

Genetically raised circulating bilirubin levels and risk of ten cancers: a Mendelian randomization study

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Funding Sources and Acknowledgements

Table S1 | Summary statistics for genetic association of total bilirubin levels and risk of ten cancers

SNPs	Chromosome	Base pair position	Effect allele	Reference allele	Total bilirubin			Pancreatic cancer overall		Pancreatic cancer in men		Pancreatic cancer in women		Renal cell cancer overall		Renal cell cancer in men		Renal cell cancer in women		Lung cancer overall		Lung cancer overall in ever smokers		Lung cancer overall in never smokers	
					Beta	SE	Explained variance (%)	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE
rs2375279	1	25541931	C	T	0.022	0.004	1.29E-04	-0.031	0.033	0.008	0.045	-0.078	0.049	0.006	0.025	-0.026	0.047	0.062	0.060	-0.007	0.017	-0.001	0.021	0.028	0.051
rs17513135	1	40035686	C	T	0.018	0.003	1.17E-04	-0.031	0.028	-0.049	0.038	-0.007	0.042	0.012	0.021	0.065	0.040	-0.025	0.051	0.006	0.014	-0.002	0.017	0.073	0.041
rs6682423	1	63171063	T	C	0.021	0.003	1.98E-04	-0.027	0.025	-0.034	0.034	-0.019	0.037	-0.010	0.019	0.009	0.037	0.041	0.046	-0.012	0.012	-0.011	0.016	-0.019	0.038
rs1762486	1	107627697	A	G	0.020	0.003	1.78E-04	-0.044	0.026	-0.048	0.035	-0.043	0.038	0.000	0.020	-0.017	0.038	0.037	0.048	-0.001	0.013	-0.006	0.016	-0.024	0.038
rs61812598	1	154420087	A	G	0.016	0.003	1.24E-04	-0.010	0.024	0.012	0.033	-0.034	0.036	-0.014	0.019	-0.042	0.036	-0.042	0.045	0.011	0.012	0.016	0.015	-0.024	0.036
rs857725	1	158607935	T	G	0.033	0.003	4.33E-04	-0.037	0.027	-0.040	0.036	-0.037	0.040	-0.017	0.020	-0.046	0.038	-0.009	0.049	-0.026	0.013	-0.008	0.016	-0.086	0.040
rs788644	1	202256962	G	T	0.018	0.003	1.56E-04	0.030	0.024	-0.004	0.032	0.070	0.036	-0.024	0.018	0.014	0.034	-0.009	0.044	-0.006	0.012	0.008	0.015	-0.015	0.035
rs1874121	1	220969049	T	C	0.023	0.003	2.47E-04	0.034	0.026	-0.002	0.035	0.076	0.038	0.000	0.020	-0.062	0.038	0.020	0.048	-0.002	0.013	-0.002	0.017	-0.017	0.039
rs556107	1	234853059	T	C	0.021	0.003	2.28E-04	-0.038	0.024	-0.043	0.032	-0.032	0.036	0.005	0.018	-0.013	0.036	0.017	0.044	0.007	0.012	-0.003	0.015	0.036	0.035
rs13030095	2	26026598	A	G	0.015	0.003	9.79E-05	-0.016	0.026	0.012	0.036	-0.047	0.039	-0.004	0.020	-0.028	0.039	-0.012	0.049	0.014	0.013	-0.007	0.017	0.041	0.039
rs2053799	2	32883197	G	A	0.015	0.003	1.03E-04	0.021	0.024	0.013	0.033	0.025	0.036	0.012	0.019	-0.018	0.036	0.085	0.044	0.012	0.012	0.027	0.015	-0.056	0.036
rs4671605	2	64887382	T	C	0.021	0.003	1.65E-04	0.034	0.027	-0.005	0.037	0.077	0.040	0.040	0.021	0.044	0.039	0.035	0.050	0.018	0.013	0.018	0.017	-0.026	0.039
rs6734238	2	113841030	A	G	0.023	0.003	2.46E-04	-0.002	0.024	0.037	0.033	-0.046	0.036	-0.022	0.019	0.005	0.036	-0.006	0.045	-0.008	0.012	-0.016	0.015	0.045	0.036
rs1047891	2	211540507	A	C	0.023	0.003	2.36E-04	-0.013	0.026	-0.020	0.036	-0.006	0.040	0.009	0.021	-0.029	0.040	0.051	0.050	-0.001	0.013	0.002	0.016	-0.002	0.038
rs6731997	2	232560411	G	A	0.017	0.003	9.89E-05	0.055	0.029	0.046	0.039	0.069	0.043	-0.029	0.022	0.014	0.041	0.006	0.051	-0.012	0.014	-0.030	0.018	0.063	0.043
rs4973588	2	233834975	A	G	0.035	0.004	2.97E-04	0.012	0.033	0.034	0.044	-0.014	0.049	-0.017	0.025	-0.023	0.048	-0.057	0.060	0.012	0.016	-0.002	0.020	0.097	0.047
rs6431625	2	234637912	C	T	0.598	0.002	0.169	0.014	0.024	0.036	0.033	-0.013	0.036	0.005	0.019	0.003	0.037	0.059	0.046	-0.012	0.012	-0.028	0.015	-0.004	0.036
rs10929023	2	235169902	G	A	0.023	0.003	2.14E-04	-0.001	0.026	0.020	0.036	-0.029	0.039	0.040	0.020	-0.044	0.039	0.034	0.050	0.007	0.013	0.009	0.017	-0.021	0.039
rs2267846	3	48556339	A	G	0.017	0.003	1.08E-04	0.059	0.027	0.083	0.036	0.029	0.040	0.014	0.020	0.057	0.038	-0.023	0.049	0.018	0.013	0.020	0.017	-0.013	0.041
rs9826148	3	114464858	C	T	0.026	0.004	1.28E-04	-0.066	0.037	-0.023	0.049	-0.118	0.055	0.033	0.028	0.007	0.052	0.042	0.066	-0.001	0.019	-0.023	0.023	0.053	0.054
rs6779903	3	135720851	T	G	0.019	0.003	1.44E-04	-0.016	0.027	-0.027	0.036	-0.003	0.040	-0.025	0.020	-0.029	0.039	0.032	0.048	0.024	0.013	0.012	0.017	0.076	0.039
rs1052618	3	136574501	A	G	0.028	0.003	3.45E-04	-0.021	0.026	0.008	0.035	-0.053	0.038	-0.025	0.020	-0.064	0.038	0.039	0.046	0.011	0.013	0.011	0.016	0.043	0.038
rs1482852	3	156798294	A	G	0.017	0.003	1.32E-04	0.035	0.024	0.012	0.033	0.068	0.036	-0.004	0.019	0.006	0.035	-0.021	0.043	-0.002	0.012	0.013	0.015	-0.055	0.036
rs61791066	3	170713380	C	T	0.031	0.004	2.06E-04	0.011	0.034	0.033	0.047	-0.012	0.051	0.017	0.026	-0.083	0.051	0.077	0.063	-0.025	0.017	-0.025	0.021	-0.088	0.052
rs11917973	3	195838613	T	C	0.014	0.003	9.48E-05	-0.012	0.024	-0.008	0.033	-0.017	0.036	-0.034	0.019	-0.014	0.038	-0.013	0.047	0.005	0.012	-0.003	0.016	-0.002	0.037
rs13092376	3	196516288	C	A	0.014	0.003	9.51E-05	-0.017	0.024	-0.011	0.033	-0.028	0.036	-0.015	0.019	0.017	0.036	-0.033	0.045	-0.022	0.012	-0.026	0.015	0.004	0.036
rs115558925	4	69765782	A	C	0.029	0.004	1.55E-04	-0.033	0.042	-0.065	0.057	0.008	0.062	-0.038	0.032	-0.035	0.064	-0.021	0.078	0.009	0.022	0.024	0.029	-0.066	0.065
rs151450	4	88016514	G	A	0.017	0.003	1.45E-04	-0.032	0.024	0.012	0.033	-0.086	0.036	0.013	0.019	0.046	0.035	0.049	0.044	-0.019	0.012	-0.011	0.015	-0.032	0.036
rs1126673	4	100045616	C	T	0.020	0.003	1.66E-04	0.006	0.025	-0.023	0.034	0.046	0.038	0.005	0.019	0.003	0.036	0.049	0.046	0.022	0.013	0.028	0.016	0.002	0.038
rs79800919	4	124787383	G	A	0.026	0.004	1.36E-04	0.000	0.037	0.003	0.049	-0.007	0.054	0.043	0.028	0.004	0.051	0.049	0.065	0.020	0.018	0.028	0.023	0.029	0.054
rs11727331	4	145091680	A	G	0.040	0.006	1.55E-04	-0.048	0.059	-0.029	0.080	-0.062	0.089	-	-	-	-	-	-	-	-	-	-	-	-
rs10003923	4	175086079	C	T	0.015	0.003	1.14E-04	0.031	0.024	0.039	0.032	0.021	0.036	0.009	0.018	-0.086	0.035	0.068	0.044	0.009	0.012	0.002	0.015	0.051	0.037
rs6869704	5	122833667	T	C	0.017	0.003	1.37E-04	0.009	0.024	0.000	0.032	0.017	0.036	0.001	0.018	0.016	0.035	-0.011	0.043	0.004	0.012	0.015	0.015	0.011	0.035
rs274555	5	131722951	C	T	0.018	0.003	1.51E-04	-0.005	0.024	-0.010	0.032	0.003	0.036	0.011	0.019	0.028	0.036	0.004	0.044	0.037	0.012	0.047	0.015	-0.022	0.035
rs12515233	5	158417109	C	A	0.019	0.003	1.05E-04	-0.003	0.031	-0.031	0.042	0.035	0.047	0.020	0.024	-0.013	0.046	-0.068	0.058	-0.007	0.015	0.002	0.020	-0.122	0.046
rs72835688	6	12811955	C	T	0.030	0.005	1.02E-04	-0.033	0.054	-0.081	0.074	0.027	0.080	-	-	-	-	-	-	-	-	-	-	-	-
rs9379764	6	25414023	G	T	0.018	0.003	1.23E-04	-0.001	0.028	0.020	0.038	-0.028	0.042	-0.010	0.022	-0.012	0.042	0.056	0.052	0.015	0.014	-0.002	0.018	0.095	0.041
rs198851	6	26104632	T	G	0.047	0.003	5.59E-04	0.003	0.034	0.002	0.046	0.000	0.050	-0.012	0.025	-0.012	0.049	0.054	0.060	-0.014	0.016	-0.021	0.021	-0.017	0.049
rs200484	6	27775674	A	G	0.023	0.004	1.23E-04	0.014	0.040	0.029	0.053	-0.002	0.060	0.076	0.030	-0.019	0.059	0.049	0.075	-0.112	0.019	-0.135	0.024	0.059	0.060
rs853684	6	28294550	T	C	0.024	0.003	2.84E-04	0.008	0.025	0.015	0.033	0.002	0.037	0.021	0.019	0.017	0.036	0.033	0.046	-0.024	0.012	-0.033	0.015	0.032	0.036
rs9267488	6	31514247	A	G	0.022	0.004	1.22E-04	-0.031	0.038	0.010	0.052	-0.083	0.057	0.108	0.029	0.075	0.059	0.027	0.075	-0.151	0.019	-0.172	0.024	0.057	0.059
rs2395943	6	42940673	A	G	0.020	0.003	1.93E-04	-0.023	0.024	0.013	0.032	-0.067	0.036	0.011	0.018	0.052	0.035	0.020	0.044	0.010	0.012	0.026	0.015	-0.057	0.035
rs12210538	6	110760008	G	A	0.017	0.003	9.99E-05	-0.051	0.028	-0.056	0.038	-0.048	0.042	0.002	0.022	-0.013	0.043	0.067	0.053	-0.003	0.014	-0.010	0.018	0.002	0.042
rs1490384	6	126851160	C	T	0.019	0.003	1.79E-04	0.078	0.024	0.113	0.032	0.036	0.035	0.013	0.018	0.000	0.035	-0.004	0.042	0.000	0.012	0.002	0.015	0.031	0.035
rs11753995	6	160575366	G	A	0.025	0.003	1.71E-04	0.005	0.032	0.002	0.044	0.012	0.048	0.013	0.024	0.059	0.047	0.118	0.059	0.030	0.016	0.034	0.020	0.049	0.048
rs4410790	7	17284577	T	C	0.031	0.003	4.43E-04	-0.016	0.025	-0.060	0.034	0.037	0.038	0.009	0.019	0.043	0.036	0.032							

