

**Supplementary Table S1: Mendelian randomization results for glioma overall.** Odds ratios (OR) and 95% confidence intervals (CI) for the effect of increasing blood cell counts or cell type ratios on the risk of glioma. MR Egger results are only presented for blood cell traits with statistically significant evidence of directional pleiotropy (MR Egger intercept  $\beta_0 \neq 0$ ,  $p < 0.05$ ).

Blood Cell Trait	MR Estimator	N <sub>SNP</sub>	Explained Variance	Glioma Overall		
				OR	(95% CI)	P
Basophils	IVW-MRE	146	0.045	0.82	(0.57 – 1.18)	0.29
	Maximum likelihood			0.82	(0.58 – 1.16)	0.26
	Weighted median			0.81	(0.46 – 1.43)	0.47
	RAPS			0.81	(0.56 – 1.19)	0.29
	PRESSO			0.82	(0.57 – 1.18)	0.29
Eosinophils	IVW-MRE	370	0.105	0.96	(0.82 – 1.12)	0.60
	Maximum likelihood			0.96	(0.82 – 1.12)	0.59
	Weighted median			0.93	(0.71 – 1.20)	0.56
	RAPS			0.98	(0.83 – 1.15)	0.82
	MR Egger			0.67	(0.46 – 0.99)	0.044
Lymphocytes	IVW-MRE	414	0.114	0.98	(0.86 – 1.11)	0.72
	Maximum likelihood			0.98	(0.86 – 1.11)	0.71
	Weighted median			1.29	(1.01 – 1.65)	0.041
	RAPS			0.94	(0.81 – 1.08)	0.36
	MR Egger			1.23	(0.98 – 1.54)	0.075
Monocytes	IVW-MRE	479	0.159	0.98	(0.89 – 1.11)	0.72
	Maximum likelihood			1.01	(0.98 – 1.05)	0.40
	Weighted median			1.01	(0.99 – 1.04)	0.33
	RAPS			1.02	(0.99 – 1.05)	0.20
	MR Egger			1.02	(0.99 – 1.06)	0.31
Neutrophils	IVW-MRE	296	0.082	1.02	(0.99 – 1.06)	0.19
	Maximum likelihood			0.99	(0.88 – 1.10)	0.82
	Weighted median			0.87	(0.70 – 1.10)	0.24
	RAPS			0.87	(0.73 – 1.05)	0.14
	PRESSO			0.77	(0.58 – 1.04)	0.090
Platelets	IVW-MRE	668	0.235	0.90	(0.73 – 1.11)	0.33
	Maximum likelihood			0.83	(0.68 – 1.02)	0.079
	Weighted median			1.02	(0.97 – 1.07)	0.51
	RAPS			1.02	(0.97 – 1.06)	0.46
	MR Egger			0.99	(0.94 – 1.04)	0.63
				1.01	(0.96 – 1.06)	0.73
				0.99	(0.94 – 1.05)	0.76

	PRESSO			1.10	(0.99 – 1.21)	0.074
LMR	IVW-MRE			1.12	(0.95 – 1.31)	0.18
	Maximum likelihood			1.12	(0.98 – 1.28)	0.11
	Weighted median	450	0.147	1.10	(0.86 – 1.40)	0.44
	RAPS			1.05	(0.90 – 1.22)	0.51
	PRESSO			1.07	(0.93 – 1.23)	0.38
NLR	IVW-MRE			0.97	(0.76 – 1.24)	0.82
	Maximum likelihood			0.97	(0.79 – 1.19)	0.78
	Weighted median	249	0.063	1.00	(0.72 – 1.37)	0.98
	RAPS			0.97	(0.76 – 1.25)	0.83
	PRESSO			0.92	(0.73 – 1.15)	0.45
PLR	IVW-MRE			1.25	(1.07 – 1.47)	4.9×10 <sup>-3</sup>
	Maximum likelihood			1.25	(1.10 – 1.43)	9.1×10 <sup>-4</sup>
	Weighted median	470	0.145	1.18	(0.93 – 1.50)	0.16
	RAPS			1.22	(1.05 – 1.43)	0.011
	PRESSO			1.21	(1.05 – 1.40)	8.8×10 <sup>-3</sup>

<sup>1</sup> Out-of-sample trait variance explained by the genetic instruments was previously reported in Kachuri et al. (2021)<sup>22</sup> and estimated for the subset of genetic instruments that were available for this analysis

Abbreviations:

IVW-MRE	Inverse variance weighted multiplicative random effect
RAPS	Robust adjusted profile score
PRESSO	Pleiotropy Residual Sum and Outlier
LMR	Lymphocyte to monocyte ratio
NLR	Neutrophil to lymphocyte ratio
PLR	Platelet to lymphocyte ratio

**Supplementary Table S2: Results of Mendelian Randomization diagnostic tests.** Assessment of the robustness of underlying Mendelian randomization assumptions for each set of analyses of glioma susceptibility, overall and stratified by major molecular subtypes.

