5.38	0.234	8	1	12.5	1.63	0.579
Overall P					0.454					0.600
rs892690										
GG	272	20	7.4	1.00		211	21	10.0	1.00	
GA	277	23	8.3	1.13	0.798	312	30	9.6	0.96	0.773
AA	56	9	16.1	2.78	0.022	112	8	7.1	0.68	0.338
Overall P					0.058					0.628
rs2115819										
TT	170	13	7.6	1.00		116	11	9.5	1.00	
CT	304	26	8.6	1.07	0.832	331	29	8.8	0.93	0.832
CC	135	13	9.6	1.34	0.537	191	18	9.4	1.03	0.898
Overall P					0.812					0.978
LT-α rs2844484										
CC	440	37	8.4	1.00		380	39	10.3	1.00	
CT	152	13	8.6	0.86	0.731	234	18	7.7	0.72	0.267
TT	15	1	6.7	0.82	0.887	27	2	7.4	0.64	0.558
Overall P					0.937					0.487
rs909253										
TT	180	16	8.9	1.00		199	19	9.5	1.00	
TC	317	24	7.6	0.99	0.890	332	26	7.8	0.86	0.645
CC	112	12	10.7	1.34	0.562	110	14	12.7	1.50	0.286
Overall P					0.732					0.226
rs1041981										

	Greenland					Denmark				
	N n		%	OR	P	N n		%	OR	P
CC	183	16	8.7	1.00		200	19	9.5	1.00	
CA	316	23	7.3	0.97	0.858	330	26	7.9	0.88	0.572
AA	112	12	10.7	1.34	0.570	107	13	12.1	1.44	0.328
Overall P					0.724					0.304
LTC4S rs730012										
AA	401	40	10.0	1.00		409	39	9.5	1.00	
AC	198	11	5.6	0.58	0.162	203	19	9.4	0.96	0.942
CC	15	1	6.7	0.65	0.665	30	1	3.3	0.34	0.326
Overall P					0.356					0.617
NOS1 rs7977109										
AA	226	25	11.1	1.00		227	23	10.1	1.00	
AG	278	17	6.1	0.56	0.086	318	23	7.2	0.68	0.190
GG	109	9	8.6	0.53	0.158	97	13	13.4	1.33	0.418
Overall P					0.149					0.135
ORMDL3 rs12603332										
CC	176	16	9.1	1.00		199	18	9.0	1.00	
CT	291	22	7.6	0.64	0.337	308	27	8.8	0.98	0.960
TT	136	13	9.6	0.91	0.919	131	13	9.9	1.11	0.642
Overall P					0.573					0.850
rs4065275										
GG	174	16	9.2	1.00		199	18	9.0	1.00	
GA	295	23	7.8	0.66	0.376	309	27	8.7	0.97	0.948
AA	117	9	7.7	0.76	0.628	106	10	9.4	1.02	0.848
Overall P					0.673					0.967
TBXA2R rs4523										
TT	264	22	8.3	1.00		242	21	8.7	1.00	
TC	275	25	9.1	0.91	0.843	291	26	8.9	0.97	0.948
CC	67	4	6.0	0.69	0.613	107	11	10.3	1.17	0.519
Overall P					0.879					0.751
TNF-α rs1799964										
TT	228	21	9.2	1.00		297	29	9.8	1.00	
TC	295	24	8.1	0.93	0.950	288	22	7.6	0.76	0.414
CC	87	7	8.0	0.80	0.641	56	8	14.3	1.40	0.456
Overall P					0.871					0.414
rs1800630										
CC	424	35	8.3	1.00		449	45	10.0	1.00	
CA	171	14	8.2	0.97	0.876	172	11	6.4	0.59	0.168
AA	16	2	12.5	0.75	0.713	21	3	14.3	1.34	0.742
Overall P					0.918					0.343
rs1800629										
GG	570	49	8.6	1.00		559	51	9.1	1.00	
GA	41	3	7.3	0.90	0.865	81	8	9.9	1.10	0.822
AA	1	0	0.0	-	-	2	0	0.0	-	-
Overall P					0.865					0.822

OR: odds ratio. The associations (overall *P* value) were investigated using logistic regression analyses between SNPs and disease prevalence, while *P* values in column were calculated for comparisons of heterozygotes and homozygotes vs reference allele respectively. All *P* values and ORs were adjusted by gender, age, height, ethnicity and smoking condition.

Supplementary Table S4: The prevalence and odds ratios of bronchitis in Inuit for the 18 SNP genotypes in Greenlandic and Danish populations.