Table S1 | Summary statistics for genetic association of total bilirubin levels and risk of ten cancers

SNPs	Chromosome	Base pair position	Effect allele	Reference allele	Total bilirubin			Pancreatic cancer overall		Pancreatic cancer in men		Pancreatic cancer in women		Renal cell cancer overall		Renal cell cancer in men		Renal cell cancer in women		Lung cancer overall		Lung cancer overall in ever smokers		Lung cancer overall in never smokers	
					Beta	SE	Explained variance (%)	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE
rs10761756	10	65172328	C	T	0.040	0.003	7.81E-04	0.036	0.024	0.064	0.032	-0.002	0.035	0.012	0.018	-0.047	0.035	0.021	0.043	0.020	0.012	0.013	0.015	0.015	0.035
rs17476364	10	71094504	C	T	0.091	0.004	1.64E-03	-0.046	0.041	-0.119	0.056	0.043	0.061	-0.022	0.032	0.004	0.066	-0.015	0.081	0.008	0.021	-0.007	0.026	0.015	0.063
rs2901610	10	94536864	C	T	0.022	0.003	2.47E-04	0.023	0.024	0.044	0.032	-0.005	0.035	-0.015	0.018	-0.033	0.035	-0.058	0.044	0.000	0.012	-0.019	0.015	0.030	0.035
rs12768009	10	96525865	G	A	0.024	0.004	1.46E-04	-0.071	0.034	-0.025	0.045	-0.123	0.051	-0.017	0.026	0.001	0.049	-0.046	0.062	-0.005	0.016	0.011	0.021	-0.068	0.049
rs2792751	10	113940329	T	C	0.021	0.003	1.81E-04	0.001	0.026	0.003	0.035	-0.001	0.039	0.018	0.020	-0.007	0.038	-0.030	0.048	-0.005	0.013	-0.006	0.016	-0.043	0.039
rs2245095	10	122857596	C	T	0.048	0.004	3.65E-04	0.017	0.040	0.047	0.054	-0.025	0.062	0.027	0.031	-0.012	0.059	0.070	0.073	-0.009	0.020	-0.022	0.025	0.018	0.061
rs11601507	11	5701074	A	C	0.028	0.005	1.03E-04	0.005	0.046	0.010	0.062	0.002	0.069	-0.016	0.036	-0.105	0.070	0.051	0.083	-0.003	0.024	-0.026	0.030	-0.013	0.071
rs360139	11	9775091	G	A	0.016	0.003	1.21E-04	-	-	-	-	-	-	0.008	0.019	0.035	0.038	-0.038	0.046	-	-	-	-	-	-
rs10832027	11	13357183	G	A	0.024	0.003	2.48E-04	0.017	0.025	0.028	0.034	0.006	0.038	-0.028	0.019	-0.064	0.037	0.075	0.046	-0.008	0.012	-0.037	0.016	0.061	0.037
rs174554	11	61579463	A	G	0.021	0.003	2.02E-04	0.000	0.025	-0.002	0.034	0.001	0.038	0.028	0.019	0.004	0.037	0.044	0.046	0.032	0.012	0.046	0.016	0.023	0.038
rs499974	11	75455021	A	C	0.029	0.003	2.18E-04	0.026	0.031	0.041	0.041	0.005	0.046	0.007	0.024	0.051	0.044	-0.031	0.056	0.015	0.015	-0.001	0.019	0.080	0.045
rs717662	11	100493995	T	C	0.026	0.004	1.34E-04	-0.002	0.037	-0.018	0.050	0.010	0.055	-0.024	0.029	-0.063	0.054	-0.073	0.068	-0.004	0.018	-0.016	0.023	-0.022	0.054
rs3741298	11	116657561	C	T	0.032	0.003	3.11E-04	-0.046	0.029	-0.064	0.040	-0.027	0.043	-0.017	0.023	-0.013	0.044	0.037	0.054	0.004	0.014	-0.010	0.018	0.033	0.043
rs76895963	12	4384844	G	T	0.062	0.010	1.54E-04	-	-	-	-	-	-	-	-	-	-	-	-	-0.044	0.051	0.029	0.064	-0.327	0.146
rs73080739	12	20761863	G	A	0.033	0.004	1.91E-04	0.033	0.040	-0.015	0.054	0.090	0.058	-0.002	0.030	0.052	0.057	0.031	0.073	0.011	0.020	0.025	0.025	0.017	0.060
rs4149056	12	21331549	C	T	0.183	0.003	8.57E-03	-0.072	0.032	-0.095	0.043	-0.045	0.049	-0.054	0.024	-0.113	0.045	-0.033	0.056	-0.014	0.016	-0.027	0.020	-0.028	0.047
rs1283809	12	21980618	C	T	0.021	0.003	1.16E-04	0.001	0.032	0.039	0.043	-0.046	0.047	-0.027	0.025	0.086	0.049	-0.022	0.061	0.025	0.016	0.032	0.020	0.043	0.046
rs36124182	12	24214934	A	G	0.049	0.007	1.68E-04	0.034	0.058	-0.012	0.080	0.085	0.084	-0.065	0.045	-0.020	0.088	0.069	0.115	0.022	0.029	0.002	0.037	-0.028	0.083
rs4760682	12	48512285	C	A	0.017	0.003	9.22E-05	-0.016	0.031	-0.024	0.042	-0.009	0.046	0.007	0.024	0.072	0.048	-0.016	0.059	-0.028	0.016	-0.024	0.020	-0.070	0.048
rs10876376	12	53261822	A	G	0.016	0.003	1.31E-04	-0.099	0.024	-0.104	0.032	-0.095	0.035	0.021	0.018	0.043	0.035	-0.025	0.044	-0.007	0.012	0.002	0.015	-0.036	0.035
rs2657879	12	56865338	G	A	0.018	0.003	9.46E-05	-0.040	0.030	-0.018	0.041	-0.064	0.045	-0.012	0.024	-0.043	0.047	-0.044	0.058	0.019	0.015	0.009	0.020	0.068	0.045
rs3184504	12	111884608	T	C	0.038	0.003	7.25E-04	-0.031	0.024	-0.023	0.032	-0.041	0.035	-0.029	0.018	-0.021	0.035	-0.081	0.044	-0.034	0.012	-0.025	0.015	-0.044	0.035
rs12811045	12	115527503	A	G	0.017	0.003	9.89E-05	0.012	0.030	0.022	0.040	-0.005	0.045	-0.010	0.023	-0.019	0.047	-0.065	0.057	0.012	0.015	0.002	0.019	-0.008	0.044
rs7135337	12	121404155	C	A	0.016	0.003	1.20E-04	-0.102	0.024	-0.109	0.032	-0.092	0.036	-0.042	0.018	-0.039	0.035	-0.065	0.044	-0.019	0.012	-0.013	0.015	0.010	0.035
rs139763750	14	51049397	A	G	0.038	0.006	1.45E-04	0.026	0.056	0.053	0.076	-0.002	0.082	0.078	0.040	0.065	0.077	0.146	0.093	-	-	-	-	-	-
rs61984409	14	64730021	A	C	0.015	0.003	9.73E-05	-0.011	0.025	-0.026	0.033	0.007	0.036	0.010	0.019	-0.021	0.037	0.000	0.045	-	-	-	-	-	-
rs339969	15	60883281	C	A	0.026	0.003	3.20E-04	0.004	0.024	0.007	0.033	0.004	0.036	0.009	0.019	0.023	0.037	0.007	0.045	-0.013	0.012	-0.022	0.015	0.019	0.036
rs17184256	15	63785421	G	A	0.022	0.003	2.14E-04	0.041	0.025	0.030	0.035	0.051	0.038	0.023	0.020	0.046	0.037	-0.047	0.047	-0.025	0.013	-0.031	0.016	0.013	0.038
rs67257650	15	73979507	T	C	0.017	0.003	1.42E-04	-0.024	0.024	-0.031	0.033	-0.012	0.036	0.001	0.019	0.032	0.035	-0.018	0.045	0.016	0.012	0.006	0.015	0.018	0.036
rs181207	16	28513530	C	T	0.020	0.003	1.76E-04	0.002	0.026	0.014	0.034	-0.013	0.039	-0.035	0.020	-0.013	0.040	-0.107	0.050	-0.028	0.013	-0.033	0.017	0.020	0.040
rs4575545	16	79755446	G	A	0.017	0.003	1.22E-04	-0.008	0.026	-0.007	0.035	-0.008	0.039	-0.052	0.020	-0.098	0.038	-0.177	0.047	-0.013	0.013	-0.030	0.016	0.025	0.038
rs7185774	16	81249927	C	T	0.015	0.003	9.57E-05	0.003	0.025	0.045	0.034	-0.046	0.037	-0.019	0.019	-0.038	0.036	-0.075	0.045	0.005	0.012	0.007	0.015	-0.063	0.036
rs247827	16	84582825	G	A	0.019	0.003	1.10E-04	0.013	0.031	0.018	0.042	0.005	0.046	0.068	0.024	0.068	0.048	0.041	0.059	0.008	0.016	0.011	0.020	0.035	0.047
rs2968478	16	88858646	T	G	0.023	0.003	2.60E-04	-0.037	0.025	-0.013	0.033	-0.064	0.037	-0.031	0.019	-0.033	0.036	-0.081	0.045	0.001	0.012	0.006	0.016	0.004	0.037
rs7222046	17	7806529	G	A	0.017	0.003	1.34E-04	-0.019	0.024	-0.008	0.032	-0.034	0.036	-0.026	0.018	-0.007	0.035	0.005	0.043	-0.006	0.012	0.016	0.015	-0.037	0.035
rs1045599	17	15879910	C	T	0.016	0.003	1.24E-04	0.018	0.024	0.018	0.032	0.015	0.036	0.007	0.018	-0.004	0.035	0.019	0.044	0.000	0.012	-0.007	0.015	0.039	0.036
rs7213285	17	27206029	A	G	0.020	0.003	1.07E-04	0.080	0.032	0.068	0.044	0.099	0.049	0.005	0.025	-0.011	0.048	-0.007	0.058	-0.010	0.016	-0.024	0.020	0.074	0.047
rs1477141	17	53361838	G	T	0.014	0.003	1.03E-04	0.003	0.024	0.002	0.032	0.004	0.035	-0.047	0.018	-0.059	0.034	-0.112	0.044	0.003	0.012	-0.006	0.015	0.031	0.038
rs764424	17	57505604	G	A	0.015	0.003	1.12E-04	-0.016	0.024	-0.053	0.032	0.027	0.035	0.023	0.018	-0.006	0.034	0.055	0.043	0.013	0.012	0.020	0.015	0.001	0.035
rs11079420	17	59253051	A	G	0.020	0.003	1.33E-04	0.093	0.029	0.098	0.039	0.087	0.043	0.009	0.022	-0.014	0.043	0.039	0.054	-0.028	0.014	-0.029	0.018	-0.057	0.041
rs7223257	17	61787684	T	C	0.017	0.003	1.33E-04	-0.045	0.025	-0.061	0.034	-0.028	0.037	0.031	0.019	0.079	0.037	0.048	0.046	0.017	0.012	0.015	0.016	-0.004	0.038
rs12601919	17	65825374	A	G	0.021	0.003	1.35E-04	-0.053	0.030	-0.057	0.040	-0.048	0.045	-0.003	0.024	0.027	0.046	-0.061	0.057	-0.049	0.015	-0.045	0.019	-0.113	0.044
rs2909210	17	66456481	T	G	0.015	0.003	1.17E-04	-0.030	0.024	-0.076	0.032	0.021	0.035	0.024	0.018	0.036	0.035	0.039	0.044	-0.009	0.012	-0.013	0.015	0.007	0.035
rs1135688	17	73827205	C	T	0.015	0.003	9.06E-05	0.042	0.026	0.055	0.035	0.024	0.038	0.043	0.020	0.046	0.038	0.081	0.048	-0.021	0.013	-0.033	0.016	-0.037	0.038
rs379149	17	76126586	C	T	0.027	0.004	1.54E-04	0.037	0.039	-0.002	0.052	0.088	0.058	-0.039	0.034	-	-	-	-	-0.050	0.024	-0.060	0.031	-0.038	0.069
rs112896133	19	12429782	G	A	0.078	0.011	1.55E-04	0.047	0.130	0.253	0.170	-0.262	0.205	0.043	0.099	-	-	-	-	-0.048	0.059	-0.073	0.074	0.224	0.170
rs12609744	19	12994140	T	C	0.016	0.003	1.10E-04	-0.013	0.026	-0.0															

