SUPPLEMENTARY MATERIAL

Supplemental Table S1: HDI and incidence rates [7] for neuroblastoma (NB), retinoblastoma (RB) and Wilms tumor (WT). Registry start and end dates are shown, with midpoint chosen as the arithmetic mean rounded up to the nearest year. The date range for the registry for Kuwait was non-continuous, so more recent HDI was selected. HDI corresponding to the midpoint date was selected (http://hdr.undp.org/en/data-explorer). When multiple registries were available from a single country, the largest population was chosen. Those not included in the analysis are shaded and italicized. Registries for which HDI or incidence data were unavailable were not included in the analysis and are listed below the table.

Supplemental Table S2: Risk SNP allele frequency and incidence.
To examine whether variations in common polymorphisms across populations may correlate with tumor incidence (with and without controlling for HDI), we identified SNPs that have been shown to confer risk to neuroblastoma and Wilms tumor and considered their distribution across populations for which incidence and HDI data were available.

We first identified 10 neuroblastoma and 7 Wilms tumor risk SNPs from the NHGRI-EBI genome-wide association studies (GWAS) catalog [13]. As several of the neuroblastoma risk SNPs seem to have stronger reported association with high-risk disease (including those in *BARD1* and *LMO1*) [9,11,15], we additionally included three SNPs in *DUSP12* (rs1027702), *IL31RA* (rs2619046), and *HSD17B12* (rs11037575) associated with low-risk disease [12] although only one of these three reached genome-wide significance. We extracted 1000 Genomes (phase 3) risk allele frequencies for each SNP using the Geography of Genetic Variants (GGV) browser [21]. While a larger number of populations were available using other datasets, the 1000 Genomes dataset provided the most robust numbers of genotyped individuals per country, and was thus used in this analysis. We excluded one Wilms tumor SNP (rs5955543) due to lack of genotyping data in the 1000 Genomes dataset. We then matched nine 1000 Genomes populations with the closest registry (as shown in Supplemental Table S3). For each SNP, we tested the risk allele frequency for association with incidence rates using linear regression, with and without controlling for HDI. We adjusted for multiple testing using the Benjamini-Hochberg procedure at a False Discovery Rate of 5% [22].

After correcting for multiple testing, we did not observe significant associations between neuroblastoma or Wilms tumor incidence and SNP risk allele frequency with and without controlling for HDI.

Supplemental Table S3: Nine matched populations used for analysis of SNP allele frequency and incidence. IARC registry population (left) and matching 1000 genomes population (right) are shown.

Supplemental References

21.   Marcus JH, Novembre J. June 9, 2016. Geography of Genetic Variants Browser v0.1.   <http://www.popgen.uchicago/ggv/>. June 9, 2016.
22.   Benjamini Y, Hochberg Y. Controlling the false discovery rate: a practical and powerful approach to multiple testing. Journal of the Royal Statistical Society Series B (Methodological) 1995:57(1):289-300.

