

ESM Table 2. Availability of specific categories of family history data by country: The EPIC-InterAct study.

Country	Family History Variables			
	Any 1st degree relative	Maternal	Paternal	Sibling
France	765	710	710	0
UK	1,746	1619	1548	1544
Netherlands	2,271	1956	1745	1121
Germany	1,699	1512	1339	1292
Sweden ^a	4,320	1959	1724	1574
Denmark	3,068	2623	2465	2294
Total	13,869	10379	9531	7825

^a In Sweden, one centre (Umea) asked a single question about family history in any first degree relative. They were therefore included only in analyses of any first degree family member, and not in those requiring information on further degrees of family history.

ESM Table. 3 SNPs included in the genetic risk score and quality metrics in the InterAct subcohort (N=11,400^a)

Gene	SNP#	Strand HapMap	Effect/Risk Allele	Other Allele	Effect Allele Freq HapMap (%)	Effect Allele Freq InterAct (%)	Call Rate	HWE p-value
<i>ADAMTS9</i>	rs4607103	+	C	T	81	73	0.997	0.59
<i>ADCY5</i>	rs11708067	+	A	G	77	80	0.980	0.002
<i>BCL11A</i>	rs243021	+	A	G	48	45	0.997	0.003
<i>CDC123</i>	rs12779790	+	G	A	23	18	0.968	<0.001
<i>CDKAL1</i>	rs10946398	+	C	A	34	31	0.990	0.14
<i>CDKN2A/B</i>	rs10811661	+	T	C	80	81	0.995	0.29
<i>CDKN2A/B</i>	rs564398	+	T	C	57	59	0.999	0.20
<i>ARAP1</i>	rs1552224	+	A	C	87	85	0.999	0.17
<i>CHCHD9</i>	rs13292136	+	C	T	93	94	0.999	0.007
<i>DGKB</i>	rs2191349	+	T	G	48	55	0.987	0.59
<i>GCK</i>	rs4607517	+	A	G	20	18	0.999	0.08
<i>GCKR</i>	rs780093	+	C	T	61	58	0.999	0.04
<i>HHEX</i>	rs1111875	+	C	T	58	60	0.998	0.70
<i>HMGA2</i>	rs1531343	+	C	G	12	11	0.999	0.33
<i>HNF1A</i>	rs7957197	+	T	A	85	39	0.998	0.11
<i>HNF1B_TCF2</i>	rs4430796	+	G	A	51	50	0.999	0.39
<i>IGF2BP2</i>	rs4402960	+	T	G	30	30	0.988	0.85
<i>IRS1</i>	rs7578326	+	A	G	65	64	0.999	0.77
<i>JAZF1</i>	rs864745	+	T	C	49	50	0.991	85
<i>KCNJ11</i>	rs757110	+	C	A	39	37	0.984	0.40
<i>KCNQ1</i>	rs163184	+	G	T	44	48	0.999	0.50
<i>KCNQ1</i>	rs2237892	+	C	T	93	94	0.998	<0.001
<i>KLF14</i>	rs972283	+	G	A	55	55	0.978	0.65
<i>MTNR1B</i>	rs10830963	+	G	C	30	28	0.976	0.21
<i>NOTCH2</i>	rs10923931	+	T	G	9	11	0.998	0.53
<i>PPARg</i>	rs1801282	+	C	G	90	88	0.999	0.007
<i>PRCI</i>	rs8042680	+	A	C	26	33	0.998	0.04
<i>PROX1</i>	rs340874	+	C	T	56	54	0.983	0.95
<i>SLC30A8</i>	rs13266634	+	C	T	75	70	0.990	0.05
<i>TCF7L2</i>	rs7903146	+	T	C	28	30	0.980	0.73
<i>THADA</i>	rs7578597	+	T	C	88	90	0.985	0.28
<i>TSPAN8</i>	rs7961581	+	C	T	25	29	0.993	0.77
<i>WFS1</i>	rs10010131	+	G	A	68	60	0.941	0.53
<i>ZBED3</i>	rs4457053	+	G	A	26	30	0.995	0.47
<i>ZFAND6</i>	rs11634397	+	G	A	64	65	0.999	0.09

^a Descriptives were produced on the InterAct subcohort after exclusion of individuals from Denmark (who had no DNA available) and those from other countries who were not included in the genetic risk score (i.e. were not successfully genotyped for at least 30 of the 35 polymorphisms). #Genotyped SNPs represent published index SNPs, except for *KCNJ11* (index rs5215, proxy rs757110; $r^2=0.97$); *CDKAL1* (index rs7754840, proxy rs10946398; $r^2=1$); *IGF2BP2* (index rs1470579, proxy rs4402960; $r^2=1$); *GCKR* (index rs780094, proxy rs780093; $r^2=1$); *HNF1B/TCF2* (index rs757210, DIAGRAM better meta-analysis SNP rs4430796); *IRS1* (index rs2943641, DIAGRAM better meta-analysis SNP rs7578326).

ESM Table 4. Proportion of individuals reporting a family history of diabetes in each country in the subcohort: the EPIC-InterAct study.

Country	Family history in any first degree relative		Overall Total reporting family history	Missing family history data N (% of total N)
	+	-		
France	475	53	765	102 (12%)
%	90	10		
UK	874	114	1,746	1 (0.1%)
%	88	12		
Netherlands	1,127	366	2,271	19 (0.8%)
%	75	25		
Germany	767	261	1,699	261 (13%)
%	75	25		
Sweden	1,906	460	4,320	1081 (20%)
%	81	19		
Denmark	1,392	249	3,068	969 (24%)
%	85	15		
<i>Total</i>	<i>6,541</i>	<i>1,503</i>	<i>13,869</i>	<i>Total N=16,302</i>

ESM Table 6. Association of family history with T2D risk in BMI, physical activity and genetic risk strata

BMI group (kg/m ²)	Family History in any first degree relative		<i>P</i> _{interaction} ^a
	-	+	
18.5-24.9	1	2.91 (2.48, 3.43)	0.08
25-29.9	3.81 (2.85, 5.10)	9.18 (6.30, 13.37)	
>=30	10.98 (7.77, 15.51)	22.00 (16.89, 28.65)	
Physical activity group			
Active	1	3.27 (2.73, 3.92)	0.048
Moderately active	1.17 (1.03, 1.33)	3.24 (2.45, 4.29)	
Moderately inactive	1.30 (1.12, 1.51)	3.50 (2.84, 4.31)	
Inactive	1.82 (1.54, 2.16)	4.33 (3.58, 5.25)	
Genetic score tertile			
Low genetic risk	1	2.56 (2.14, 3.06)	0.81
Medium genetic risk	1.40 (1.21, 1.63)	3.83 (3.18, 4.61)	
High genetic risk	1.88 (1.61, 2.19)	4.83 (4.02, 5.80)	

^aInteraction is with BMI, PA index and genetic score treated as continuous variables.