Table S1 | Summary statistics for genetic association of total bilirubin levels and risk of ten cancers

SNPs	Chromosome	Base pair position	Effect allele	Reference allele	Lung adenocarcinoma		Squamous cell lung cancer		Small cell Lung cancer		Ovarian cancer overall		Ovarian serous cancer		Breast cancer overall		Breast ER positive cancer		Breast ER negative cancer		Endometrial cancer		Prostate cancer		Melanoma		Neuroblastoma	
					Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE
rs2375279	1	25541931	C	T	0.003	0.023	-0.013	0.027	0.011	0.042	0.005	0.017	0.001	0.019	-0.005	0.010	-0.003	0.011	0.011	0.017	-0.007	0.023	-0.007	0.012	0.082	0.078	-0.089	0.060
rs17513135	1	40035686	C	T	0.008	0.019	-0.005	0.022	-0.027	0.034	0.034	0.014	0.038	0.016	-0.014	0.008	-0.012	0.009	-0.024	0.014	-0.035	0.019	-0.020	0.010	-0.008	0.065	-	-
rs6682423	1	63171063	T	C	-0.021	0.017	-0.043	0.020	0.050	0.031	0.016	0.013	0.016	0.014	-0.003	0.007	-0.005	0.008	0.007	0.012	-	-	-0.010	0.009	-	-	0.075	0.045
rs1762486	1	107627697	A	G	0.000	0.017	-0.013	0.020	0.021	0.032	0.024	0.013	0.024	0.014	0.000	0.007	0.001	0.008	-0.018	0.012	0.009	0.017	-0.004	0.009	-	-	-	-
rs61812598	1	154420087	A	G	0.013	0.017	-0.008	0.019	-0.011	0.030	0.014	0.012	0.012	0.013	-0.007	0.006	-0.012	0.008	0.001	0.012	0.031	0.016	0.016	0.008	-0.019	0.057	0.003	0.044
rs857725	1	158607935	T	G	-0.013	0.018	-0.016	0.021	-0.055	0.033	-0.002	0.013	0.005	0.015	-0.003	0.007	0.004	0.009	-0.042	0.013	-	-	-0.021	0.009	-0.004	0.062	-0.058	0.049
rs788644	1	202256962	G	T	-0.026	0.016	-0.006	0.019	0.012	0.029	-	-	-	-	0.001	0.006	0.013	0.008	-0.031	0.012	0.004	0.016	-0.014	0.008	-0.055	0.057	-0.101	0.043
rs1874121	1	220969049	T	C	-0.006	0.018	0.010	0.021	0.011	0.033	-	-	-	-	-0.012	0.007	-0.018	0.009	-0.013	0.013	-0.025	0.018	0.001	0.009	-	-	-	-
rs556107	1	234853059	T	C	0.024	0.016	-0.023	0.019	0.002	0.030	-0.029	0.012	-0.016	0.013	0.004	0.007	0.009	0.008	-0.003	0.012	0.006	0.016	0.019	0.008	0.097	0.055	-0.026	0.043
rs13030095	2	26026598	A	G	0.000	0.018	0.026	0.021	0.038	0.033	0.003	0.013	-0.011	0.015	-0.004	0.007	-0.002	0.009	-0.011	0.013	-0.010	0.017	0.012	0.009	-0.044	0.061	0.023	0.046
rs2053799	2	32883197	G	A	0.028	0.017	0.018	0.019	0.004	0.030	0.005	0.012	-0.007	0.013	0.013	0.006	0.010	0.008	0.021	0.012	-0.020	0.016	-0.010	0.008	-	-	-	-
rs4671605	2	64887382	T	C	0.013	0.018	0.019	0.021	0.053	0.034	-0.013	0.014	-0.017	0.015	0.019	0.007	0.023	0.009	0.022	0.013	0.006	0.018	0.006	0.010	-0.003	0.063	0.010	0.048
rs6734238	2	113841030	A	G	-0.006	0.017	-0.031	0.019	-0.041	0.030	0.019	0.012	0.021	0.013	0.005	0.006	0.005	0.008	0.011	0.012	-0.038	0.016	-0.022	0.008	0.083	0.057	-0.017	0.044
rs1047891	2	211540507	A	C	0.016	0.018	-0.007	0.021	-0.043	0.033	0.010	0.013	0.009	0.014	0.011	0.007	0.001	0.008	0.036	0.013	-0.025	0.018	0.012	0.009	-	-	-	-
rs6731997	2	232560411	G	A	-0.001	0.020	-0.001	0.023	-0.002	0.036	0.005	0.015	0.003	0.016	-0.014	0.008	-0.016	0.009	0.001	0.014	-0.032	0.020	0.010	0.010	0.001	0.069	0.059	0.053
rs4973588	2	233834975	A	G	0.011	0.022	0.017	0.026	-0.024	0.041	-0.010	0.016	-0.002	0.018	-0.001	0.009	-0.004	0.011	0.016	0.016	0.031	0.022	0.008	0.012	-	-	-0.091	0.061
rs6431625	2	234637912	C	T	-0.004	0.017	-0.018	0.019	-0.031	0.031	-0.024	0.012	-0.037	0.013	0.001	0.006	0.008	0.008	-0.020	0.012	-0.006	0.016	0.000	0.008	0.048	0.058	0.029	0.044
rs10929023	2	235169902	G	A	-0.011	0.018	-0.001	0.021	0.050	0.033	0.004	0.013	0.005	0.015	0.003	0.007	0.005	0.009	0.007	0.014	-0.027	0.018	0.004	0.010	0.084	0.058	0.044	0.047
rs2267846	3	48556339	A	G	0.011	0.018	0.019	0.021	0.040	0.034	-0.033	0.014	-0.031	0.015	0.009	0.007	0.006	0.009	0.018	0.013	0.010	0.018	0.033	0.009	-0.153	0.062	0.009	0.048
rs9826148	3	114464858	C	T	-0.014	0.025	-0.018	0.030	0.025	0.047	0.023	0.019	0.046	0.021	0.007	0.010	0.009	0.012	-0.011	0.018	-0.022	0.025	0.010	0.013	0.049	0.090	-	-