SUPPLEMENTAL TABLE S1

Country	Registry start date	Registry end date	Midpoint date of registry	HDI from midpoint	RATE (NB)	RATE (RB)	RATE (WT)
Algeria, Setif	1986	1995	1991	0.58	6.1	1.4	4.7
Brazil, Belem	1987	1991	1989	0.60	4.6	15.4	10.8
Brazil, Goiania	*1989*	*1994*	*1992*	*0.62*	*5.5*	*9.1*	*18.2*
Bulgaria	1980	1989	1985	0.69	7.9	3.4	7.4
Canada	1982	1991	1987	0.84	26.4	10.1	18.4
China, Tianjin	1981	1992	1987	0.48	6.4	6.4	4.6
Colombia, Cali	1982	1991	1987	0.58	7.8	17.1	15.6
Costa Rica	1984	1992	1988	0.64	10	15.7	11.2
Cuba	1986	1990	1988	0.67	17.2	8.5	11.3
Denmark	1983	1991	1987	0.79	25.3	15.3	20.9
Ecuador, Quito	1985	1992	1989	0.64	5.9	16.6	5.9
Egypt, Alexandria	1980	1989	1985	0.51	10.9	1.5	8.1
Finland	1980	1989	1985	0.76	23.8	11	21
France	1983	1992	1988	0.76	32.7	8.4	16.8
France, Lorraine	*1983*	*1992*	*1988*	*0.76*	*24.5*	*6.7*	*14.7*
France, PACA & Corsica	*1984*	*1992*	*1988*	*0.76*	*36.7*	*8.5*	*15.3*
Germany	1991	1995	1993	0.82	26.5	8.1	20.4
Germany, former FRG	*1985*	*1990*	*1988*	*NA*	*26.1*	*10.7*	*19.6*
Germany, former GDR	*1981*	*1989*	*1985*	*NA*	*21.2*	*9.2*	*16.5*
Hong Kong	1980	1989	1985	0.74	17.5	14.4	10
Hungary	1985	1990	1988	0.71	21.8	5.6	12
India, Bombay	1980	1992	1986	0.40	6.7	10.6	7.1
India, Bangalore	*1982*	*1992*	*1987*	*0.41*	*5*	*7.1*	*6.9*
India, Delhi	*1988*	*1992*	*1990*	*0.43*	*5.8*	*12*	*12.4*
India, Madras	*1982*	*1992*	*1987*	*0.41*	*4.3*	*19.6*	*9.8*
India, Poona	*1980*	*1992*	*1986*	*0.40*	*7*	*7.3*	*4.2*
Israel, Jews	1980	1989	1985	0.77	34.6	9.1	14.8
Israel, non-Jews	*1980*	*1989*	*1985*	*0.77*	*19.8*	*11.2*	*14.6*
Italy	1980	1991	1986	0.74	25.8	5.4	15.9
Italy, Piedmont	*1982*	*1989*	*1986*	*0.74*	*30.6*	*4.8*	*14.3*
Japan	1980	1992	1986	0.80	28.7	12.2	9
Japan, Osaka	*1981*	*1989*	*1985*	*0.79*	*29.8*	*10.6*	*11.1*
Korea (Republic of), Seoul	1992	1994	1993	0.76	15.2	9.3	5.1
Kuwait, Kuwaiti	1983, 1992	1989, 1993	1986; 1993	.73; .74 (0.74 selected)	12.7	3.4	8.4
Kuwait, non-Kuwaiti	*1983, 1992*	*1989, 1993*	*1986; 1993*	*.73; .74*	*22.8*	*3.3*	*10.9*
Malawi, Blantyre	1991	1995	1993	0.31	NA	10.7	3.6
Mali, Bamako	1987	1995	1991	0.24	NA	42.5	7.1
Netherlands	1989	1992	1991	0.84	17.2	13.8	16.9
New Zealand, non-Maori	1980	1992	1986	0.81	24.5	18.6	24.1
New Zealand, Maori	*1970*	*1992*	*1981*	*0.80*	*28.4*	*17.8*	*11.8*
Norway	1980	1989	1985	0.83	25.9	15.4	16.6
Peru, Lima	1990	1991	1991	0.62	5.7	15.5	7.3
Philippines, Manila and Rizal	1983	1992	1988	0.58	4.5	17.4	7.8
Poland	1980	1989	1985	0.70	10.8	5.4	16.2
Portugal	1989	1992	1991	0.72	26.6	10.9	16.4
Spain	1980	1991	1986	0.73	25	11.1	13.6
Spain, Valencia	*1983*	*1990*	*1987*	*0.74*	*17.8*	*17.8*	*11.9*
Sweden	1983	1989	1986	0.80	18.2	11	22.6
Switzerland	1980	1992	1986	0.82	31.7	12.4	13.8
Thailand	1983	1993	1988	0.56	5.9	10	6.7
Uganda, Kampala	1992	1995	1994	0.32	2.5	24	17.7
United Kingdom, England & Wales	1981	1990	1986	0.76	20.9	9.3	16
United Kingdom, Scotland	*1981*	*1990*	*1986*	*0.76*	*17.9*	*13.9*	*16.6*
Uruguay	1988	1992	1990	0.69	4.7	7	14.8
USA, SEER, White	1983	1992	1988	0.85	30.2	12	19.6
USA, Greater Delaware Valley, Black	*1980*	*1989*	*1985*	*0.84*	*26*	*14*	*23*
USA, Greater Delaware Valley, White	*1980*	*1989*	*1985*	*0.84*	*29.9*	*9.8*	*20.8*
USA, Los Angeles, Black	*1984*	*1992*	*1988*	*0.85*	*21.5*	*6.3*	*22.8*
USA, Los Angeles, Hispanic	*1984*	*1992*	*1988*	*0.85*	*24.1*	*13.3*	*20*
USA, Los Angeles, non-Hispanic white	*1984*	*1992*	*1988*	*0.85*	*32.2*	*13.4*	*19.3*
USA, New York, Black	*1983*	*1991*	*1987*	*0.85*	*19.2*	*11.9*	*20*
USA, New York, White	*1983*	*1991*	*1987*	*0.85*	*27.9*	*10.2*	*18.9*
USA, SEER, Black	*1983*	*1992*	*1988*	*0.85*	*23.3*	*13.8*	*18.1*
USA, SEER, Hawaii, Hawaiian	*1973*	*1992*	*1983*	*0.83*	*30.7*	*22.5*	*10.2*
Vietnam, Hanoi	1991	1994	1993	0.51	2.2	18.9	3.3
Zimbabwe, Harare, Africans	1990	1994	1992	0.49	7.8	23.3	31.1

