

**Appendix [posted as supplied by author]**

**Table A** Characteristics of 32 established SNPs for BMI

SNP	Nearest Gene	Chr	Allele*		Beta (SE)†	NHS		HPFS		WGHS	
			Effect	Other		EAF	r <sup>2</sup> ‡	EAF	r <sup>2</sup> ‡	EAF	r <sup>2</sup> ‡
rs543874	<i>SEC16B</i>	1	G	A	0.22 (0.03)	0.19	1.00	0.19	1.00	0.20	0.99
rs1514175	<i>TNNI3K</i>	1	A	G	0.07 (0.02)	0.42	1.00	0.40	1.00	0.42	1.00
rs1555543	<i>PTBP2</i>	1	C	A	0.06 (0.02)	0.59	1.00	0.58	1.00	0.59	1.00
rs2815752	<i>NEGR1</i>	1	A	G	0.13 (0.02)	0.63	1.00	0.63	1.00	0.62	1.00
rs2890652	<i>LRP1B</i>	2	C	T	0.09 (0.03)	0.17	0.99	0.17	0.99	0.17	0.97
rs887912	<i>FANCL</i>	2	T	C	0.10 (0.02)	0.30	0.99	0.30	0.99	0.28	0.99
rs713586	<i>RBJ</i>	2	C	T	0.14 (0.02)	0.47	1.00	0.48	1.00	0.46	0.95
rs2867125	<i>TMEM18</i>	2	C	T	0.31 (0.03)	0.82	1.00	0.81	1.00	0.82	1.00
rs13078807	<i>CADM2</i>	3	G	A	0.10 (0.02)	0.21	0.99	0.22	0.99	0.21	1.00
rs9816226	<i>ETV5</i>	3	T	A	0.14 (0.03)	0.82	0.97	0.82	0.97	0.82	0.95
rs13107325	<i>SLC39A8</i>	4	T	C	0.19 (0.04)	0.08	0.86	0.09	0.83	0.07	1.00
rs10938397	<i>GNPDA2</i>	4	G	A	0.18 (0.02)	0.44	0.98	0.44	0.99	0.43	0.85
rs4836133	<i>ZNF608</i>	5	A	C	0.07 (0.02)	0.48	0.94	0.52	0.93	0.48	0.90
rs2112347	<i>FLJ35779</i>	5	T	G	0.10 (0.02)	0.64	0.97	0.63	0.97	0.64	0.98
rs987237	<i>TFAP2B</i>	6	G	A	0.13 (0.03)	0.18	1.00	0.18	1.00	0.18	1.00
rs206936	<i>NUDT3</i>	6	G	A	0.06 (0.02)	0.20	1.00	0.20	1.00	0.20	0.98
rs10968576	<i>LRRN6C</i>	9	G	A	0.11 (0.02)	0.31	1.00	0.31	1.00	0.32	1.00
rs3817334	<i>MTCH2</i>	11	T	C	0.06 (0.02)	0.42	1.00	0.41	1.00	0.42	1.00
rs4929949	<i>RPL27A</i>	11	C	T	0.06 (0.02)	0.51	0.97	0.49	0.97	0.51	0.95
rs10767664	<i>BDNF</i>	11	A	T	0.19 (0.03)	0.78	1.00	0.78	1.00	0.79	1.00
rs7138803	<i>FAIM2</i>	12	A	G	0.12 (0.02)	0.38	1.00	0.39	1.00	0.38	1.00
rs4771122	<i>MTIF3</i>	13	G	A	0.09 (0.03)	0.22	0.95	0.21	0.95	0.23	0.94
rs11847697	<i>PRKD1</i>	14	T	C	0.17 (0.05)	0.05	0.85	0.05	0.80	0.04	0.95
rs10150332	<i>NRXN3</i>	14	C	T	0.13 (0.03)	0.22	1.00	0.20	1.00	0.22	0.99
rs2241423	<i>MAP2K5</i>	15	G	A	0.13 (0.02)	0.77	1.00	0.74	1.00	0.78	1.00
rs7359397	<i>SH2B1</i>	16	T	C	0.15 (0.02)	0.39	0.98	0.37	0.97	0.39	1.00
rs1558902	<i>FTO</i>	16	A	T	0.39 (0.02)	0.42	1.00	0.44	1.00	0.40	0.89
rs12444979	<i>GPRC5B</i>	16	C	T	0.17 (0.03)	0.86	0.99	0.86	0.98	0.86	0.99
rs571312	<i>MC4R</i>	18	A	C	0.23 (0.03)	0.24	1.00	0.24	1.00	0.24	0.96
rs29941	<i>KCTD15</i>	19	G	A	0.06 (0.02)	0.68	1.00	0.68	1.00	0.69	1.00
rs3810291	<i>TMEM160</i>	19	A	G	0.09 (0.02)	0.65	0.70	0.64	0.71	0.65	0.77
rs2287019	<i>QPCTL</i>	19	C	T	0.15 (0.03)	0.81	0.75	0.80	0.67	0.81	1.00

Chr: chromosome; EAF: effect allele frequency.