Blood Cell Trait	$I^2_{GX}$	Glioma						IDH-mutated (IDH <sub>mut</sub> )					
		Heterogeneity <sup>1</sup>			MR Egger <sup>2</sup>		MR PRESSO	Heterogeneity <sup>1</sup>			MR Egger <sup>2</sup>		MR PRESSO
		Q	DF	$P_{Q-value}$	$\beta_0$	$P_{Egger}$	$P_{Global}^3$	Q	DF	$P_{Q-value}$	$\beta_0$	$P_{Egger}$	$P_{Global}^3$
Basophils	0.985	162.1	145	0.16	-0.011	0.24	0.15	171.3	145	0.067	-0.008	0.58	0.073
Eosinophils	0.986	406.2	369	0.089	0.012	0.048	0.091	432.7	369	0.012	0.006	0.51	0.011
Lymphocytes	0.986	464.3	413	0.041	-0.010	0.015	0.031	484.7	413	$8.5 \times 10^{-3}$	-0.009	0.14	$8.0 \times 10^{-3}$
Monocytes	0.988	639.9	478	$9.6 \times 10^{-7}$	-0.005	0.048	0.013	765.8	478	$1.1 \times 10^{-15}$	-0.006	0.19	$2.5 \times 10^{-4}$
Neutrophils	0.985	476.1	295	$1.1 \times 10^{-10}$	0.007	0.37	$<1.0 \times 10^{-4}$	385.2	295	$3.2 \times 10^{-4}$	0.013	0.23	$3.0 \times 10^{-4}$
Platelets	0.988	906.6	667	$1.6 \times 10^{-9}$	0.005	0.031	$6.7 \times 10^{-5}$	858.6	667	$6.8 \times 10^{-7}$	0.004	0.24	$6.7 \times 10^{-5}$
LMR	0.988	631.9	449	$2.5 \times 10^{-8}$	-0.005	0.33	$<6.7 \times 10^{-5}$	753.2	449	$9.3 \times 10^{-18}$	-0.007	0.42	$<6.7 \times 10^{-5}$
NLR	0.985	355.0	248	$9.5 \times 10^{-6}$	0.013	0.16	$<1e \times 10^{-4}$	306.7	248	$6.5 \times 10^{-3}$	-0.008	0.54	$6.2 \times 10^{-3}$
PLR	0.987	658.8	469	$1.5 \times 10^{-8}$	0.009	0.11	$<6.7 \times 10^{-5}$	635.5	469	$4.3 \times 10^{-7}$	0.009	0.30	$<6.7 \times 10^{-5}$
	$I^2_{GX}$	IDH-mutated 1p/19q co-deleted (IDH <sub>mut-code1</sub> )						IDH-mutated 1p/19q non-codeleted (IDH <sub>mut-noncode1</sub> )					
		Heterogeneity <sup>1</sup>			MR Egger <sup>2</sup>		MR PRESSO	Heterogeneity <sup>1</sup>			MR Egger <sup>2</sup>		MR PRESSO
		Q	DF	$P_{Q-value}$	$\beta_0$	$P_{Egger}$	$P_{Global}^3$	Q	DF	$P_{Q-value}$	$\beta_0$	$P_{Egger}$	$P_{Global}^3$
Basophils	0.985	162.8	145	0.15	-0.018	0.38	0.14	194.0	145	$4.1 \times 10^{-3}$	-0.010	0.58	$4.3 \times 10^{-3}$
Eosinophils	0.986	436.8	369	$8.6 \times 10^{-3}$	-0.008	0.59	$8.1 \times 10^{-3}$	468.8	369	$3.2 \times 10^{-4}$	0.017	0.17	$3.6 \times 10^{-4}$
Lymphocytes	0.986	502.4	413	$1.7 \times 10^{-3}$	-0.016	0.086	$1.8 \times 10^{-3}$	430.1	413	0.27	-0.007	0.34	0.26
Monocytes	0.988	665.9	478	$2.6 \times 10^{-8}$	-0.005	0.38	$1.3 \times 10^{-3}$	716.8	478	$8.0 \times 10^{-12}$	-0.005	0.32	$2.8 \times 10^{-3}$
Neutrophils	0.985	356.9	295	$7.9 \times 10^{-3}$	-0.006	0.71	$7.7 \times 10^{-3}$	367.7	295	$2.5 \times 10^{-3}$	0.018	0.19	$2.4 \times 10^{-3}$
Platelets	0.988	931.4	667	$4.7 \times 10^{-11}$	0.007	0.21	$6.7 \times 10^{-5}$	752.9	667	0.011	0.004	0.28	0.019
LMR	0.988	645.2	449	$3.3 \times 10^{-9}$	0.001	0.92	$<6.7 \times 10^{-5}$	681.6	449	$7.8 \times 10^{-12}$	-0.014	0.19	$<6.7 \times 10^{-5}$
NLR	0.985	300.1	248	0.013	0.008	0.66	0.012	283.4	248	0.061	-0.020	0.19	0.055
PLR	0.987	596.8	469	$5.5 \times 10^{-5}$	0.012	0.35	$6.7 \times 10^{-5}$	600.0	469	$3.8 \times 10^{-12}$	0.015	0.15	$<6.7 \times 10^{-5}$