*HDI data unavailable: Australia; Croatia; Czech Republic; Estonia; Iceland; Namibia; Nigeria, Ibadan; Puerto Rico; Singapore, Chinese; Singapore, Malay; Slovakia; Slovenia

**Incidence data unavailable: Bangladesh; Pakistan, Islamabad; Pakistan, Karachi; Papua New Guinea; South Africa, Black; South Africa, White; United Arab Emirates, Al Ain

SUPPLEMENTAL TABLE S2

Neuroblastoma Risk SNP	Unadjusted		Adjusted for HDI	
	Beta (Std. Err)	P-value	Beta (Std. Err)	P-value
rs6939340	-54.6 (22.1)	0.04	-16.4 (14)	0.29
rs6435862	95.7 (34.1)	0.03	18.2 (28.4)	0.54
rs7587476	33.4 (109.4)	0.77	-28 (45.3)	0.56
rs9295536	-40.4 (18.6)	0.07	-8 (12)	0.53
rs110419	-31.7 (49)	0.54	-23.7 (18.5)	0.25
rs11037575	-33 (16.7)	0.09	-7 (9.9)	0.51
rs4712653	-43.9 (20.1)	0.07	-8.3 (13.1)	0.55
rs3768716	193.3 (93.5)	0.08	13.2 (63.5)	0.84
rs4336470	13 (58.6)	0.83	34.8 (20)	0.13
rs17065417	-113.3 (71.8)	0.16	-12.9 (39.7)	0.76
rs1027702	-0.5 (25.6)	0.98	-16.7 (8.5)	0.10
rs2619046	-35.2 (17)	0.08	-12.4 (8.9)	0.21
rs10055201	-34.9 (15.2)	0.06	-11.2 (8.9)	0.25

Wilms Tumor Risk SNP	Unadjusted		Adjusted for HDI	
	Beta (Std. Err)	P-value	Beta (Std. Err)	P-value
rs3755132	-61.4 (29.3)	0.07	-41.5 (28.1)	0.19
rs1027643	64.2 (88.8)	0.49	73.5 (67.8)	0.32
rs790356	-22.4 (9.6)	0.05	-15.4 (9.6)	0.16
rs807624	-20.6 (6.3)	0.01	-16.4 (5.3)	0.02
rs2495478	-72.3 (36.7)	0.09	-40.4 (40.5)	0.36
rs2283873	-41 (9.5)	0.004	-33.3 (8.6)	0.008

SUPPLEMENTAL TABLE S3

IARC Registry	1000 Genomes Population
China, Tianjin	CHB: Han Chinese in Bejing, China
Colombia, Cali	CLM: Colombians from Medellin, Colombia
Finland	FIN: Finnish in Finland
Italy	TSI: Toscani from Italy
Japan	JPT: Japanese in Tokyo, Japan
Peru, Lima	PEL: Peruvians from Lima, Peru
Spain	IBS: Iberian population in Spain
United Kingdom, England & Wales	GBR: British in England and Scotland
USA, SEER, White	CEU: Utah Residents with Northern and Western Ancestry, USA