	Greenland Bronchitis					Denmark Bronchitis				
	N	n	%	OR	P	N	n	%	OR	P
ADAM33 rs612709										
GG	539	138	25.6	1.00		548	76	13.9	1.00	
GA	73	17	23.3	0.90	0.717	89	13	14.6	1.12	0.727
AA	1	1	100.0	-	-	5	0	0.0	-	-
Overall P					0.717					0.727
rs528557										
CC	492	127	25.8	1.00		464	65	14.0	1.00	
CG	106	27	25.5	0.90	0.930	163	22	13.5	1.02	0.865
GG	10	1	10.0	0.29	0.250	12	1	8.3	0.57	0.613
Overall P					0.564					0.862
rs44707										
AA	276	64	23.2	1.00		290	38	13.1	1.00	
AC	268	76	28.4	0.21	0.149	295	40	13.6	1.10	0.813
CC	64	16	25.0	0.66	0.644	55	11	20.0	1.77	0.145
Overall P					0.450					0.334
rs2787094										
GG	489	124	25.4	1.00		488	71	14.5	1.00	
GC	117	29	24.8	0.84	0.801	144	17	11.8	0.83	0.488
CC	5	3	60.0	0.14	0.118	10	1	10.0	0.66	0.656
Overall P					0.319					0.722
ALOX5 rs4986832										
GG	541	137	25.3	1.00		523	73	14.0	1.00	
GA	65	17	26.2	0.83	0.680	111	14	12.6	0.93	0.955
AA	3	1	33.3	0.92	0.865	8	2	25.0	2.01	0.435
Overall P					0.974					0.733
rs892690										
GG	271	71	26.2	1.00		211	27	12.8	1.00	
GA	277	69	24.9	0.78	0.809	312	47	15.1	1.17	0.515
AA	56	16	28.6	0.58	0.541	112	15	13.4	1.07	0.862
Overall P					0.771					0.800
rs2115819										
TT	169	41	24.3	1.00		116	16	13.8	1.00	
CT	304	81	26.6	0.56	0.547	331	41	12.4	0.88	0.724
CC	135	34	25.2	0.82	0.849	191	31	16.2	1.17	0.641
Overall P					0.840					0.587
LT-α rs2844484										
CC	440	113	25.7	1.00		379	63	16.6	1.00	
CT	151	36	23.8	0.90	0.647	235	18	7.7	0.41	0.003
TT	15	5	33.3	1.54	0.419	27	7	25.9	1.92	0.171
Overall P					0.624					0.002
rs909253										
TT	180	45	25.0	1.00		200	24	12.0	1.00	
TC	316	79	25.0	1.06	0.720	331	42	12.7	1.02	0.945
CC	112	32	28.6	1.33	0.318	110	23	20.9	1.91	0.060
Overall P					0.597					0.090
rs1041981										

	Greenland Bronchitis					Denmark Bronchitis				
	N	n	%	OR	P	N	n	%	OR	P
CC	183	46	25.1	1.00		201	24	11.9	1.00	
CA	315	78	24.8	0.98	0.778	329	42	12.8	1.08	0.924
AA	112	32	28.6	1.19	0.339	107	23	21.5	2.02	0.047
Overall P					0.615					0.070
LTC4S rs730012										
AA	400	108	27.0	1.00		408	52	12.7	1.00	
AC	198	43	21.7	0.78	0.306	203	33	16.3	1.34	0.238
CC	15	5	33.3	1.36	0.572	31	4	12.9	0.99	0.905
Overall P					0.470					0.497
NOS1 rs7977109										
AA	225	53	23.6	1.00		226	33	14.6	1.00	
AG	278	73	26.3	1.17	0.418	319	41	12.9	0.87	0.503
GG	109	30	27.5	1.17	0.566	97	15	15.5	1.14	0.791
Overall P					0.700					0.666
ORMDL3 rs12603332										
CC	176	43	24.4	1.00		199	23	11.6	1.00	
CT	290	73	25.2	1.01	0.786	308	49	15.9	1.51	0.118
TT	136	39	28.7	1.20	0.426	131	17	13.0	1.13	0.768
Overall P					0.717					0.245
rs4065275										
GG	174	43	24.7	1.00		199	23	11.6	1.00	
GA	294	74	25.2	1.00	0.847	309	49	15.9	1.50	0.118
AA	117	33	28.2	1.19	0.458	106	14	13.2	1.15	0.766
Overall P					0.740					0.255
TBXA2R rs4523										
TT	264	71	26.9	1.00		241	36	14.9	1.00	
TC	274	70	25.5	0.96	0.848	292	34	11.6	0.86	0.563
CC	67	14	20.9	0.72	0.343	107	19	17.8	1.39	0.229
Overall P					0.636					0.232
TNF-α rs1799964										
TT	227	64	28.2	1.00		297	44	14.8	1.00	
TC	295	68	23.1	0.70	0.117	288	36	12.5	0.80	0.356
CC	87	24	27.6	0.88	0.611	56	9	16.1	1.11	0.787
Overall P					0.291					0.561
rs1800630										
CC	423	110	26.0	1.00		449	62	13.8	1.00	
CA	171	38	22.2	0.78	0.295	172	24	14.0	1.02	0.965
AA	16	8	50.0	3.22	0.031	21	3	14.3	1.10	0.852
Overall P					0.042					0.983
rs1800629										
GG	569	139	24.4	1.00		559	80	14.3	1.00	
GA	41	17	41.5	2.41	0.010	81	9	11.1	0.82	0.595
AA	1	0	0.0	-	-	2	0	0.0	-	-
Overall P					0.010					0.595