	IDH wildtype (IDH <sub>wt</sub> )						
	I <sup>2</sup> <sub>Gx</sub>	Heterogeneity <sup>1</sup>			MR Egger <sup>2</sup>		MR PRESSO
		Q	DF	P <sub>Q-value</sub>	β <sub>0</sub>	P <sub>Egger</sub>	P <sub>Global</sub> <sup>3</sup>
Basophils	0.985	143.6	145	0.52	-0.014	0.22	0.53
Eosinophils	0.986	387.6	369	0.24	0.006	0.45	0.24
Lymphocytes	0.986	431.3	413	0.26	-0.006	0.36	0.26
Monocytes	0.988	506.5	478	0.18	-0.009	0.082	0.32
Neutrophils	0.985	456.6	295	4.5×10 <sup>-9</sup>	-0.005	0.084	<1.0×10 <sup>-4</sup>
Platelets	0.988	857.7	667	7.5×10 <sup>-7</sup>	0.000	0.98	1.3×10 <sup>-4</sup>
LMR	0.988	510.4	449	0.024	0.024	0.029	0.025
NLR	0.985	319.4	248	1.5×10 <sup>-3</sup>	0.003	0.26	1.9×10 <sup>-3</sup>
PLR	0.987	601.0	469	3.4×10 <sup>-5</sup>	0.014	0.059	<6.7×10 <sup>-5</sup>

- <sup>1</sup> Modified Cochran's Q test for heterogeneity in causal effect estimates (indicative of horizontal pleiotropy), p-values<0.05 are considered statistically significant
- <sup>2</sup> Tests for directional horizontal pleiotropy indicated by non-zero in MR Egger intercept (β<sub>0</sub>) values, p-values<0.05 are considered statistically significant
- <sup>3</sup> Tests for horizontal pleiotropy, empirical p-values were estimated based on 12000-15000 replicates, p-values<0.05 are considered statistically significant
- <sup>4</sup> Values of I<sup>2</sup><sub>Gx</sub><0.90 indicate potential for regression dilution bias and violation of the NOME (no measurement error assumption)

Abbreviations:

PRESSO Pleiotropy Residual Sum and Outlier

LMR Lymphocyte to monocyte ratio

NLR Neutrophil to lymphocyte ratio

PLR Platelet to lymphocyte ratio

**Supplementary Table S3: Mendelian randomization results for IDH mutant (IDH<sub>mut</sub>) glioma.** Odds ratios (OR) and 95% confidence intervals (CI) estimate the effect of increasing blood cell counts or cell type ratios on disease risk. MR Egger results are only presented for traits with statistically significant evidence of directional pleiotropy (MR Egger intercept  $\beta_0 \neq 0$ ,  $p < 0.05$ ).