rs6779903	3	135720851	T	G	0.036	0.018	0.003	0.021	0.029	0.033	-0.016	0.013	-0.019	0.015	0.006	0.007	0.005	0.008	0.013	0.013	0.001	0.018	-0.004	0.009	-0.002	0.061	0.040	0.048
rs1052618	3	136574501	A	G	0.019	0.017	0.005	0.020	0.022	0.032	0.010	0.013	0.006	0.014	0.013	0.007	0.015	0.008	0.025	0.012	-0.029	0.017	-0.018	0.009	-0.052	0.059	0.017	0.047
rs1482852	3	156798294	A	G	-0.004	0.017	0.010	0.019	-0.032	0.031	0.033	0.012	0.047	0.013	0.006	0.006	0.005	0.008	0.012	0.012	-0.017	0.016	-0.022	0.008	-	-	-0.029	0.044
rs61791066	3	170713380	C	T	-0.005	0.023	-0.017	0.027	-0.015	0.043	-0.037	0.017	-0.036	0.019	0.016	0.009	0.007	0.011	0.028	0.016	-0.003	0.023	-0.024	0.012	0.034	0.082	0.031	0.063
rs11917973	3	195838613	T	C	0.014	0.017	0.016	0.020	-0.026	0.031	0.003	0.012	0.011	0.014	0.015	0.007	0.018	0.008	0.014	0.012	-0.020	0.017	-0.001	0.009	-	-	-	-
rs13092376	3	196516288	C	A	-0.023	0.017	-0.026	0.019	-0.007	0.030	0.017	0.012	0.019	0.014	-0.004	0.007	-0.003	0.008	-0.004	0.012	-0.035	0.016	0.004	0.008	-	-	-	-
rs115558925	4	69765782	A	C	0.005	0.030	-0.021	0.036	-0.010	0.057	0.007	0.021	-0.017	0.023	-0.018	0.012	-0.018	0.014	-0.025	0.021	0.017	0.029	0.018	0.015	-	-	-	-
rs151450	4	88016514	G	A	-0.006	0.016	-0.037	0.019	-0.017	0.030	0.009	0.012	0.007	0.013	-0.013	0.006	-0.016	0.008	-0.009	0.012	0.022	0.016	-0.012	0.008	-	-	-	-
rs1126673	4	100045616	C	T	0.000	0.017	0.031	0.020	0.011	0.032	-0.017	0.013	-0.019	0.014	-0.012	0.007	-0.017	0.008	0.007	0.012	-0.016	0.017	-0.004	0.009	0.052	0.059	0.034	0.046
rs79800919	4	124787383	G	A	0.053	0.025	0.033	0.029	-0.018	0.045	0.002	0.018	-0.001	0.020	0.013	0.010	0.019	0.012	0.011	0.018	-0.027	0.025	0.027	0.013	0.044	0.086	-	-
rs11727331	4	145091680	A	G	-	-	-	-	-	-	0.008	0.027	0.012	0.030	-	-	-	-	-	-	0.020	0.037	0.023	0.018	-	-	-	-
rs10003923	4	175086079	C	T	0.025	0.017	0.000	0.020	0.029	0.031	0.006	0.013	0.006	0.014	0.007	0.007	0.013	0.008	-0.006	0.012	-0.004	0.017	-0.001	0.009	-0.050	0.055	-	-
rs6869704	5	122833667	T	C	0.009	0.016	0.021	0.019	-0.050	0.030	0.005	0.012	0.007	0.013	0.005	0.006	0.006	0.007	0.011	0.011	-0.026	0.016	0.007	0.008	0.100	0.055	-0.009	0.043
rs274555	5	131722951	C	T	0.027	0.016	0.035	0.019	0.063	0.030	0.012	0.012	0.021	0.013	0.024	0.006	0.026	0.007	-0.003	0.012	-0.009	0.016	-	-	-0.039	0.056	-	-
rs12515233	5	158417109	C	A	-0.030	0.021	0.002	0.025	0.046	0.039	-0.020	0.015	-0.028	0.017	0.044	0.008	0.046	0.010	0.051	0.015	0.033	0.021	0.005	0.010	0.102	0.074	-	-
rs72835688	6	12811955	C	T	-	-	-	-	-	-	0.004	0.029	0.012	0.032	-0.016	0.016	-0.020	0.019	-0.004	0.029	0.054	0.040	0.017	0.020	-	-	-	-
rs9379764	6	25414023	G	T	0.049	0.019	-0.010	0.022	-0.014	0.035	-0.013	0.014	-0.017	0.015	0.009	0.007	0.009	0.009	0.001	0.014	-0.001	0.019	0.013	0.010	-	-	-	-
rs198851	6	26104632	T	G	-0.025	0.023	-0.014	0.026	0.000	0.041	-0.001	0.016	0.004	0.018	0.000	0.009	-0.002	0.011	-0.012	0.016	0.052	0.022	-0.033	0.011	-0.070	0.075	-0.036	0.062
rs200484	6	27775674	A	G	-0.040	0.027	-0.188	0.031	-0.130	0.049	0.011	0.019	-0.001	0.021	0.045	0.011	0.051	0.013	0.036	0.020	-	-	0.042	0.013	-0.139	0.132	0.045	0.069
rs853684	6	28294550	T	C	-0.001	0.017	-0.058	0.019	-0.026	0.031	0.036	0.012	0.033	0.014	-0.009	0.007	-0.006	0.008	-0.021	0.012	0.012	0.016	0.006	0.008	-0.042	0.067	0.067	0.044
rs9267488	6	31514247	A	G	-0.091	0.027	-0.230	0.030	-0.198	0.048	-0.019	0.019	-0.028	0.021	0.025	0.010	0.027	0.013	-0.002	0.019	0.109	0.025	0.055	0.013	-	-	-	-
rs2395943	6	42940673	A	G	0.014	0.016	-0.003	0.019	0.006	0.030	0.004	0.012	0.006	0.013	0.011	0.006	0.021	0.008	-0.005	0.011	-0.027	0.016	-0.028	0.008	-0.008	0.057	-0.025	0.044
rs12210538	6	110760008	G	A	-0.003	0.019	-0.005	0.022	-0.007	0.036	0.029	0.014	0.020	0.015	-0.008	0.007	-											

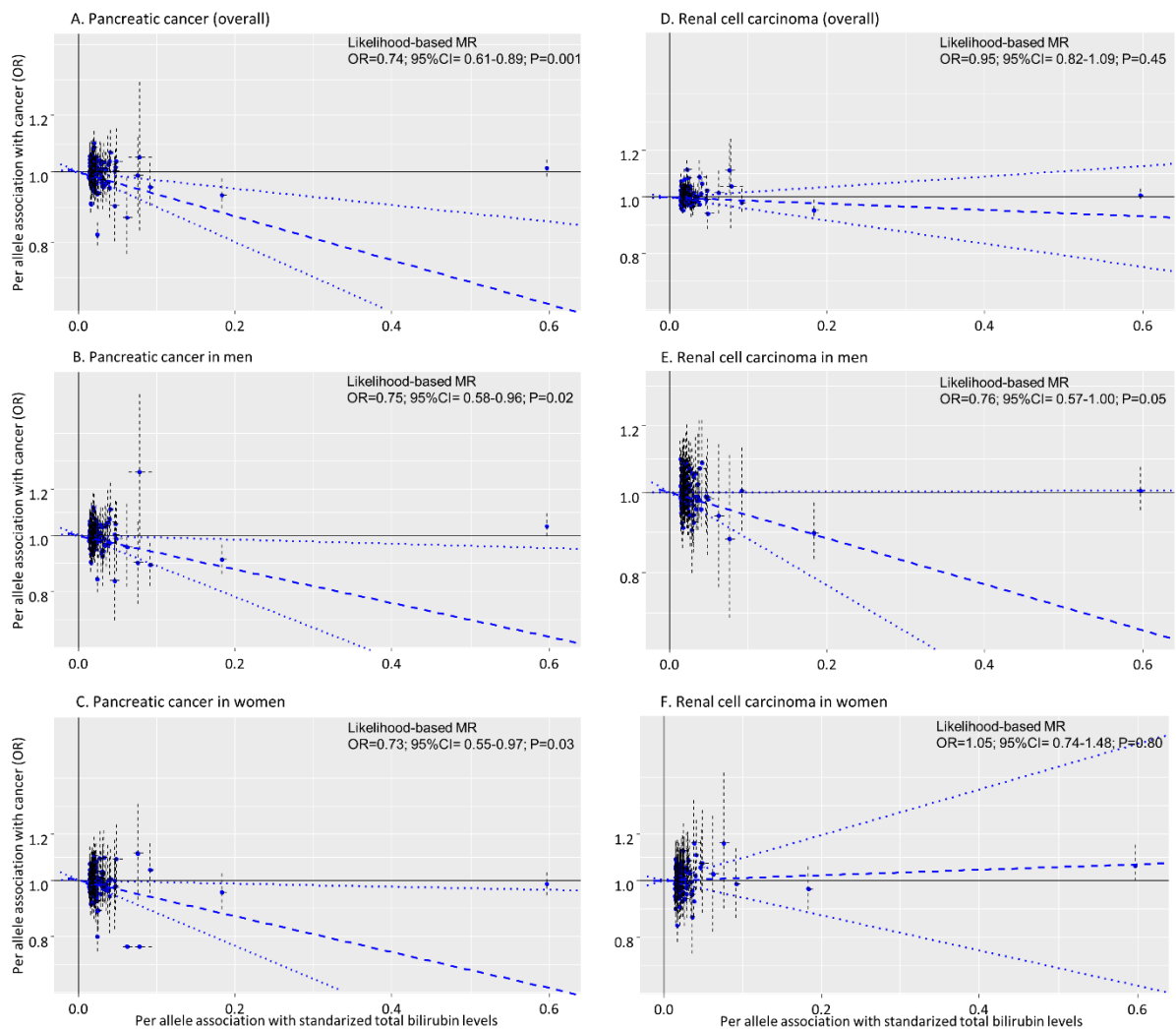
Table S1 | Summary statistics for genetic association of total bilirubin levels and risk of ten cancers