\*Allele coding based on the forward strand.

†Effect sizes in kg/m<sup>2</sup> of BMI obtained from GWAS (Speliotes et al., Nat Genet 2010;42(11):937-948).

‡r<sup>2</sup> refers to the measurement of SNPs imputation quality.

**Table B** Diet and lifestyle factors according to tertiles of genetic risk score

	Tertiles of genetic risk score			<i>P</i>
	Tertile 1	Tertile 2	Tertile 3	
<b>NHS</b>				
Current smoking (%)	19	21	20	0.10
Physical activity (MET-hr/week)	14.3 (20.3)	14.1 (17.8)	13.4 (16.5)	0.06
TV watching (hr/week)	13.0 (11.5)	13.4 (11.7)	13.6 (11.8)	0.06
Total energy intake (kcal/day)	1754 (518)	1757 (517)	1756 (536)	0.86
Alcohol consumption (g/day)	7.3 (11.4)	7.1 (11.2)	7.0 (11.2)	0.29
Sugar-sweetened beverage intake (servings/day)	0.30 (0.51)	0.30 (0.54)	0.28 (0.52)	0.20
Alternative Health Eating Index score	38.7 (10.3)	38.8 (10.4)	39.2 (10.6)	0.07
Western dietary pattern score	0.01 (0.98)	0.02 (0.99)	0.01 (0.99)	0.68
Fried food consumption frequency (times/week)	2.1 (1.5)	2.1 (1.6)	2.2 (1.6)	0.57
<b>HPFS</b>				
Current smoking (%)	9	9	9	0.99
Physical activity (MET-hr/week)	21.4 (31.8)	20.4 (23.9)	20.3 (24.3)	0.29
TV watching (hr/week)	11.5 (8.6)	11.3 (8.4)	11.4 (8.6)	0.58
Total energy intake (kcal/day)	2008 (606)	2039 (596)	2008 (622)	0.91
Alcohol consumption (g/day)	12.3 (15.4)	12.3 (15.8)	12.6 (16.2)	0.45
Sugar-sweetened beverage intake (servings/day)	0.32 (0.52)	0.31 (0.51)	0.30 (0.50)	0.10
Alternative Health Eating Index score	45.0 (10.8)	45.2 (11.3)	44.6 (10.8)	0.43
Western dietary pattern score	0.01 (0.92)	0.06 (0.91)	0.04 (0.93)	0.48
Fried food consumption frequency (times/week)	2.7 (1.9)	2.7 (1.9)	2.6 (1.9)	0.18

<sup>a</sup>Data are presented as mean (SD) unless otherwise indicated. Baseline data were from 9623 women in the NHS (1984) and 6379 men in the HPFS (1986). Physical activity was assessed in 1986 for the NHS. Television watching was assessed in 1992 for the NHS and in 1988 for the HPFS.

**Table C** Association between fried food consumption and BMI according to genetic risk score in the NHS and HPFS through 2008<sup>a</sup>