Blood Cell Trait	MR Estimator	N <sub>SNP</sub>	IDH <sub>mut</sub>			IDH <sub>mut</sub> 1p/19q co-deleted			IDH <sub>mut</sub> 1p/19q non-codeleted		
			OR	(95% CI)	P	OR	(95% CI)	P	OR	(95% CI)	P
Basophils	IVW-MRE	146	0.67	(0.38 – 1.20)	0.18	0.79	(0.34 – 1.18)	0.57	0.73	(0.34 – 1.57)	0.42
	Maximum likelihood		0.67	(0.39 – 1.15)	0.15	0.79	(0.36 – 1.73)	0.55	0.73	(0.38 – 1.43)	0.36
	Weighted median		0.50	(0.21 – 1.22)	0.13	0.54	(0.14 – 2.02)	0.36	0.29	(0.10 – 0.85)	0.023
	RAPS		0.57	(0.31 – 1.03)	0.064	0.65	(0.28 – 1.53)	0.33	0.65	(0.30 – 1.42)	0.28
	PRESSO		0.67	(0.38 – 1.20)	0.18	0.79	(0.34 – 1.18)	0.57	0.73	(0.34 – 1.57)	0.42
Eosinophils	IVW-MRE	370	0.94	(0.73 – 1.20)	0.60	1.13	(0.78 – 1.64)	0.51	0.83	(0.60 – 1.15)	0.26
	Maximum likelihood		0.93	(0.74 – 1.18)	0.57	1.13	(0.80 – 1.60)	0.48	0.83	(0.62 – 1.11)	0.21
	Weighted median		0.85	(0.57 – 1.25)	0.40	1.12	(0.61 – 2.03)	0.72	0.92	(0.58 – 1.48)	0.74
	RAPS		0.95	(0.73 – 1.22)	0.66	1.16	(0.79 – 1.71)	0.44	0.87	(0.63 – 1.21)	0.40
	PRESSO		0.99	(0.78 – 1.25)	0.91	1.13	(0.78 – 1.64)	0.51	0.87	(0.64 – 1.18)	0.38
Lymphocytes	IVW-MRE	414	0.83	(0.68 – 1.02)	0.079	1.07	(0.79 – 1.45)	0.67	0.70	(0.55 – 0.89)	3.8×10 <sup>-3</sup>
	Maximum likelihood		0.84	(0.69 – 1.02)	0.081	1.07	(0.81 – 1.42)	0.64	0.71	(0.55 – 0.91)	6.5×10 <sup>-3</sup>
	Weighted median		1.25	(0.85 – 1.84)	0.25	1.48	(0.83 – 2.65)	0.19	1.00	(0.62 – 1.62)	0.98
	RAPS		0.75	(0.60 – 0.93)	8.9×10 <sup>-3</sup>	1.05	(0.76 – 1.46)	0.76	0.67	(0.53 – 0.86)	1.9×10 <sup>-3</sup>
	PRESSO		0.83	(0.68 – 1.02)	0.080	1.07	(0.79 – 1.45)	0.67	0.70	(0.55 – 0.89)	3.9×10 <sup>-3</sup>
Monocytes	IVW-MRE	479	0.99	(0.94 – 1.05)	0.85	1.00	(0.93 – 1.07)	0.95	0.98	(0.92 – 1.05)	0.62
	Maximum likelihood		0.99	(0.95 – 1.04)	0.81	1.00	(0.94 – 1.06)	0.95	0.98	(0.93 – 1.04)	0.54
	Weighted median		1.00	(0.96 – 1.04)	0.98	1.00	(0.93 – 1.06)	0.91	0.99	(0.94 – 1.05)	0.82
	RAPS		1.00	(0.96 – 1.05)	0.98	1.01	(0.94 – 1.07)	0.85	0.99	(0.94 – 1.04)	0.66
	PRESSO		1.00	(0.95 – 1.05)	0.96	1.00	(0.94 – 1.07)	0.94	0.91	(0.73 – 1.15)	0.44
Neutrophils	IVW-MRE	296	0.69	(0.50 – 0.94)	0.019	0.80	(0.51 – 1.24)	0.31	0.60	(0.41 – 0.88)	9.1×10 <sup>-3</sup>
	Maximum likelihood		0.69	(0.52 – 0.90)	7.5×10 <sup>-3</sup>	0.79	(0.53 – 1.19)	0.26	0.60	(0.43 – 0.85)	3.9×10 <sup>-3</sup>
	Weighted median		0.54	(0.34 – 0.85)	7.3×10 <sup>-3</sup>	0.70	(0.36 – 1.37)	0.30	0.48	(0.26 – 0.87)	0.016
	RAPS		0.68	(0.49 – 0.95)	0.024	0.87	(0.55 – 1.38)	0.57	0.61	(0.41 – 0.92)	0.017

	PRESSO		0.67	(0.49 – 0.91)	0.011	0.80	(0.51 – 1.24)	0.31	0.60	(0.41 – 0.88)	$9.6 \times 10^{-3}$
	IVW-MRE		0.98	(0.91 – 1.05)	0.53	0.90	(0.80 – 1.01)	0.071	1.03	(0.94 – 1.12)	0.54
	Maximum likelihood		0.98	(0.91 – 1.04)	0.48	0.90	(0.81 – 0.99)	0.038	1.03	(0.95 – 1.12)	0.52
Platelets	Weighted median	668	0.96	(0.89 – 1.04)	0.34	0.89	(0.78 – 1.00)	0.058	1.02	(0.92 – 1.12)	0.74
	RAPS		0.97	(0.90 – 1.06)	0.53	0.90	(0.79 – 1.02)	0.097	1.02	(0.93 – 1.12)	0.66
	PRESSO		0.97	(0.91 – 1.04)	0.45	0.90	(0.80 – 1.00)	0.049	1.02	(0.94 – 1.12)	0.58
	IVW-MRE		1.05	(0.80 – 1.37)	0.73	1.11	(0.77 – 1.60)	0.58	1.02	(0.74 – 1.39)	0.91
	Maximum likelihood		1.05	(0.85 – 1.29)	0.66	1.11	(0.82 – 1.51)	0.51	1.02	(0.79 – 1.32)	0.89
LMR	Weighted median	450	0.98	(0.68 – 1.40)	0.90	0.91	(0.53 – 1.56)	0.74	1.20	(0.75 – 1.94)	0.45
	RAPS		0.94	(0.75 – 1.19)	0.61	0.87	(0.63 – 1.21)	0.41	1.01	(0.75 – 1.36)	0.96
	PRESSO		0.93	(0.75 – 1.15)	0.49	0.95	(0.69 – 1.29)	0.73	0.92	(0.69 – 1.21)	0.54
	IVW-MRE		1.17	(0.83 – 1.66)	0.37	1.06	(0.64 – 1.76)	0.82	1.29	(0.85 – 1.95)	0.24
	Maximum likelihood		1.18	(0.86 – 1.61)	0.32	1.06	(0.66 – 1.69)	0.81	1.29	(0.87 – 1.92)	0.20
NLR	Weighted median	249	1.21	(0.72 – 2.02)	0.47	0.98	(0.46 – 2.07)	0.96	1.62	(0.85 – 3.12)	0.14
	RAPS		1.17	(0.81 – 1.70)	0.39	1.11	(0.64 – 1.90)	0.72	1.26	(0.80 – 1.96)	0.32
	PRESSO		1.17	(0.83 – 1.66)	0.37	1.06	(0.64 – 1.77)	0.82	1.29	(0.85 – 1.95)	0.24
	IVW-MRE		1.38	(1.09 – 1.75)	$7.2 \times 10^{-3}$	1.15	(0.82 – 1.61)	0.43	1.53	(1.15 – 2.03)	$3.7 \times 10^{-3}$
	Maximum likelihood		1.39	(1.13 – 1.71)	$1.7 \times 10^{-3}$	1.15	(0.85 – 1.55)	0.37	1.54	(1.19 – 1.98)	$9.4 \times 10^{-4}$
PLR	Weighted median	470	1.25	(0.88 – 1.78)	0.21	1.17	(0.71 – 1.94)	0.53	1.47	(0.97 – 2.24)	0.072
	RAPS		1.38	(1.08 – 1.76)	0.011	1.19	(0.84 – 1.70)	0.33	1.48	(1.10 – 2.00)	$9.6 \times 10^{-3}$
	PRESSO		1.40	(1.11 – 1.77)	$4.9 \times 10^{-3}$	1.14	(0.82 – 1.61)	0.43	1.55	(1.17 – 2.06)	$2.4 \times 10^{-3}$