SNPs	Chromosome	Base pair position	Effect allele	Reference allele	Lung adenocarcinoma		Squamous cell lung cancer		Small cell Lung cancer		Ovarian cancer overall		Ovarian serous cancer		Breast cancer overall		Breast ER positive cancer		Breast ER negative cancer		Endometrial cancer		Prostate cancer		Melanoma		Neuroblastoma	
					Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE	Beta	SE
rs10761756	10	65172328	C	T	0.009	0.016	0.020	0.019	0.038	0.030	-0.007	0.012	-0.003	0.013	0.021	0.006	0.028	0.008	0.002	0.012	0.012	0.016	0.000	0.008	-0.022	0.055	0.055	0.043
rs17476364	10	71094504	C	T	0.004	0.028	-0.001	0.033	-0.013	0.053	-0.016	0.021	-0.025	0.023	0.009	0.011	0.012	0.013	0.018	0.020	-0.035	0.027	0.011	0.014	-	-	-	-
rs2901610	10	94536864	C	T	-0.004	0.016	0.007	0.019	0.005	0.030	-0.009	0.012	-0.007	0.013	-0.008	0.006	-0.014	0.008	-0.005	0.012	0.008	0.016	0.005	0.008	-	-	-0.053	0.043
rs12768009	10	96525865	G	A	-0.001	0.023	0.003	0.026	0.063	0.042	0.039	0.017	0.040	0.019	0.002	0.009	-0.004	0.010	0.016	0.016	0.001	0.022	-0.022	0.011	0.005	0.078	-0.126	0.062
rs2792751	10	113940329	T	C	-0.005	0.018	-0.007	0.020	0.007	0.032	0.010	0.013	0.016	0.014	-0.013	0.007	-0.015	0.008	-0.008	0.013	0.012	0.018	0.015	0.009	0.016	0.061	0.074	0.047
rs2245095	10	122857596	C	T	0.003	0.028	0.020	0.032	0.001	0.050	0.023	0.020	0.035	0.023	0.032	0.011	0.030	0.013	0.001	0.019	-0.005	0.027	-0.003	0.014	0.037	0.095	-0.070	0.075
rs11601507	11	5701074	A	C	0.021	0.033	-0.037	0.039	0.018	0.061	-0.065	0.025	-0.074	0.028	0.003	0.013	0.018	0.016	0.016	0.024	0.016	0.034	-0.068	0.017	-0.145	0.107	-	-
rs360139	11	9775091	G	A	-	-	-	-	-	-	-0.006	0.012	0.000	0.014	-0.021	0.007	-0.021	0.008	-0.031	0.012	-0.004	0.017	-0.019	0.009	0.039	0.060	0.004	0.045
rs10832027	11	13357183	G	A	-0.008	0.017	-0.026	0.020	0.012	0.031	-0.026	0.012	-0.025	0.014	0.002	0.007	0.000	0.008	0.011	0.012	-0.003	0.017	-0.014	0.009	0.042	0.060	0.052	0.046
rs174554	11	61579463	A	G	0.035	0.017	0.039	0.020	0.026	0.031	-0.014	0.012	-0.008	0.014	0.008	0.007	0.000	0.008	0.031	0.012	-0.021	0.017	0.002	0.009	0.029	0.059	-0.010	0.048
rs499974	11	75455021	A	C	0.032	0.021	-0.022	0.024	0.013	0.038	0.030	0.015	0.027	0.017	-0.012	0.008	-0.027	0.010	0.042	0.015	-0.031	0.021	0.000	0.010	0.002	0.074	0.088	0.057
rs717662	11	100493995	T	C	-0.022	0.025	0.010	0.029	-0.059	0.047	0.016	0.019	0.006	0.021	-0.014	0.010	-0.037	0.012	0.040	0.018	0.032	0.025	0.016	0.013	-	-	-0.149	0.066
rs3741298	11	116657561	C	T	0.006	0.020	0.030	0.023	-0.072	0.036	0.002	0.015	0.007	0.016	-0.017	0.008	-0.027	0.009	-0.013	0.014	-0.001	0.020	-0.009	0.010	-0.086	0.067	-	-
rs76895963	12	4384844	G	T	-0.072	0.068	-0.021	0.081	0.094	0.120	0.016	0.044	0.032	0.049	0.001	0.026	-0.005	0.030	0.015	0.048	-0.131	0.065	0.038	0.032	-	-	-	-
rs73080739	12	20761863	G	A	-0.009	0.027	0.025	0.032	0.074	0.050	0.019	0.020	0.027	0.022	-0.004	0.010	-0.017	0.012	0.015	0.019	-0.021	0.026	-	-	-0.043	0.098	-	-
rs4149056	12	21331549	C	T	-0.020	0.022	0.002	0.025	-0.057	0.040	0.032	0.016	0.036	0.018	0.010	0.008	0.012	0.010	0.013	0.015	0.079	0.021	-0.004	0.011	-0.019	0.076	-	-
rs1283809	12	21980618	C	T	0.035	0.022	0.037	0.026	0.002	0.041	0.038	0.016	0.028	0.018	-0.002	0.009	0.004	0.010	-0.012	0.016	-	-	-	-	-0.037	0.073	-	-
rs36124182	12	24214934	A	G	0.025	0.039	-0.042	0.046	0.044	0.075	0.042	0.030	0.033	0.033	0.014	0.017	0.017	0.020	0.015	0.030	0.003	0.042	-	-	-	-	-	-
rs4760682	12	48512285	C	A	-0.014	0.022	-0.051	0.026	-0.018	0.041	0.004	0.016	-0.001	0.018	-0.006	0.008	-0.008	0.010	-	-	-0.014	0.021	-	-	-	-	-	-
rs10876376	12	53261822	A	G	-0.003	0.016	0.001	0.019	0.004	0.030	-0.003	0.012	0.008	0.013	0.005	0.006	-0.005	0.007	0.021	0.011	0.002	0.016	-0.019	0.008	-0.092	0.056	0.028	0.043
rs2657879	12	56865338	G	A	0.020	0.021	-0.002	0.025	-0.013	0.039	-0.034	0.015	-0.038	0.017	0.006	0.009	0.001	0.010	0.031	0.016	0.024	0.021	-	-	-0.024	0.072	-	-
rs3184504	12	111884608	T	C	-0.034	0.016	-0.034	0.019	-0.053	0.030	-0.007	0.012	-0.002	0.013	-0.031	0.006	-0.030	0.007	-0.033	0.011	-0.099	0.016	-0.019	0.008	0.047	0.055	0.060	0.043
rs12811045	12	115527503	A	G	0.000	0.021	0.015	0.024	-0.021	0.038	0.002	0.014	0.010	0.016	0.002	0.008	-0.004	0.009	0.017	0.014	0.006	0.020	0.008	0.010	0.086	0.069	-	-
rs7135337	12	121404155	C	A	-0.023	0.016	0.019	0.019	-0.026	0.030	-0.065	0.012	-0.080	0.013	0.017	0.006	0.009	0.008	0.032	0.011	0.001	0.016	-0.013	0.008	0.084	0.057	-0.061	0.044
rs139763750	14	51049397	A	G	-	-	-	-	-	-	0.013	0.027	0.002	0.031	-0.022	0.015	-0.035	0.018	-0.042	0.027	-0.031	0.036	-0.001	0.020	-	-	-	-
rs61984409	14	64730021	A	C	-	-	-	-	-	-	0.020	0.012	0.009	0.014	-0.014	0.006	-0.014	0.008	-0.023	0.012	-0.003	0.016	-0.023	0.008	-	-	-	-
rs339969	15	60883281	C	A	0.008	0.017	-0.034	0.019	0.004	0.031	0.035	0.012	0.045	0.014	-0.010	0.007	-0.007	0.008	-0.013	0.012	-0.011	0.016	-0.006	0.008	-0.051	0.057	0.024	0.044
rs17184256	15	63785421	G	A	-0.015	0.017	-0.049	0.020	-0.102	0.032	0.007	0.013	-0.005	0.014	0.004	0.007	0.008	0.008	-0.017	0.012	0.050	0.017	0.006	0.009	-	-	-	-
rs67257650	15	73979507	T	C	0.019	0.016	0.036	0.019	0.033	0.030	-0.006	0.012	-0.004	0.013	-0.003	0.006	0.002	0.008	-0.009	0.012	0.020	0.016	0.008	0.008	0.099	0.056	0.034	0.043
rs181207	16	28513530	C	T	-0.008	0.018	-0.043	0.021	-0.053	0.034	-0.005	0.013	0.013	0.015	-0.002	0.007	-0.010	0.009	0.008	0.013	-0.034	0.018	-0.003	0.009	-0.083	0.059	-	-
rs4575545	16	79755446	G	A	-0.028	0.018	-0.012	0.021	0.026	0.032	0.016	0.013	0.015	0.014	0.001	0.007	-0.002	0.008	0.016	0.012	-0.019	0.017	0.007	0.009	0.110	0.059	-	-
rs7185774	16	81249927	C	T	-0.014	0.017	0.020	0.019	0.004	0.031	-0.004	0.012	-0.012	0.014	-0.002	0.007	-0.001	0.008	0.000	0.012	0.011	0.017	0.000	0.009	-0.079	0.059	-0.100	0.045
rs247827	16	84582825	G	A	0.004	0.022	0.023	0.025	0.059	0.040	-0.014	0.016	-0.017	0.017	0.009	0.008	0.003	0.010	0.018	0.015	0.023	0.021	-0.024	0.011	-	-	-	-
rs2968478	16	88858646	T	G	0.001	0.017	0.023	0.020	-0.039	0.031	0.016	0.012	0.015	0.014	-0.009	0.007	-0.007	0.008	-0.013	0.012	-0.003	0.017	-0.009	0.009	-	-	-	-
rs7222046	17	7806529	G	A	-0.016	0.016	0.024	0.019	-0.002	0.030	0.010	0.012	0.008	0.014	0.019	0.007	0.021	0.008	0.020	0.012	-0.008	0.017	0.030	0.009	0.000	0.056	0.042	0.044
rs1045599	17	15879910	C	T	-0.003	0.016	-0.030	0.019	-0.032	0.030	-0.009	0.012	-0.018	0.014	-0.003	0.006	-0.006	0.008	0.004	0.012	-0.024	0.016	-0.007	0.008	0.002	0.056	-0.017	0.044
rs7213285	17	27206029	A	G	-0.019	0.022	0.008	0.026	-0.012	0.041	-0.015	0.016	-0.017	0.018	0.007	0.009	0.001	0.010	0.009	0.016	0.002	0.022	0.007	0.011	-	-	-	-
rs1477141	17	53361838	G	T	0.017	0.017	-0.019	0.019	-0.011	0.031	0.011	0.013	0.025	0.014	0.010	0.007	0.005	0.008	0.013	0.012	0.028	0.017	0.006	0.009	0.013	0.055	-	-
rs764424	17	57505604	G	A	0.024	0.016	0.000	0.019	-0.010	0.030	-0.007	0.012	-0.009	0.013	0.008	0.006	0.013	0.007	0.002	0.011	0.000	0.016	0.013	0.008	-0.077	0.056	-0.015	0.043
rs11079420	17	59253051	A	G	-0.037	0.019	-0.034	0.023	-0.041	0.035	0.029	0.014	0.041	0.016	0.003	0.008	0.012	0.009	-0.017	0.014	-0.016	0.019	0.023	0.010	-0.006	0.067	0.046	0.053
rs7223257	17	61787684	T	C	0.037	0.017	-0.022	0.020	0.071	0.032	-0.008	0.012	-0.008	0.014	0.009	0.007	0.004	0.008	0.001	0.012	-0.016	0.017	-0.024	0.008	-0.066	0.060	-0.053	0.046
rs12601919	17	65825374	A	G	-0.052	0.021	-0.042	0.024	-0.152	0.037	0.023	0.015	0.034	0.016	-0.002	0.008	0.002	0.009	-0.025	0.014	-0.088	0.020	0.027	0.010	-0.055	0.068	0.046	0.054
rs2909210	17	66456481	T	G	-0.013	0.016	-0.027	0.019	0.020	0.030	0.014	0.012	0.026	0.013	0.004	0.006	-0.005	0.008	0.025	0.012	-0.015	0.016	0.013	0				