OR: odds ratio. The associations (overall *P* value) were investigated using logistic regression analyses between SNPs and disease prevalence, while *P* values in column were calculated for comparisons of heterozygotes and homozygotes vs reference allele respectively. All *P* values and ORs were adjusted by gender, age, height, ethnicity and smoking condition.

Supplementary Table S5: The prevalence and odds ratios of rhinitis in Inuit for the 18 SNP genotypes in Greenlandic and Danish populations.

	Greenland Rhinitis					Denmark Rhinitis				
	N	n	%	OR	P	N	n	%	OR	P
ADAM33 rs612709										
GG	357	150	42.0	1.00		544	325	59.7	1.00	
GA	46	22	47.8	1.38	0.318	88	56	63.6	1.18	0.503
AA	1	0	0.0	-	-	5	5	100.0	-	-
Overall P					0.318					0.503
rs528557										
CC	323	136	42.1	1.00		461	279	60.5	1.00	
CG	73	33	45.2	1.15	0.576	161	98	60.9	1.02	0.686
GG	4	1	25.0	0.45	0.577	12	8	66.7	1.31	0.664
Overall P					0.721					0.849
rs44707										
AA	184	76	41.3	1.00		286	168	58.7	1.00	
AC	169	75	44.4	1.18	0.516	294	179	60.9	1.07	0.762
CC	47	19	40.4	1.04	0.927	55	37	67.3	1.33	0.387
Overall P					0.804					0.686
rs2787094										
GG	322	135	41.9	1.00		484	287	59.3	1.00	
GC	77	33	42.9	1.03	0.906	143	91	63.6	1.13	0.397
CC	4	3	75.0	4.21	0.226	10	8	80.0	3.13	0.150
Overall P					0.479					0.262
ALOX5 rs4986832										
GG	347	154	44.4	1.00		519	314	60.5	1.00	
GA	51	15	29.4	0.53	0.049	110	66	60.0	0.97	0.975
AA	2	1	50.0	1.19	0.916	8	6	75.0	2.36	0.298
Overall P					0.142					0.579
rs892690										
GG	177	66	37.3	1.00		209	125	59.8	1.00	
GA	183	85	46.4	1.47	0.078	310	195	62.9	1.17	0.452
AA	39	19	48.7	1.61	0.179	111	62	55.9	0.85	0.499
Overall P					0.150					0.393
rs2115819										
TT	116	44	37.9	1.00		114	71	62.3	1.00	
CT	195	90	46.2	1.37	0.182	331	200	60.4	0.94	0.699
CC	90	38	42.2	1.19	0.585	188	113	60.1	0.99	0.896
Overall P					0.402					0.912
LT-α rs2844484										
CC	284	123	43.3	1.00		377	229	60.7	1.00	
CT	103	43	41.7	0.92	0.767	232	139	59.9	0.92	0.697
TT	12	5	41.7	0.95	0.942	27	17	63.0	1.04	0.868
Overall P					0.956					0.902
rs909253										
TT	119	54	45.5	1.00		200	120	60.0	1.00	
TC	206	83	40.3	0.83	0.382	327	199	60.9	1.04	0.861
CC	75	34	45.3	1.11	0.852	109	66	60.6	1.03	0.999
Overall P					0.528					0.980
rs1041981										