Abbreviations:

IVW-MRE	Inverse variance weighted multiplicative random effect
RAPS	Robust adjusted profile score
PRESSO	Pleiotropy Residual Sum and Outlier
LMR	Lymphocyte to monocyte ratio
NLR	Neutrophil to lymphocyte ratio
PLR	Platelet to lymphocyte ratio

**Supplementary Table S4: Mendelian randomization results for IDH wildtype (IDH<sub>wt</sub>) glioma.** Odds ratios (OR) and 95% confidence intervals (CI) for the effect of increasing blood cell counts or cell type ratios on disease risk. MR Egger results are only presented for phenotypes with evidence of directional horizontal pleiotropy (MR Egger intercept  $\beta_0 \neq 0$  ( $p < 0.05$ )).

Blood Trait	MR Estimator	N <sub>SNP</sub>	IDH <sub>wt</sub>		
			OR	(95% CI)	P
Basophils	IVW-MRE	146	0.87	(0.56 – 1.36)	0.54
	Maximum likelihood		0.87	(0.55 – 1.37)	0.54
	Weighted median		0.81	(0.40 – 1.62)	0.55
	RAPS		0.86	(0.54 – 1.38)	0.53
	PRESSO		0.87	(0.56 – 1.36)	0.54
Eosinophils	IVW-MRE	370	0.98	(0.80 – 1.19)	0.81
	Maximum likelihood		0.98	(0.80 – 1.19)	0.81
	Weighted median		1.13	(0.83 – 1.53)	0.45
	RAPS		1.02	(0.82 – 1.25)	0.88
	PRESSO		0.98	(0.80 – 1.19)	0.81
Lymphocytes	IVW-MRE	414	1.05	(0.89 – 1.23)	0.59
	Maximum likelihood		1.05	(0.89 – 1.23)	0.58
	Weighted median		1.19	(0.85 – 1.67)	0.31
	RAPS		1.05	(0.88 – 1.25)	0.57
	PRESSO		1.05	(0.89 – 1.23)	0.59
Monocytes	IVW-MRE	479	1.04	(1.00 – 1.07)	0.058
	Maximum likelihood		1.04	(1.00 – 1.07)	0.052
	Weighted median		1.04	(1.00 – 1.08)	0.036
	RAPS		1.04	(1.00 – 1.08)	0.056
	PRESSO		1.04	(1.00 – 1.07)	0.058
Neutrophils	IVW-MRE	296	1.03	(0.78 – 1.38)	0.82
	Maximum likelihood		1.03	(0.82 – 1.31)	0.78
	Weighted median		0.87	(0.60 – 1.26)	0.45
	RAPS		1.00	(0.76 – 1.30)	0.98
	PRESSO		0.94	(0.74 – 1.21)	0.65
Platelets	IVW-MRE	668	1.03	(0.97 – 1.10)	0.37
	Maximum likelihood		1.03	(0.97 – 1.09)	0.33
	Weighted median		1.00	(0.94 – 1.07)	0.93
	RAPS		1.03	(0.96 – 1.09)	0.42
	PRESSO		1.02	(0.96 – 1.08)	0.49
LMR	IVW-MRE	450	1.08	(0.89 – 1.30)	0.44
	Maximum likelihood		1.08	(0.90 – 1.29)	0.41
	Weighted median		1.01	(0.74 – 1.38)	0.96
	RAPS		1.03	(0.85 – 1.26)	0.76