Table S2 | Results of sensitivity Mendelian randomization methods for total bilirubin levels and risk of ten cancers

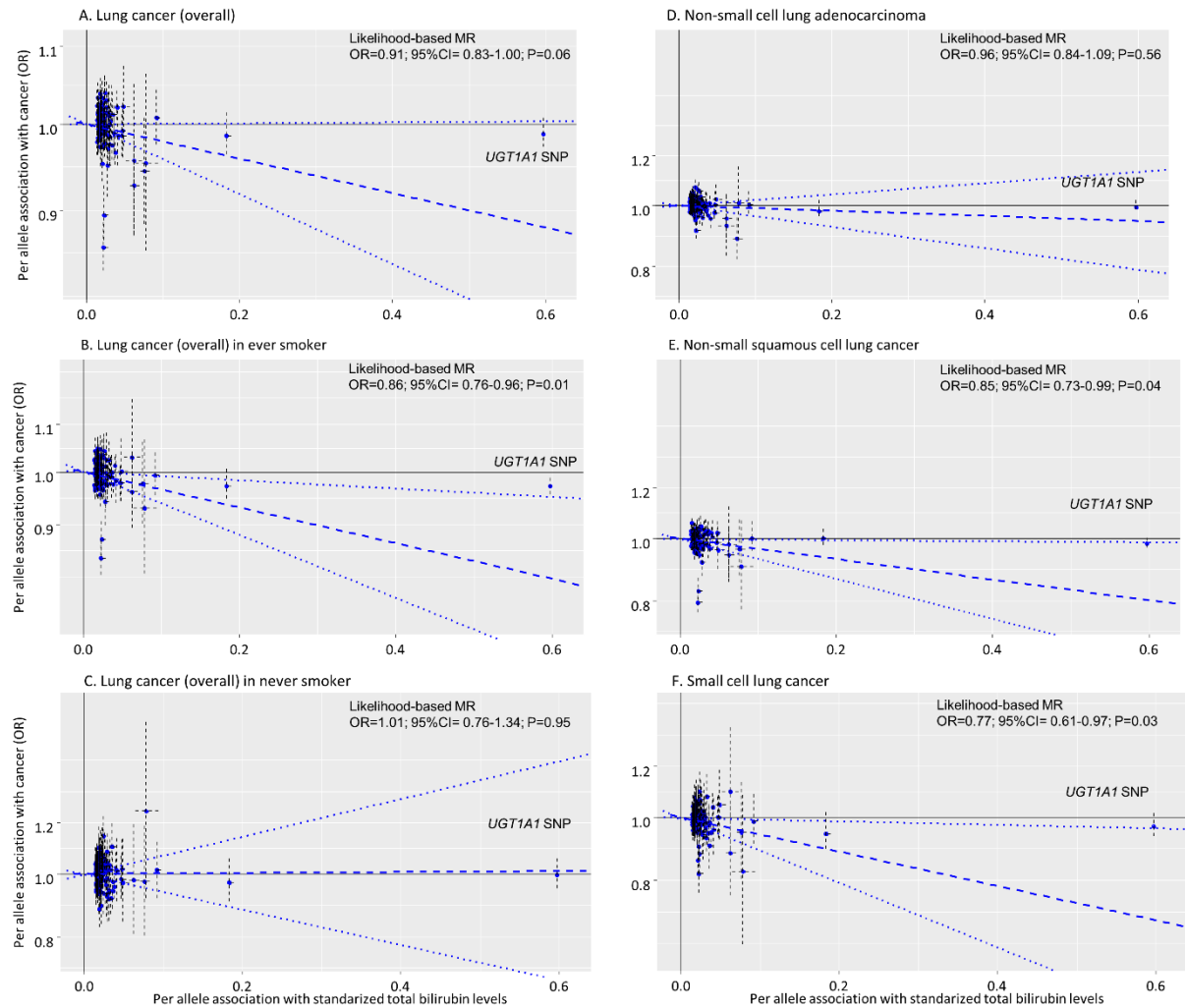
Cancer outcome	Subtype	SNP set	n SNP	Likelihood-based method				Inverse-variance weighted method				Weigthed median approach				Modal-based method				MR-Egger Simex approach				MR-Egger intercept approach				MR-PRESSO approach							
				OR	LCI	UCI	P	Phet	OR	LCI	UCI	P	OR	LCI	UCI	P	OR	LCI	UCI	P	OR	LCI	UCI	P	Est	LCI	UCI	P	P Global	P Distortion	Outlier SNPs				
Pancreatic cancer	overall	UGT1A1 SNP	1	1.02	0.95	1.11	0.56																												
		Non-UGT1A1 SNPs	113	0.74	0.61	0.89	1.7E-03	3.0E-08	0.74	0.61	0.90	2.E-03	0.68	0.49	0.95	0.02	0.69	0.51	0.94	0.02	0.69	0.43	1.10	0.12	0.002	-0.007	0.011	0.63	<1e-04	0.28	rs10876376,rs2519093				
		Pleiotropy out SNPs	91	0.85	0.66	1.11	0.23	2.2E-03	0.85	0.66	1.11	0.23	0.96	0.63	1.45	0.84	1.02	0.50	2.09	0.95	1.05	0.41	2.664	0.92	-0.005	-0.021	0.010	0.51	2.1E-03	0.23	rs10876376,rs7135337				
	men	UGT1A1 SNP	1	1.06	0.95	1.18	0.27																												
		Non-UGT1A1 SNPs	113	0.75	0.58	0.96	0.02	2.5E-03	0.75	0.58	0.97	0.03	0.60	0.39	0.93	0.02	0.60	0.39	0.92	0.02	0.60	0.35	1.05	0.07	0.007	-0.005	0.019	0.27	2.2E-03	0.72	rs2519093				
		Pleiotropy out SNPs	91	0.89	0.63	1.27	0.53	0.11	0.89	0.63	1.26	0.51	0.96	0.56	1.64	0.89	1.18	0.26	5.26	0.83	0.89	0.29	2.73	0.83	6.9E-06	-0.021	0.021	1.00	0.10	-	-				
	women	UGT1A1 SNP	1	0.98	0.87	1.10	0.71																												
		Non-UGT1A1 SNPs	113	0.73	0.55	0.97	0.03	0.01	0.73	0.55	0.97	0.03	0.78	0.49	1.26	0.32	0.81	0.51	1.29	0.38	0.81	0.44	1.49	0.49	-0.004	-0.017	0.010	0.60	0.01	0.57	rs2519093				
		Pleiotropy out SNPs	91	0.81	0.55	1.20	0.29	0.11	0.81	0.55	1.19	0.29	0.96	0.52	1.76	0.90	0.93	0.36	2.42	0.89	1.44	0.42	4.97	0.56	-0.013	-0.036	0.011	0.29	0.11	-	-				
Renal cell cancer	overall	UGT1A1 SNP	1	1.01	0.95	1.07	0.78																												
		Non-UGT1A1 SNPs	111	0.95	0.82	1.09	0.45	1.2E-03	0.95	0.82	1.09	0.45	0.76	0.61	0.96	0.02	0.77	0.61	0.97	0.03	0.78	0.57	1.06	0.11	0.007	-4.E-04	0.014	0.06	8.0E-04	-	-				
		Pleiotropy out SNPs	89	1.09	0.89	1.33	0.43	3.9E-04	1.08	0.89	1.32	0.43	1.05	0.77	1.43	0.78	1.14	0.70	1.87	0.60	1.09	0.51	2.34	0.82	4.2E-04	-0.012	0.013	0.95	2.0E-04	-	-				
	men	UGT1A1 SNP	1	1.01	0.89	1.13	0.93																												
		Non-UGT1A1 SNPs	109	0.76	0.57	1.00	0.05	0.41	0.76	0.57	1.00	0.05	0.56	0.35	0.89	0.01	0.56	0.37	0.86	0.01	0.50	0.30	0.82	0.01	0.014	5.E-04	0.027	0.04	0.37	-	-				
		Pleiotropy out SNPs	87	0.88	0.59	1.30	0.50	0.34	0.88	0.59	1.29	0.51	0.74	0.41	1.34	0.33	0.65	0.23	1.82	0.41	0.39	0.11	1.35	0.14	0.017	-0.007	0.041	0.17	0.35	-	-				
	women	UGT1A1 SNP	1	1.10	0.95	1.28	0.20																												
		Non-UGT1A1 SNPs	109	1.05	0.74	1.48	0.80	0.41	1.05	0.74	1.48	0.80	0.84	0.48	1.48	0.56	0.93	0.54	1.61	0.80	1.03	0.55	1.92	0.93	0.001	-0.016	0.018	0.90	0.42	-	-				
		Pleiotropy out SNPs	87	1.06	0.65	1.72	0.83	0.39	1.06	0.65	1.71	0.83	1.32	0.64	2.70	0.46	1.84	0.57	5.87	0.31	2.21	0.48	10.17	0.31	-0.015	-0.045	0.015	0.31	0.41	-	-				
Lung cancer	overall	UGT1A1 SNP	1	0.98	0.94	1.02	0.31																												
		Non-UGT1A1 SNPs	109	0.91	0.83	1.00	0.06	1.2E-15	0.91	0.83	1.00	0.06	0.93	0.79	1.09	0.36	0.93	0.80	1.09	0.39	0.84	0.64	1.10	0.20	0.002	-0.002	0.007	0.29	<1e-04	0.25	rs200484,rs9267488				
		Pleiotropy out SNPs	87	0.92	0.81	1.05	0.22	1.3E-14	0.92	0.81	1.05	0.23	1.01	0.81	1.26	0.95	1.06	0.73	1.52	0.77	0.78	0.42	1.48	0.45	0.003	-0.005	0.011	0.43	<1e-04	0.05	rs200484,rs9267488				
	ever smokers	UGT1A1 SNP	1	0.95	0.91	1.00	0.07																												