Genetic risk score	<1/week	1-3/week	≥4/week	<i>P</i> for trend	<i>P</i> for interaction
<b>Total fried food consumption</b>					
NHS					
Tertile 1 (<27.5)	25.8 (0.1)	26.1 (0.1)	26.1 (0.2)	0.005	0.008
Tertile 2 (27.5-30.8)	26.2 (0.1)	26.7 (0.1)	27.0 (0.2)	<0.001	
Tertile 3 (≥30.9)	27.1 (0.1)	27.5 (0.1)	27.9 (0.2)	<0.001	
HPFS					
Tertile 1 (<27.5)	25.8 (0.1)	26.1 (0.1)	26.0 (0.1)	0.17	0.02
Tertile 2 (27.5-30.8)	26.1 (0.1)	26.4 (0.2)	26.6 (0.1)	<0.001	
Tertile 3 (≥30.9)	26.5 (0.1)	26.9 (0.1)	27.0 (0.1)	<0.001	
<b>Fried food consumed at home</b>					
NHS					
Tertile 1 (<27.5)	25.9 (0.1)	26.1 (0.1)	25.3 (0.3)	0.12	0.06
Tertile 2 (27.5-30.8)	26.2 (0.1)	26.8 (0.1)	26.2 (0.3)	<0.001	
Tertile 3 (≥30.9)	27.2 (0.1)	27.5 (0.1)	27.2 (0.3)	0.006	
HPFS					
Tertile 1 (<27.5)	25.9 (0.1)	26.0 (0.1)	25.8 (0.2)	0.59	0.01
Tertile 2 (27.5-30.8)	26.2 (0.1)	26.5 (0.1)	26.5 (0.2)	0.002	
Tertile 3 (≥30.9)	26.6 (0.1)	27.1 (0.1)	26.9 (0.3)	<0.001	
<b>Fried food consumed away from home</b>					
NHS					
Tertile 1 (<27.5)	25.9 (0.1)	26.5 (0.2)	27.7 (0.9)	<0.001	0.001
Tertile 2 (27.5-30.8)	26.3 (0.1)	27.2 (0.2)	27.6 (0.7)	<0.001	
Tertile 3 (≥30.9)	27.1 (0.1)	28.4 (0.2)	28.4 (1.0)	<0.001	
HPFS					
Tertile 1 (<27.5)	25.9 (0.1)	26.1 (0.1)	25.9 (0.3)	0.15	0.24
Tertile 2 (27.5-30.8)	26.3 (0.1)	26.4 (0.1)	27.2 (0.3)	0.05	
Tertile 3 (≥30.9)	26.7 (0.1)	26.9 (0.1)	26.9 (0.4)	0.23	

<sup>a</sup>Data are least squares means (SE) of BMI (kg/m<sup>2</sup>), derived from repeated measures analysis for women in the NHS (7 measures during 1984-2008) and in the HPFS (6 measures during 1986-1998), adjusted for age, source of genotyping data, physical activity, TV watching, smoking, alcohol intake, sugar-sweetened beverage intake, alternative Healthy Eating Index, and total energy intake. Data on fried food consumption were assessed 4 years before the assessment of BMI.