	Greenland Rhinitis					Denmark Rhinitis				
	N	n	%	OR	P	N	n	%	OR	P
CC	121	55	45.5	1.00		201	121	60.2	1.00	
CA	207	83	40.1	0.82	0.344	325	197	60.6	1.02	0.925
AA	74	34	45.9	1.12	0.817	106	64	60.4	1.02	0.978
Overall P					0.463					0.992
LTC4S rs730012										
AA	265	117	44.2	1.00		406	252	62.1	1.00	
AC	130	53	40.8	0.89	0.707	200	114	57.0	0.86	0.429
CC	9	2	22.2	0.41	0.292	31	20	64.5	1.20	0.439
Overall P					0.552					0.486
NOS1 rs7977109										
AA	146	66	45.2	1.00		224	138	61.6	1.00	
AG	189	75	39.7	0.79	0.283	316	188	59.5	0.87	0.381
GG	68	30	44.1	0.92	0.840	97	60	61.9	0.96	0.814
Overall P					0.543					0.673
ORMDL3 rs12603332										
CC	109	49	45.0	1.00		199	123	61.8	1.00	
CT	193	79	40.9	0.88	0.683	304	172	56.6	0.79	0.303
TT	94	41	43.6	0.95	0.830	130	88	67.7	1.22	0.384
Overall P					0.920					0.178
rs4065275										
GG	107	48	44.9	1.00		199	123	61.8	1.00	
GA	196	81	41.3	0.91	0.949	305	172	56.4	0.78	0.289
AA	83	36	43.4	0.96	0.968	105	74	70.5	1.36	0.210
Overall P					0.978					0.091
TBXA2R rs4523										
TT	173	78	45.1	1.00		240	146	60.8	1.00	
TC	178	77	43.3	1.01	0.917	289	173	59.9	0.89	0.443
CC	48	15	31.2	0.56	0.130	106	66	62.3	1.01	0.907
Overall P					0.261					0.665
TNF-α rs1799964										
TT	153	68	44.4	1.00		293	181	61.8	1.00	
TC	195	75	38.5	0.73	0.254	287	170	59.2	0.94	0.654
CC	52	25	53.8	1.35	0.327	56	34	60.7	0.94	0.928
Overall P					0.153					0.904
rs1800630										
CC	287	127	44.3	1.00		445	266	59.8	1.00	
CA	105	42	40.0	0.80	0.376	171	105	61.4	1.12	0.554
AA	10	2	20.0	0.29	0.122	21	15	71.4	1.66	0.332
Overall P					0.226					0.554
rs1800629										
GG	370	160	43.2	1.00		555	335	60.4	1.00	
GA	31	11	35.5	0.75	0.455	80	49	61.2	0.96	0.873
AA	1	1	100.0	-	-	2	2	100.0	-	-
Overall P					0.455					0.873

OR: odds ratio. The associations (overall *P* value) were investigated using logistic regression analyses between SNPs and disease prevalence, while *P* values in column were calculated for comparisons of heterozygotes and homozygotes vs reference allele respectively. All *P* values and ORs were adjusted by gender, age, height, ethnicity and smoking condition.

Supplementary Table S6: The prevalence and odds ratios of dermatitis in Inuit the 18 SNP genotypes in Greenlandic and Danish populations.

	Greenland Dermatitis					Denmark Dermatitis				
	N	n	%	OR	P	N	n	%	OR	P
ADAM33 rs612709										
GG	540	318	58.9	1.00		548	200	36.5	1.00	
GA	73	35	47.9	0.62	0.063	89	31	34.8	0.92	0.773
AA	1	1	100.0	-	-	5	2	40.0	1.17	0.843
Overall P					0.063					0.939
rs528557										
CC	493	286	58.0	1.00		464	166	35.8	1.00	
CG	106	60	56.6	0.96	0.831	163	60	36.8	1.06	0.911
GG	10	5	50.0	0.75	0.603	12	6	50.0	1.74	0.315
Overall P					0.860					0.603
rs44707										
AA	276	150	54.3	1.00		290	99	34.1	1.00	
AC	269	163	60.6	1.35	0.077	295	114	38.6	1.20	0.201
CC	64	38	59.4	1.17	0.548	55	18	32.7	0.87	0.807
Overall P					0.209					0.360
rs2787094										
GG	490	288	58.8	1.00		488	175	35.9	1.00	
GC	117	62	53.0	0.80	0.310	144	56	38.9	1.07	0.590
CC	5	3	60.0	1.11	0.939	10	2	20.0	0.45	0.328
Overall P					0.593					0.519
ALOX5 rs4986832										
GG	542	310	57.2	1.00		523	196	37.5	1.00	
GA	65	39	60.0	1.30	0.606	111	35	31.5	0.76	0.282
AA	3	2	66.7	1.70	0.680	8	2	25.0	0.59	0.532
Overall P					0.808					0.475
rs892690										
GG	272	160	58.8	1.00		211	80	37.9	1.00	
GA	277	159	57.4	0.92	0.696	312	112	35.9	0.94	0.782
AA	56	31	55.4	0.83	0.515	112	40	35.7	0.93	0.892
Overall P					0.792					0.962
rs2115819										
TT	170	98	57.6	1.00		116	46	39.7	1.00	
CT	304	176	57.9	1.02	0.749	331	123	37.2	0.95	0.904
CC	135	76	56.3	0.97	0.902	191	63	33.0	0.77	0.394
Overall P					0.894					0.578
LT-α rs2844484										
CC	440	240	54.5	1.00		379	148	39.1	1.00	
CT	152	100	65.8	1.63	0.012	235	77	32.8	0.74	0.124
TT	15	10	66.7	1.62	0.366	27	8	29.6	0.64	0.368
Overall P					0.035					0.245
rs909253										
TT	180	112	62.2	1.00		200	65	32.5	1.00	
TC	317	183	57.7	0.82	0.343	331	130	39.3	1.39	0.077
CC	112	56	50.0	0.63	0.078	110	37	33.6	1.10	0.772
Overall P					0.211					0.170
rs1041981										