NLR	PRESSO	249	1.08	(0.90 – 1.29)	0.44
	IVW-MRE		0.96	(0.71 – 1.30)	0.81
	Maximum likelihood		0.96	(0.74 – 1.26)	0.79
	Weighted median		0.97	(0.64 – 1.48)	0.90
	RAPS		0.93	(0.69 – 1.25)	0.62
	MR Egger		0.42	(0.18 – 0.93)	0.034
	PRESSO		0.89	(0.68 – 1.18)	0.43
PLR	IVW-MRE	470	1.23	(1.01 – 1.49)	0.036
	Maximum likelihood		1.23	(1.04 – 1.47)	0.017
	Weighted median		1.07	(0.80 – 1.43)	0.64
	RAPS		1.21	(1.00 – 1.47)	0.051
	MR Egger		0.83	(0.53 – 1.30)	0.42
	PRESSO		1.19	(1.00 – 1.42)	0.055

Abbreviations:

IVW-MRE Inverse variance weighted multiplicative random effect

RAPS Robust adjusted profile score

PRESSO Pleiotropy Residual Sum and Outlier

LMR Lymphocyte to monocyte ratio

NLR Neutrophil to lymphocyte ratio

PLR Platelet to lymphocyte ratio



**Supplementary Table S5: Mendelian randomization results following manual removal of invalid genetic instruments.** Odds ratios (OR) and 95% for glioma for selected traits were estimated after filtering instruments that contributed to significant heterogeneity.

Blood Cell Trait	Outcome	N / N <sub>SNP</sub>	OR	IVW-MRE	P	Diagnostics	
				(95% CI)		P <sub>Q-value</sub>	P <sub>Egger</sub>
PLR	Glioma overall	442 / 470	1.27	(1.12 – 1.44)	2.2×10 <sup>-4</sup>	0.98	0.18
PLR	IDH <sub>mut</sub>	425 / 470	1.45	(1.18 – 1.77)	3.1×10 <sup>-4</sup>	0.99	0.40
PLR	1p/19q non-codeleted (IDH <sub>mut-noncodelet</sub> )	434 / 470	1.53	(1.19 – 1.96)	8.1×10 <sup>-4</sup>	0.99	0.11
Lymphocytes	IDH <sub>mut</sub>	388 / 414	0.68	(0.55 – 0.83)	1.8×10 <sup>-4</sup>	0.99	0.52
Lymphocytes	1p/19q non-codeleted (IDH <sub>mut-noncodelet</sub> )	391 / 414	0.69	(0.55 – 0.85)	4.5×10 <sup>-4</sup>	0.99	0.20
Neutrophils	IDH <sub>mut</sub>	271 / 296	0.65	(0.50 – 0.85)	1.4×10 <sup>-3</sup>	0.97	0.16
Neutrophils	1p/19q non-codeleted (IDH <sub>mut-noncodelet</sub> )	278 / 296	0.61	(0.43 – 0.86)	5.2×10 <sup>-3</sup>	0.73	0.51

Abbreviations:

IVW-MRE Inverse variance weighted multiplicative random effect

PLR Platelet to lymphocyte ratio

**Supplementary Table S6: Multivariable (MV) Mendelian randomization results.** Odds ratios (OR) and 95% for glioma, estimated using MVMR for traits that were individually associated with specific glioma subtypes or were used to derive associated ratio phenotypes.

Outcome	Traits Included	MV Method	Association Estimates		
			OR	(95% CI)	P
IDH <sub>mut</sub>	Lymphocytes	IVW	0.78	(0.58 – 1.06)	0.11
	Neutrophils	IVW	1.08	(0.91 – 1.28)	0.37
	Platelets	IVW	1.09	(0.91 – 1.30)	0.36
	PLR	LASSO	1.11		
	Lymphocytes	LASSO	-		
	Neutrophils	LASSO	0.86		
	Platelets	LASSO	-		
IDH <sub>mut-noncode1</sub>	Lymphocytes	IVW	0.70	(0.48 – 1.00)	0.051
	Neutrophils	IVW	1.12	(0.91 – 1.40)	0.27
	Platelets	IVW	1.10	(0.89 – 1.37)	0.36
	PLR	LASSO	1.16		
	Lymphocytes	LASSO	0.89		
	Neutrophils	LASSO	0.90		
	Platelets	LASSO	-		

**Supplementary Table S7: Candidate variants for colocalization.** Genome-wide significant glioma risk variants identified among genetic instruments for blood cell traits. For each variant associations with all blood cell phenotypes and/or leukocyte telomere length that reached genome-wide significance are shown.