**Table D** Interactions between 32 SNPs and total fried food consumption on BMI in the NHS, HPFS and WGHS

SNP	Gene	NHS <sup>a</sup>		HPFS <sup>a</sup>		WGHS <sup>b</sup>		Pooled <sup>c</sup>	
		Beta (SE)	P for interaction	Beta (SE)	P for interaction	Beta (SE)	P for interaction	Beta (SE)	P for interaction
rs10767664	<i>BDNF</i>	0.05 (0.09)	0.60	-0.03 (0.08)	0.70	-0.01 (0.09)	0.90	0.00 (0.05)	0.99
rs13078807	<i>CADM2</i>	0.05 (0.09)	0.61	0.04 (0.08)	0.61	0.05 (0.09)	0.58	0.05 (0.05)	0.35
rs9816226	<i>ETV5</i>	-0.07 (0.10)	0.48	-0.11 (0.08)	0.16	0.07 (0.10)	0.48	-0.05 (0.05)	0.36
rs7138803	<i>FAIM2</i>	0.09 (0.08)	0.25	0.09 (0.06)	0.13	0.05 (0.08)	0.49	0.08 (0.04)	0.05
rs887912	<i>FANCL</i>	-0.01 (0.08)	0.94	0.09 (0.07)	0.18	0.08 (0.08)	0.33	0.06 (0.04)	0.19
rs2112347	<i>FLJ35779</i>	-0.01 (0.08)	0.93	-0.06 (0.07)	0.39	0.09 (0.08)	0.24	0.00 (0.04)	0.99
rs1558902	<i>FTO</i>	0.18 (0.08)	0.02	0.15 (0.07)	0.03	0.29 (0.08)	<0.001	0.20 (0.04)	<0.001
rs10938397	<i>GNPDA2</i>	0.13 (0.07)	0.06	0.11 (0.06)	0.07	0.05 (0.08)	0.51	0.10 (0.04)	0.01
rs12444979	<i>GPRC5B</i>	-0.02 (0.10)	0.85	0.10 (0.09)	0.28	0.03 (0.11)	0.77	0.04 (0.06)	0.46
rs29941	<i>KCTD15</i>	0.05 (0.08)	0.53	-0.04 (0.07)	0.54	0.07 (0.08)	0.35	0.02 (0.04)	0.64
rs2890652	<i>LRP1B</i>	0.05 (0.11)	0.64	0.03 (0.08)	0.72	0.27 (0.10)	0.006	0.11 (0.06)	0.05
rs10968576	<i>LRRN6C</i>	0.02 (0.08)	0.76	-0.07 (0.07)	0.33	0.09 (0.08)	0.27	0.01 (0.04)	0.90
rs2241423	<i>MAP2K5</i>	0.04 (0.09)	0.66	-0.04 (0.07)	0.59	0.06 (0.09)	0.50	0.01 (0.05)	0.84
rs571312	<i>MC4R</i>	0.10 (0.09)	0.25	0.08 (0.08)	0.29	0.10 (0.09)	0.26	0.10 (0.05)	0.05
rs3817334	<i>MTCH2</i>	0.02 (0.08)	0.76	-0.08 (0.06)	0.17	0.06 (0.07)	0.42	-0.01 (0.04)	0.79
rs4771122	<i>MTIF3</i>	0.08 (0.09)	0.37	-0.03 (0.08)	0.70	0.06 (0.09)	0.49	0.03 (0.05)	0.53
rs2815752	<i>NEGR1</i>	0.14 (0.08)	0.07	0.07 (0.06)	0.27	0.11 (0.08)	0.15	0.10 (0.04)	0.02
rs10150332	<i>NRXN3</i>	-0.08 (0.09)	0.40	0.00 (0.08)	0.99	0.08 (0.09)	0.39	0.00 (0.05)	0.99
rs206936	<i>NUDT3</i>	0.11 (0.10)	0.25	0.04 (0.08)	0.62	-0.05 (0.09)	0.61	0.03 (0.05)	0.60
rs11847697	<i>PRKD1</i>	0.08 (0.19)	0.65	-0.11 (0.15)	0.46	0.12 (0.18)	0.52	0.01 (0.09)	0.92
rs1555543	<i>PTBP2</i>	0.04 (0.08)	0.60	0.02 (0.06)	0.72	0.06 (0.08)	0.43	0.04 (0.04)	0.38
rs2287019	<i>QPCTL</i>	0.07 (0.10)	0.45	-0.10 (0.08)	0.23	0.19 (0.09)	0.04	0.04 (0.05)	0.45
rs713586	<i>RBJ</i>	-0.02 (0.07)	0.80	-0.05 (0.06)	0.42	0.10 (0.07)	0.19	0.00 (0.04)	0.93
rs4929949	<i>RPL27A</i>	0.05 (0.07)	0.45	-0.02 (0.06)	0.75	-0.05 (0.08)	0.55	0.00 (0.04)	0.90
rs543874	<i>SEC16B</i>	0.16 (0.09)	0.09	0.12 (0.08)	0.11	0.06 (0.09)	0.54	0.11 (0.05)	0.02
rs7359397	<i>SH2B1</i>	0.09 (0.08)	0.24	0.00 (0.06)	0.95	-0.11 (0.08)	0.16	-0.01 (0.04)	0.90
rs13107325	<i>SLC39A8</i>	0.02 (0.15)	0.88	0.19 (0.12)	0.10	0.24 (0.15)	0.10	0.16 (0.08)	0.05
rs987237	<i>TEAP2B</i>	-0.08 (0.10)	0.41	0.10 (0.08)	0.21	0.06 (0.10)	0.56	0.04 (0.05)	0.47
rs3810291	<i>TMEM160</i>	-0.02 (0.08)	0.81	0.08 (0.07)	0.20	0.06 (0.09)	0.49	0.04 (0.04)	0.35
rs2867125	<i>TMEM18</i>	0.16 (0.09)	0.07	-0.06 (0.08)	0.49	0.00 (0.10)	0.99	0.03 (0.05)	0.59
rs1514175	<i>TNNI3K</i>	0.03 (0.08)	0.67	0.00 (0.06)	0.94	0.05 (0.07)	0.49	0.02 (0.04)	0.55
rs4836133	<i>ZNF608</i>	0.06 (0.07)	0.45	0.00 (0.06)	0.98	0.20 (0.08)	0.01	0.07 (0.04)	0.07