	Greenland Dermatitis					Denmark Dermatitis				
	N	n	%	OR	P	N	n	%	OR	P
CC	183	114	62.3	1.00		201	66	32.8	1.00	
CA	316	184	58.2	0.83	0.388	329	130	39.5	1.39	0.080
AA	112	55	49.1	0.61	0.059	107	35	32.7	1.04	0.953
Overall P					0.167					0.147
LTC4S rs730012										
AA	401	224	55.9	1.00		408	158	38.7	1.00	
AC	198	125	63.1	1.33	0.110	203	68	33.5	0.80	0.163
CC	15	5	33.3	0.40	0.097	31	7	22.6	0.46	0.127
Overall P					0.051					0.150
NOS1 rs7977109										
AA	226	123	54.4	1.00		226	80	35.4	1.00	
AG	278	162	58.3	1.11	0.581	319	117	36.7	1.06	0.659
GG	109	68	62.4	1.35	0.222	97	36	37.1	1.03	0.787
Overall P					0.473					0.904
ORMDL3 rs12603332										
CC	176	102	58.0	1.00		199	65	32.7	1.00	
CT	291	168	57.7	1.03	0.986	308	118	38.3	1.30	0.135
TT	136	78	57.4	0.97	0.841	131	49	37.4	1.27	0.271
Overall P					0.970					0.302
rs4065275										
GG	174	101	58.0	1.00		199	64	32.2	1.00	
GA	295	171	58.0	1.04	0.961	309	118	38.2	1.32	0.110
AA	117	66	56.4	0.94	0.730	106	39	36.8	1.25	0.308
Overall P					0.911					0.268
TBXA2R rs4523										
TT	264	158	59.8	1.00		241	88	36.5	1.00	
TC	275	150	54.5	0.85	0.296	292	107	36.6	1.02	0.928
CC	67	43	64.2	1.23	0.610	107	36	33.6	0.91	0.775
Overall P					0.392					0.935
TNF-α rs1799964										
TT	228	131	57.5	1.00		297	101	34.0	1.00	
TC	295	169	57.3	0.95	0.594	288	111	38.5	1.20	0.285
CC	87	50	57.5	0.97	0.778	56	20	35.7	1.03	0.990
Overall P					0.866					0.534
rs1800630										
CC	424	244	57.5	1.00		449	158	35.2	1.00	
CA	171	98	57.3	0.96	0.676	172	69	40.1	1.24	0.294
AA	16	10	62.5	1.12	0.920	21	6	28.6	0.72	0.517
Overall P					0.907					0.428
rs1800629										
GG	570	329	57.7	1.00		559	203	36.3	1.00	
GA	41	24	58.5	1.04	0.901	81	30	37.0	1.07	0.798
AA	1	1	100.0	-	-	2	0	0.0	-	-
Overall P					0.901					0.798

OR: odds ratio. The associations (overall *P* value) were investigated using logistic regression analyses between SNPs and disease prevalence, while *P* values in column were calculated for comparisons of heterozygotes and homozygotes vs reference allele respectively. All *P* values and ORs were adjusted by gender, age, height, ethnicity and smoking condition.

Supplementary Table S7: The prevalence and odds ratios of atopy in Inuit the 18 SNP genotypes in Greenlandic and Danish populations.