Region	SNP <sup>1</sup>	Outcome	OR	P-value	P-values for associated traits			
2q37.3	rs34290285 (G/A)	IDH <sub>mut</sub> 1p/19q non-codel	0.60	5.2×10 <sup>-10</sup>	Eosinophils:	3.9×10 <sup>-37</sup>		
		IDH <sub>mut</sub>	0.66	1.6×10 <sup>-9</sup>				
5p15.33	rs7705526 (C/A)	IDH <sub>wt</sub>	0.60	6.7×10 <sup>-25</sup>	Neutrophils:	1.3×10 <sup>-12</sup>		
		IDH <sub>wt</sub>	0.60	6.7×10 <sup>-25</sup>	NLR:	1.4×10 <sup>-9</sup>		
		Glioma overall	0.68	2.2×10 <sup>-23</sup>	PLR:	2.7×10 <sup>-12</sup>		
5p15.33	rs2853677 (G/A)	Glioma overall	1.25	1.2×10 <sup>-9</sup>	Platelets:	9.9×10 <sup>-33</sup>		
					Neutrophils:	2.4×10 <sup>-282</sup>		
					NLR:	2.2×10 <sup>-11</sup>		
					PLR:	5.7×10 <sup>-14</sup>		
					Telomere length:	3.2×10 <sup>-12</sup>		
8q24	rs72716319 (A/G)	IDH <sub>mut</sub>	0.27	2.5×10 <sup>-41</sup>	LMR:	5.3×10 <sup>-21</sup>		
		IDH <sub>mut</sub> 1p/19q non-codel	0.27	5.2×10 <sup>-29</sup>				
		Glioma overall	0.47	6.2×10 <sup>-24</sup>			Monocytes:	4.0×10 <sup>-21</sup>
		IDH <sub>mut</sub> 1p/19q co-del	0.26	1.5×10 <sup>-23</sup>				
8q24	rs55705857 (A/G)	IDH <sub>mut</sub>	0.24	3.0×10 <sup>-55</sup>	LMR:	1.0×10 <sup>-22</sup>		
		IDH <sub>mut</sub> 1p/19q co-del	0.20	8.9×10 <sup>-37</sup>				
		IDH <sub>mut</sub> 1p/19q non-codel	0.25	2.7×10 <sup>-34</sup>			Monocytes:	1.6×10 <sup>-19</sup>
		Glioma overall	0.44	3.1×10 <sup>-32</sup>				
8q24	rs16904140 (G/A)	IDH <sub>mut</sub>	0.57	1.3×10 <sup>-19</sup>	LMR:	6.1×10 <sup>-21</sup>		
		IDH <sub>mut</sub> 1p/19q co-del	0.48	2.0×10 <sup>-17</sup>				
		Glioma overall	0.76	1.5×10 <sup>-10</sup>			Monocytes:	2.2×10 <sup>-17</sup>
		IDH <sub>mut</sub> 1p/19q non-codel	0.64	4.8×10 <sup>-9</sup>			Platelets:	1.1×10 <sup>-8</sup>
20q13.33	rs4809319 (A/G)	IDH <sub>wt</sub>	0.62	1.3×10 <sup>-14</sup>	Platelets:	1.1×10 <sup>-9</sup>		
		Glioma overall	0.71	1.4×10 <sup>-13</sup>	Telomere length:	1.1×10 <sup>-19</sup>		

<sup>1</sup> Alleles are listed as effect allele/other allele, where the odds ratio corresponds to the effect allele

**Supplementary Table S8: Colocalization results.** Regions with evidence of colocalization, denoted by posterior probability (PP)>0.90 between signals for glioma susceptibility and putative risk factors.

Locus	Candidate	Colocalized Traits	Dropped Traits	PP <sup>1</sup>	PP <sub>regional</sub> <sup>2</sup>	Fine-mapped <sup>3</sup>	PP <sub>SNP</sub>
2q37.3	rs34290285 ( <i>D2HGDH</i> )	IDH <sub>mut</sub> 1p/19q non-codel, Eosinophils	-	0.939	1	rs34290285	0.944
5p15.33	rs7705526 ( <i>TERT</i> )	IDH <sub>wt</sub> , telomere length, platelets, neutrophils, PLR	-	0.994	1	rs7705526	1
5p15.33	rs2853677 ( <i>TERT</i> )	Glioma, telomere length, platelets	-	0.978	1	rs7705526	1
20q13.33	rs4809319 ( <i>STMN3</i> )	None	Telomere length	-	0.665	-	-
		IDH <sub>wt</sub> , platelets	-	0.952	1	rs6011018 ( <i>RTEL1</i> )	0.178

<sup>1</sup> Posterior probability that all traits are colocalized

<sup>2</sup> Posterior probability that one or more SNPs in the region have shared associations across the traits

<sup>3</sup> Candidate variant explaining the shared association

<sup>4</sup> Proportion of the posterior probability explained by the fine-mapped variant

Abbreviations:

PP            Posterior probability

**Supplementary Table S9: Survival analysis of blood cell trait polygenic scores (PGS).** Hazard ratios (HR) and 95% confidence intervals per 1 standard deviation increase in the standardized PGS were estimated using Cox proportional hazards models fit separately in each patient population. Associations of each PGS with all-cause mortality were estimated with adjustment for age, sex, and top 10 genetic ancestry principal components.