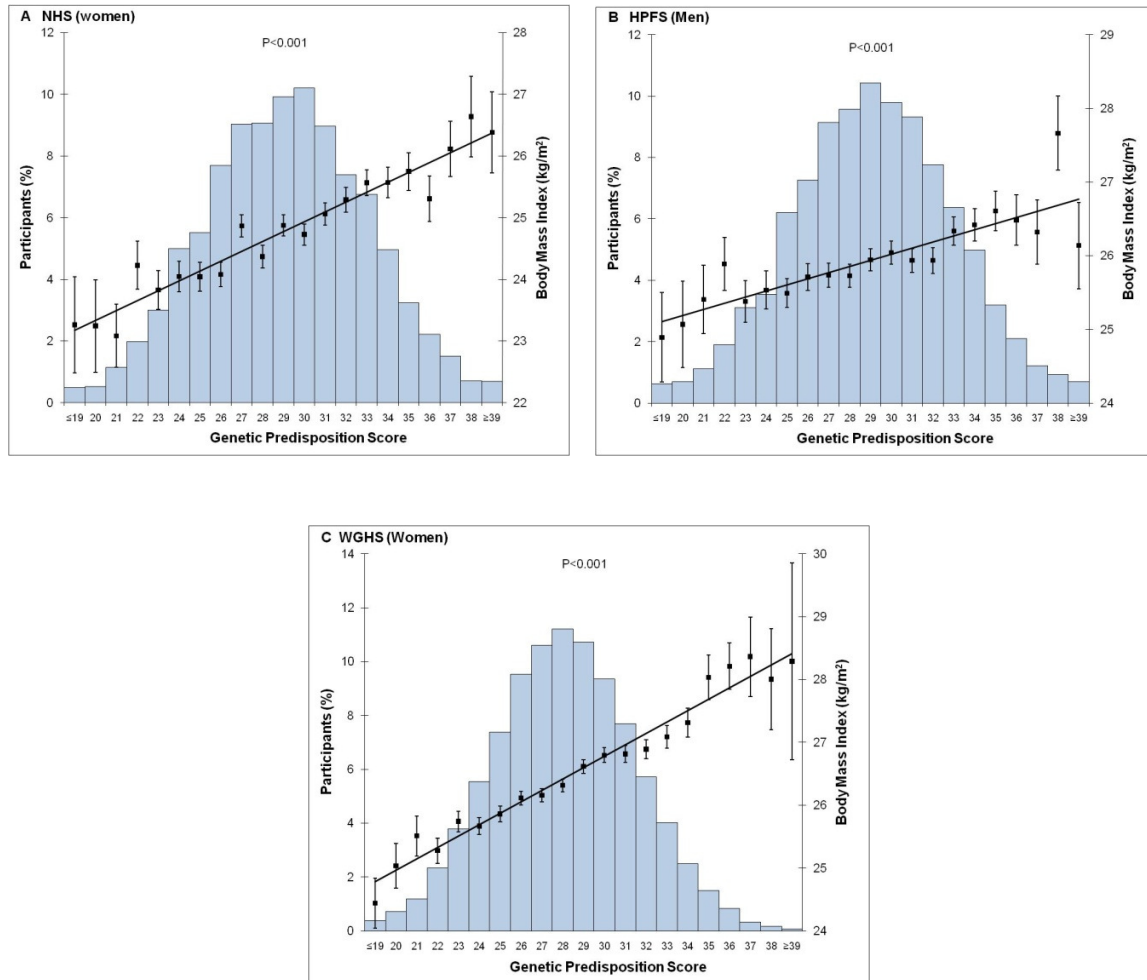
<sup>a</sup>Data were derived from repeated measures analysis for women in the NHS (4 measures during 1984-1998) and in the HPFS (3 measures during 1986-1998), adjusted for age, source of genotyping data, physical activity, TV watching, smoking, alcohol intake, sugar-sweetened beverage intake, alternative Healthy Eating Index, and total energy intake. Data on fried food consumption were assessed 4 years before the assessment of BMI.

<sup>b</sup>Data were derived from general linear regression analysis for the women in the WGHS, adjusted for age, physical activity, smoking, alcohol intake, sugar-sweetened beverage intake, alternative Healthy Eating Index, and total energy intake. Data on fried food consumption were assessed 3 years before the assessment of BMI.

<sup>c</sup>Results for the three cohorts were pooled by means of fixed-effects meta-analysis.

### Figure A Genetic risk score and body mass index in three cohorts

The histograms represent the percentage of participants; and the means ( $\pm$ SE) of BMI are plotted, with the trend lines across the genetic predisposition score.



**Figure B** Association between genetic risk score and BMI according to frequency of fried food consumed at home and away from home

Data are differences in BMI (SE) per increment of 10 risk alleles, adjusted for age, source of genotyping data, physical activity, TV watching, smoking, alcohol intake, sugar-sweetened beverage intake, alternative Healthy Eating Index, and total energy intake in the NHS and HPFS, and adjusted for age, physical activity, smoking, alcohol intake, sugar-sweetened beverage intake, alternative Healthy Eating Index, and total energy intake in the WGHS. Results from the NHS, HPFS and WGHS cohorts were pooled by random-effects meta-analyses. For fried food consumed away from home in the NHS, participants in the categories of 1-3/wk and  $\geq 4$ /wk were combined because of small sample size in the category of  $\geq 4$ /wk.