	Greenland					Denmark				
	Atopy		%	OR	P	Atopy		OR	P	
N	n	N				n				
ADAM33 rs612709										
GG	110	26	23.6	1.00		440	108	24.5	1.00	
GA	15	4	26.7	0.92	0.897	71	12	16.9	0.55	0.116
AA	0	0	0.0	-	-	5	1	20.0	0.91	0.961
Overall P					0.897					0.291
rs528557										
CC	107	25	23.4	1.00		375	92	24.5	1.00	
CG	17	5	29.4	1.20	0.757	129	27	20.9	0.74	0.259
GG	1	0	0.0	-	-	10	2	20.0	0.82	0.765
Overall P					0.757					0.516
rs44707										
AA	57	13	22.8	1.00		241	53	22.0	1.00	
AC	51	11	21.6	0.89	0.795	236	56	23.7	1.03	0.812
CC	17	6	35.3	1.73	0.322	39	12	30.8	1.61	0.261
Overall P					0.496					0.530
rs2787094										
GG	102	24	23.5	1.00		389	87	22.4	1.00	
GC	23	6	26.1	1.03	0.923	117	32	27.4	1.19	0.414
CC	0	0	0.0	-	-	10	2	20.0	1.01	0.936
Overall P					0.923					0.716
ALOX5 rs4986832										
GG	115	28	24.3	1.00		421	97	23.0	1.00	
GA	10	2	20.0	0.78	0.605	89	20	22.5	0.97	0.801
AA	0	0	0.0	-	-	6	4	66.7	6.68	0.029
Overall P					0.605					0.087
rs892690										
GG	47	10	21.3	1.00		171	46	26.9	1.00	
GA	62	14	22.6	1.09	0.618	247	57	23.1	0.87	0.489
AA	14	5	35.7	2.18	0.197	91	17	18.7	0.66	0.199
Overall P					0.435					0.432
rs2115819										
TT	36	10	27.8	1.00		90	22	24.4	1.00	
CT	61	12	19.7	0.67	0.514	265	65	24.5	1.02	0.963
CC	28	8	28.6	1.14	0.844	157	34	21.7	0.90	0.719
Overall P					0.672					0.869
LT-α rs2844484										
CC	93	21	22.6	1.00		310	75	24.2	1.00	
CT	29	7	24.1	1.01	0.959	183	44	24.0	0.90	0.482
TT	3	2	66.7	5.70	0.111	22	2	9.1	0.27	0.082
Overall P					0.869					0.195
rs909253										
TT	37	10	27.0	1.00		165	39	23.6	1.00	
TC	68	15	22.1	0.70	0.431	265	59	22.3	0.91	0.605
CC	20	5	25.0	0.76	0.694	86	23	26.7	1.29	0.426
Overall P					0.734					0.440
rs1041981										

	Greenland					Denmark				
			Atopy					Atopy		
	N	n	%	OR	P	N	n	%	OR	P
CC	37	10	27.0	1.00		165	39	23.6	1.00	
CA	68	15	22.1	0.70	0.438	263	59	22.4	0.92	0.637
AA	19	5	26.3	0.83	0.801	85	22	25.9	1.23	0.528
Overall P					0.731					0.566
LTC4S rs730012										
AA	79	23	29.1	1.00		330	78	23.6	1.00	
AC	43	5	11.6	0.32	0.022	160	38	23.8	1.01	0.976
CC	3	2	66.7	4.87	0.473	26	5	19.2	0.77	0.545
Overall P					0.046					0.831
NOS1 rs7977109										
AA	43	12	27.9	1.00		175	49	28.0	1.00	
AG	62	12	19.4	0.67	0.426	260	53	20.4	0.63	0.065
GG	20	6	30.0	1.24	0.878	81	19	23.5	0.75	0.386
Overall P					0.636					0.180
ORMDL3 rs12603332										
CC	38	12	31.6	1.00		162	36	22.2	1.00	
CT	60	12	20.0	0.47	0.179	240	59	24.6	1.12	0.650
TT	26	6	23.1	0.57	0.440	111	26	23.4	1.08	0.732
Overall P					0.180					0.895
rs4065275										
GG	38	12	31.6	1		163	36	22.1	1	
GA	60	12	20	0.47	0.172	241	59	24.5	1.13	0.623
AA	23	6	26.1	0.68	0.597	90	21	23.3	1.07	0.802
Overall P					0.392					0.886
TBXA2R rs4523										
TT	55	13	23.6	1		190	46	24.2	1	
TC	53	16	30.2	1.39	0.587	239	60	25.1	0.93	0.648
CC	17	1	5.9	0.2	0.132	86	15	17.4	0.64	0.233
Overall P					0.216					0.490
TNF-a rs1799964										
TT	41	11	26.8	1		228	57	25	1	
TC	64	16	25	1.05	0.833	241	51	21.2	0.84	0.451
CC	19	3	15.8	0.63	0.477	47	13	27.7	1.22	0.460
Overall P					0.772					0.455
rs1800630										
CC	85	20	23.5	1		353	85	24.1	1	
CA	38	10	26.3	1.4	0.521	145	30	20.7	0.79	0.449
AA	2	0	0	-	-	18	6	33.3	1.54	0.390
Overall P					0.814					0.471
rs1800629										
GG	115	28	24.3	1		448	103	23	1	
GA	10	2	20	0.85	0.851	66	18	27.3	1.15	0.650
AA	0	0	0	-	-	2	0	0	-	-
Overall P					0.851					0.650

OR: odds ratio. The associations (overall *P* value) were investigated using logistic regression analyses between SNPs and disease prevalence, while *P* values in column were calculated for comparisons of heterozygotes and homozygotes vs reference allele respectively. All *P* values and ORs were adjusted by gender, age, height, ethnicity and smoking condition.