		Non-UGT1A1 SNPs	109	0.86	0.76	0.96	0.01	2.3E-10	0.86	0.76	0.97	0.01	0.86	0.71	1.06	0.16	0.85	0.71	1.03	0.09	0.79	0.58	1.07	0.13	0.003	-0.003	0.009	0.35	<1e-04	0.28	rs200484,rs9267488				
		Pleiotropy out SNPs	87	0.89	0.75	1.05	0.16	2.4E-10	0.89	0.76	1.05	0.17	0.93	0.71	1.23	0.64	0.98	0.66	1.44	0.91	0.72	0.34	1.50	0.38	0.004	-0.006	0.015	0.38	<1e-04	0.15	rs200484,rs9267488				
	never smokers	UGT1A1 SNP	1	0.99	0.88	1.12	0.91																												
		Non-UGT1A1 SNPs	109	1.01	0.76	1.34	0.95	0.03	1.01	0.76	1.34	0.95	0.86	0.53	1.40	0.56	0.94	0.60	1.48	0.80	0.83	0.47	1.47	0.53	0.006	-0.007	0.020	0.37	0.03	-	-				
		Pleiotropy out SNPs	87	0.97	0.66	1.44	0.88	0.10	0.97	0.66	1.43	0.88	1.18	0.63	2.23	0.61	1.28	0.48	3.42	0.62	1.03	0.29	3.72	0.96	-0.001	-0.025	0.022	0.91	0.10	-	-				
	adenocarcinoma	UGT1A1 SNP	1	0.99	0.94	1.05	0.81																												
		Non-UGT1A1 SNPs	109	0.96	0.84	1.09	0.54	6.6E-04	0.96	0.84	1.09	0.54	0.90	0.72	1.13	0.38	0.91	0.74	1.11	0.35	0.80	0.60	1.06	0.12	0.006	-3.E-04	0.012	0.06	9.0E-04	0.78	rs676388				
		Pleiotropy out SNPs	87	1.02	0.85	1.22	0.86	1.7E-03	1.02	0.85	1.22	0.87	1.03	0.77	1.37	0.87	1.02	0.68	1.52	0.94	0.76	0.39	1.46	0.41	0.006	-0.005	0.017	0.26	1.5E-03	0.15	rs676388				
	squamous cell	UGT1A1 SNP	1	0.97	0.91	1.03	0.35																												
		Non-UGT1A1 SNPs	109	0.85	0.73	0.99	0.04	5.8E-11	0.85	0.73	0.99	0.04	1.01	0.78	1.30	0.95	0.99	0.77	1.26	0.91	0.93	0.62	1.38	0.71	-0.003	-0.010	0.004	0.44	<1e-04	0.25	rs200484,rs9267488				
		Pleiotropy out SNPs	87	0.80	0.65	0.99	0.04	4.5E-12	0.81	0.66	0.99	0.05	0.99	0.70	1.42	0.97	1.08	0.65	1.80	0.77	0.74	0.28	1.95	0.54	0.002	-0.011	0.014	0.78	<1e-04	0.17	rs200484,rs9267488				
small cell	UGT1A1 SNP	1	0.95	0.86	1.05	0.32																													
	Non-UGT1A1 SNPs	109	0.77	0.61	0.97	0.03	0.02	0.77	0.61	0.98	0.03	0.75	0.50	1.13	0.17	0.77	0.53	1.14	0.20	0.65	0.40	1.06	0.09	0.005	-0.007	0.016	0.40	0.02	0.78	rs9267488					
	Pleiotropy out SNPs	87	0.95	0.68	1.33	0.76	3.8E-03	0.95	0.68	1.32	0.76	1.03	0.61	1.73	0.93	1.00	0.43	2.31	0.99	0.72	0.22	2.38	0.59	0.006	-0.014	0.026	0.55	4.0E-03	0.18	rs9267488					
Ovarian cancer	overall	UGT1A1 SNP	1	0.96	0.92	1.00	0.05																												
		Non-UGT1A1 SNPs	111	1.10	1.00	1.21	0.04	6.2E-13	1.10	1.00	1.21	0.04	1.19	1.01	1.40	0.04	1.13	0.97	1.32	0.11	1.11	0.86	1.43	0.43	0.000	-0.005	0.005	1.00	<1e-04	0.56	rs2519093,rs7135337				
		Pleiotropy out SNPs	89	1.12	0.98	1.27	0.10	1.9E-06	1.11	0.98	1.27	0.11	1.14	0.93	1.41	0.21	0.91	0.66	1.26	0.57	0.93	0.55	1.57	0.78	0.004	-0.004	0.012	0.30	<1e-04	0.75	rs7135337				
	serous	UGT1A1 SNP	1	0.94	0.90	0.98	5.8E-03																												
		Non-UGT1A1 SNPs	111	1.12	1.01	1.24	0.04	9.8E-15	1.12	1.01	1.24	0.04	1.22	1.01	1.47	0.04	1.19	1.01	1.41	0.05	1.14	0.85	1.53	0.37	-0.001	-0.006	0.004	0.79	<1e-04	0.53	rs2519093,rs7135337				
		Pleiotropy out SNPs	89	1.10	0.95	1.27	0.23	2.9E-08	1.09	0.95	1.26	0.24	1.07	0.84	1.36	0.62	0.96	0.65	1.41	0.84	0.95	0.52	1.73	0.86											

Figure S1. Scatter plots depicting the genetic associations between bilirubin levels and risk of pancreatic and renal cell cancers, overall and sex subgroups



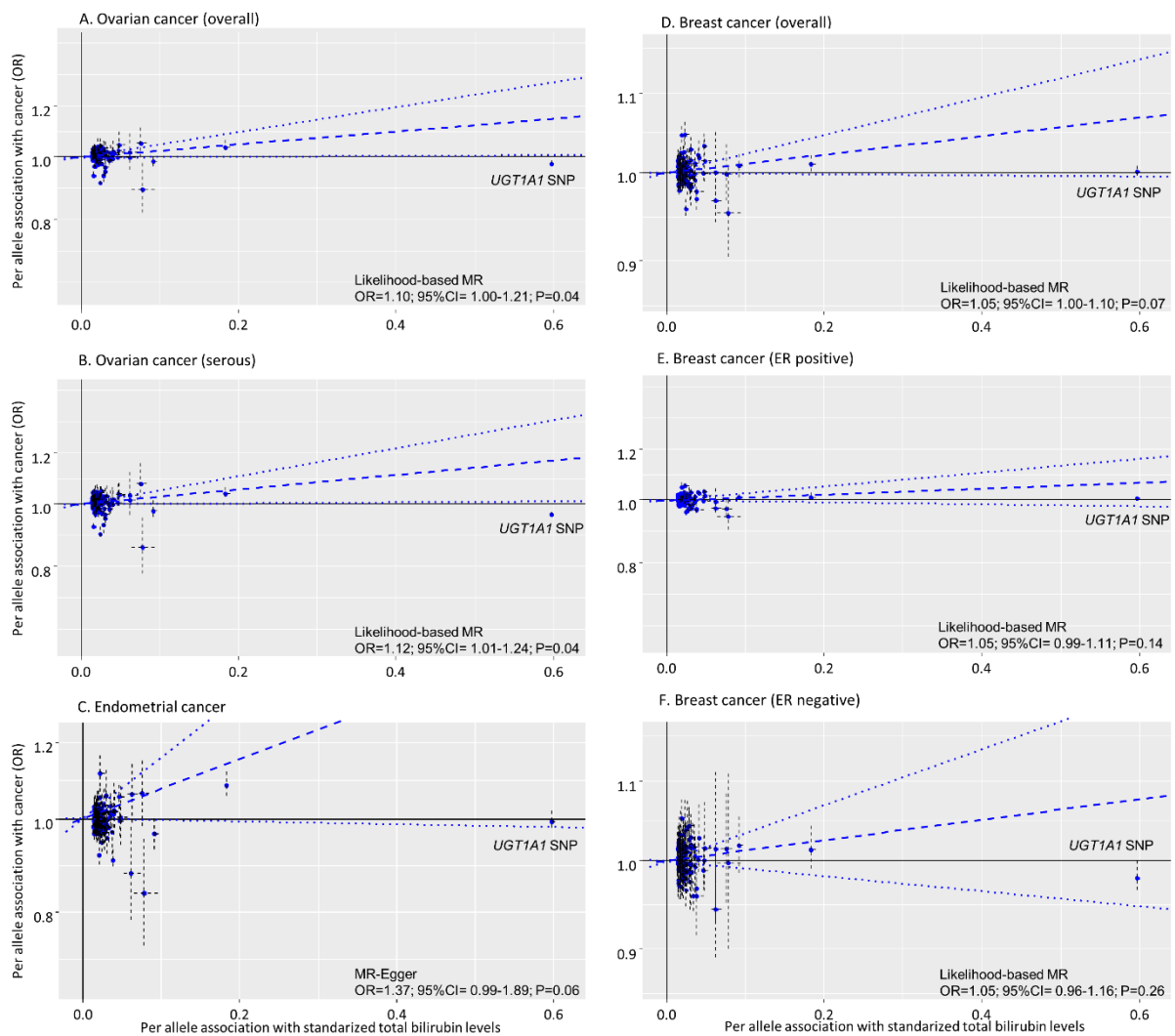
Per allele association of bilirubin SNPs with inverse-normal-transformed bilirubin levels (x axis) and risk of pancreatic cancer and renal cell carcinoma (y axis; logarithmic scale); pancreatic cancer overall (A), pancreatic cancer in men (B), pancreatic cancer in women (C) renal cell carcinoma overall (D), renal cell carcinoma in men (E), renal cell carcinoma in women (F), including the likelihood-based MR estimate (dashed-blue line) and its 95% confidence interval (dotted-blue lines).