Supplementary Table S8A: The genotype - phenotype associations in the sensitivity analysis for Inuit population residing in Greenland.

SNP	FEV1	FVC	Ever asthma	Bronchitis	Rhinitis	Dermatitis	Atopy
<i>ADAM33</i>							
rs612709	0.717	0.253	1.000	0.987	0.650	0.258	0.959
rs528557	0.490	0.206	0.698	0.566	0.585	0.973	0.996
rs44707	0.205	0.217	0.082	0.299	0.794	0.175	0.418
rs2787094	0.357	0.311	0.704	0.325	0.500	0.618	0.825
<i>ALOX5</i>							
rs4986832	0.177	0.133	0.499	0.992	0.226	0.880	0.919
rs892690	0.313	0.166	0.029	0.846	0.213	0.849	0.247
rs2115819	0.510	0.572	0.625	0.900	0.606	0.974	0.815
<i>LT-α</i>							
rs2844484	0.584	0.493	0.998	0.528	0.911	0.025	0.731
rs909253	0.822	0.864	0.830	0.557	0.255	0.296	0.858
rs1041981	0.712	0.846	0.833	0.573	0.214	0.242	0.772
<i>LTC4S</i>							
rs730012	0.787	0.841	0.274	0.501	0.629	0.131	0.051
<i>NOS1</i>							
rs7977109	0.605	0.919	0.173	0.810	0.385	0.542	0.496
<i>ORMDL3</i>							
rs12603332	0.014	0.009	0.381	0.810	0.967	0.869	0.567
rs4065275	0.011	0.005	0.338	0.703	0.975	0.841	0.673
<i>TBXA2R</i>							
rs4523	0.175	0.178	0.621	0.656	0.280	0.566	0.221
<i>TNF-α</i>							
rs1799964	0.702	0.750	0.971	0.222	0.326	0.686	0.675
rs1800630	0.953	0.549	0.784	0.063	0.171	0.812	0.900
rs1800629	0.428	0.169	0.729	0.023	0.793	0.454	0.694

The associations (overall *P* value) were investigated using general linear model between SNPs and lung function or using logistic regression analyses between SNPs and disease prevalence. Number represents overall *P* value adjusted by gender, age, height, and smoking condition.

Supplementary Table S8B: The genotype - phenotype associations in the sensitivity analysis for Inuit population residing in Denmark.

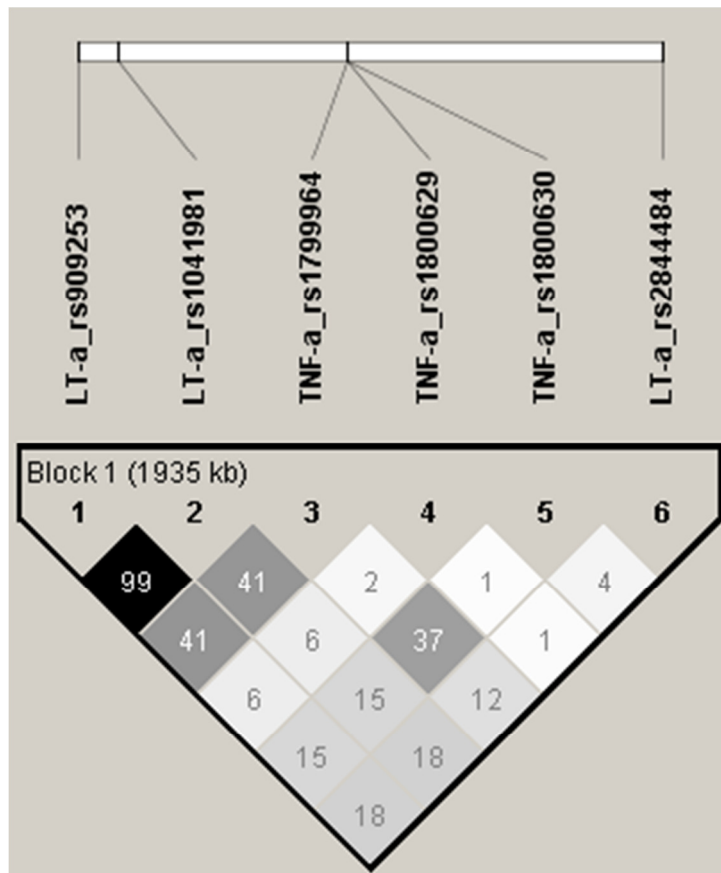
SNP	FEV1	FVC	Ever asthma	Bronchitis	Rhinitis	Dermatitis	Atopy
<i>ADAM33</i>							
rs612709	0.911	0.856	0.778	0.997	0.802	0.794	0.807
rs528557	0.637	0.240	0.887	0.822	0.627	0.879	0.546
rs44707	0.208	0.102	0.279	0.591	0.843	0.661	0.316
rs2787094	0.473	0.090	0.593	0.982	0.291	0.954	0.417
<i>ALOX5</i>							
rs4986832	0.786	0.701	0.665	0.863	0.992	0.705	0.234
rs892690	0.554	0.273	0.821	0.752	0.298	0.404	0.365
rs2115819	0.945	0.987	0.600	0.460	0.574	0.335	0.799
<i>LT-α</i>							
rs2844484	0.165	0.093	0.868	0.044	0.959	0.911	0.554
rs909253	0.142	0.159	0.375	0.019	0.471	0.613	0.328
rs1041981	0.158	0.169	0.531	0.014	0.404	0.565	0.444
<i>LTC4S</i>							
rs730012	0.599	0.244	0.976	0.551	0.281	0.868	0.690
<i>NOS1</i>							
rs7977109	0.705	0.913	0.455	0.895	0.755	0.693	0.594
<i>ORMDL3</i>							
rs12603332	0.737	0.624	0.890	0.750	0.090	0.159	0.715
rs4065275	0.741	0.544	0.704	0.737	0.164	0.185	0.519
<i>TBXA2R</i>							
rs4523	0.282	0.230	0.668	0.109	0.159	0.569	0.560
<i>TNF-α</i>							
rs1799964	0.464	0.404	0.222	0.609	0.721	0.630	0.341
rs1800630	0.866	0.363	0.419	0.969	0.284	0.458	0.521
rs1800629	0.926	0.562	0.300	0.344	0.948	0.620	0.719

The associations (overall *P* value) were investigated using general linear model between SNPs and lung function or using logistic regression analyses between SNPs and disease prevalence. Number represents overall *P* value adjusted by gender, age, height, and smoking condition.

Supplementary Table S9: The significance (*P* values) of the interaction of place with genotype-phenotype associations

SNP	FEV1	FVC	Ever asthma	Bronchitis	Rhinitis	Dermatitis	Atopy
<i>ADAM33</i>							
rs612709	0.418	0.557	0.968	0.867	0.974	0.561	0.312
rs528557	0.775	0.430	0.999	0.917	0.717	0.611	0.653
rs44707	0.351	0.386	0.483	0.430	0.665	0.825	0.867
rs2787094	0.354	0.601	0.634	0.379	0.858	0.446	0.983
<i>ALOX5</i>							
rs4986832	0.579	0.657	0.523	0.944	0.188	0.377	0.850
rs892690	0.715	0.833	0.060	0.688	0.370	0.914	0.263
rs2115819	0.873	0.890	0.848	0.587	0.346	0.892	0.538
<i>LT-α</i>							
rs2844484	0.261	0.264	0.921	0.108	0.966	0.009	0.073
rs909253	0.594	0.152	0.864	0.568	0.547	0.100	0.795
rs1041981	0.666	0.180	0.931	0.520	0.527	0.129	0.844
<i>LTC4S</i>							
rs730012	0.379	0.398	0.489	0.256	0.346	0.081	0.054
<i>NOS1</i>							
rs7977109	0.753	0.999	0.307	0.566	0.892	0.776	0.793
<i>ORMDL3</i>							
rs12603332	0.024	0.042	0.766	0.389	0.571	0.577	0.426
rs4065275	0.021	0.030	0.781	0.400	0.359	0.539	0.415
<i>TBXA2R</i>							
rs4523	0.327	0.400	0.719	0.198	0.267	0.439	0.301
<i>TNF-α</i>							
rs1799964	0.685	0.205	0.518	0.901	0.474	0.697	0.505
rs1800630	0.693	0.159	0.462	0.335	0.190	0.563	0.800
rs1800629	0.710	0.334	0.936	0.115	0.799	1.000	0.597

Number represents *P* value.



Supplementary Fig 1 - Example of the linkage disequilibrium (LD) in the selected single nucleotide polymorphisms (SNPs): *LT- α* and *TNF- α* SNPs are located in Chromosome 6. Haploview version 4.2 is utilized to visualise the LD. Black colour represents the strong correlation between the two SNPs.