Figure S2. Scatter plots depicting the genetic associations between bilirubin levels and lung cancer risk, overall, smoking subgroups, and histological subtypes



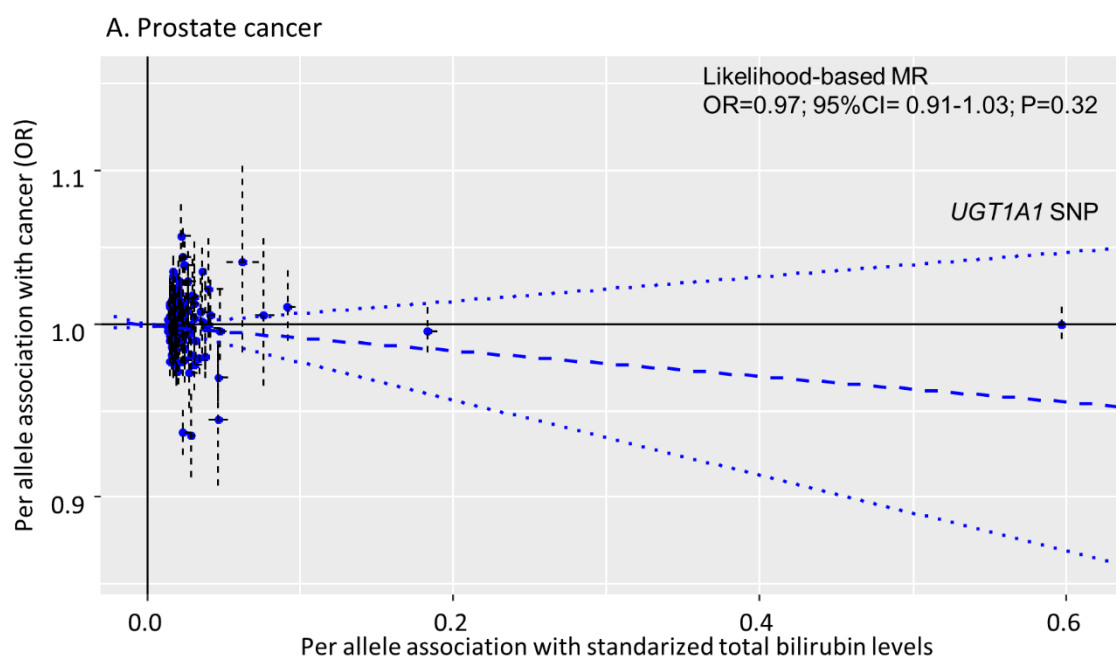
Per allele associations of bilirubin SNPs with inverse-normal-transformed bilirubin levels (x axis) and lung cancer risk (y axis; logarithmic scale); overall (A), in ever smoker (B), in never smoker (C), adenocarcinoma (D), squamous cell lung cancer (E), small cell lung cancer (F), including the likelihood-based MR estimate (dashed-blue line) and its 95% confidence interval (dotted-blue lines).

Figure S3. Scatter plots depicting the genetic associations between bilirubin levels and risk of ovarian, endometrial, and breast cancers, overall and subtypes



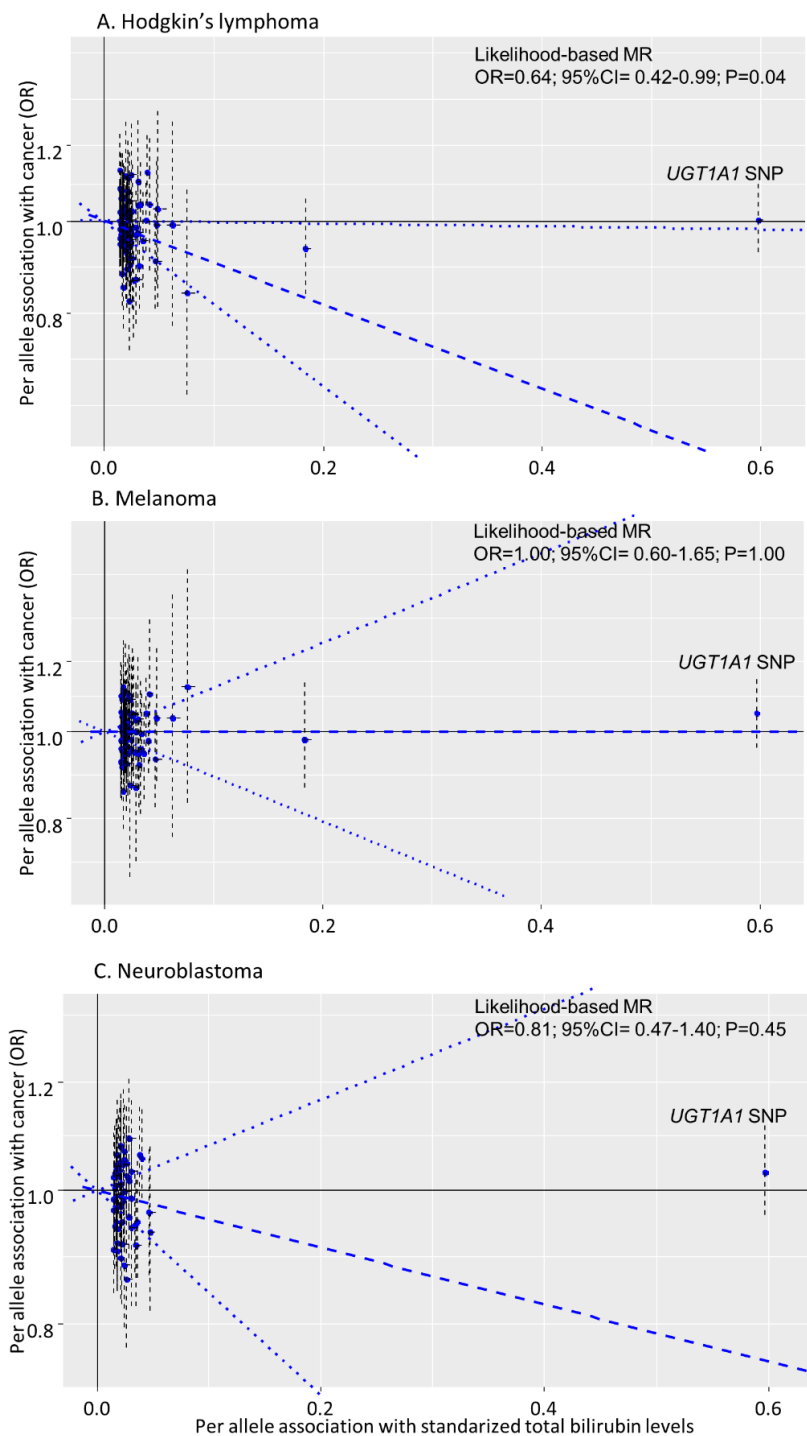
Per allele associations of bilirubin SNPs with inverse-normal-transformed bilirubin levels (x axis) and risk of ovarian, endometrial, and breast cancers (y axis; logarithmic scale); ovarian cancer overall (A), serous ovarian cancer (B), endometrial cancer (C), breast cancer overall (D), ER positive breast cancer (E), ER negative breast cancer (F), including the likelihood-based MR estimate (dashed-blue line) and its 95% confidence interval (dotted-blue lines), with the exception of endometrial cancer, which results are provided by the Egger-MR test.

Figure S4. Scatter plots depicting the genetic association between bilirubin levels and prostate cancer risk



Per allele association of bilirubin SNPs with inverse-normal-transformed bilirubin levels (x axis) and prostate cancer risk (y axis; logarithmic scale), including the likelihood-based MR estimate (dashed-blue line) and its 95% confidence interval (dotted-blue lines).

Figure S5. Scatter plots depicting the genetic associations between bilirubin levels and risk of Hodgkin's lymphoma, melanoma, and neuroblastoma



Per allele association of bilirubin SNPs with inverse-normal-transformed bilirubin levels (x axis) and risk of Hodgkin's lymphoma (A), melanoma (B), and neuroblastoma (C) (y axis; logarithmic scale), including the likelihood-based MR estimate (dashed-blue line) and its 95% confidence interval (dotted-blue lines).

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