Blood Cell PGS	Cases (Events)	UCSF AGS and Mayo Clinic			UCSF AGS			TCGA				
		HR	(95% CI)	P	HR	(95% CI)	P	HR	(95% CI)	P		
Basophils		1.02	(0.97 – 1.08)	0.43	1.01	(0.93 – 1.09)	0.83	1.14	(1.00 – 1.14)	0.042		
Eosinophils		0.99	(0.93 – 1.05)	0.73	1.04	(0.96 – 1.13)	0.30	1.03	(0.92 – 1.16)	0.64		
Lymphocytes		1.02	(0.96 – 1.08)	0.48	1.00	(0.93 – 1.09)	0.94	1.14	(1.01 – 1.29)	0.030		
Monocytes	Glioma 1973 (1218)	1.00	(0.95 – 1.06)	0.89	Glioma 659 (592)	1.01	(0.93 – 1.10)	0.83	Glioma 786 (310)	0.93	(0.83 – 1.03)	0.17
Neutrophils		1.05	(0.99 – 1.11)	0.12		0.97	(0.90 – 1.05)	0.43		1.07	(0.95 – 1.21)	0.26
Platelets		1.01	(0.96 – 1.07)	0.65		1.05	(0.97 – 1.14)	0.23		0.98	(0.88 – 1.09)	0.72
LMR		0.96	(0.91 – 1.02)	0.21		1.00	(0.92 – 1.09)	0.98		1.10	(0.99 – 1.23)	0.090
NLR		1.00	(0.95 – 1.06)	0.94		0.96	(0.88 – 1.04)	0.29	0.87	(0.78 – 0.97)	0.013	
PLR		0.97	(0.91 – 1.02)	0.24		1.00	(0.92 – 1.08)	0.97	0.95	(0.85 – 1.06)	0.36	
Basophils		1.11	(0.96 – 1.28)	0.18		1.00	(0.78 – 1.29)	0.99	1.70	(1.22 – 2.37)	1.8E-03	
Eosinophils		1.17	(1.00 – 1.37)	0.055		0.89	(0.70 – 1.14)	0.36	1.18	(0.86 – 1.61)	0.31	
Lymphocytes		1.09	(0.94 – 1.27)	0.26		0.99	(0.78 – 1.25)	0.91	1.42	(1.03 – 1.95)	0.030	
Monocytes	IDH <sub>mut</sub> 588 (201)	0.98	(0.85 – 1.13)	0.79	IDH <sub>mut</sub> 111 (74)	0.79	(0.59 – 1.06)	0.11	IDH <sub>mut</sub> 375 (50)	0.86	(0.63 – 1.18)	0.35
Neutrophils		1.12	(0.96 – 1.31)	0.15		0.95	(0.76 – 1.19)	0.66		1.35	(1.00 – 1.82)	0.051
Platelets		1.04	(0.90 – 1.20)	0.58		0.96	(0.76 – 1.21)	0.72		1.09	(0.83 – 1.45)	0.53
LMR		0.93	(0.80 – 1.07)	0.30		1.06	(0.83 – 1.36)	0.64		1.32	(0.96 – 1.81)	0.083
NLR		0.91	(0.80 – 1.05)	0.20		0.95	(0.76 – 1.19)	0.67	0.76	(0.56 – 1.03)	0.073	
PLR		0.93	(0.81 – 1.08)	0.34		0.88	(0.70 – 1.10)	0.25	0.84	(0.60 – 1.16)	0.29	
Basophils		1.33	(1.00 – 1.77)	0.047		-	-	-	2.59	(1.04 – 6.41)	0.040	
Eosinophils		1.56	(1.15 – 2.13)	4.4×10 <sup>-3</sup>		-	-	-	1.94	(0.60 – 6.32)	0.27	

Lymphocytes		1.68	(1.24 – 2.27)	7.4×10 <sup>-4</sup>		-	-	-		1.38	(0.50 – 3.81)	0.53
Monocytes		1.22	(0.94 – 1.59)	0.13		-	-	-		1.71	(0.65 – 4.48)	0.28
Neutrophils	IDH <sub>mut</sub> 1p/19q	1.37	(1.03 – 1.83)	0.033	IDH <sub>mut</sub> 1p/19q	-	-	-	IDH <sub>mut</sub> 1p/19q	4.82	(1.63 – 14.29)	4.5E-03
platelet	co-del	0.80	(0.61 – 1.05)	0.11	co-del	-	-	-	co-del	1.50	(0.59 – 3.80)	0.39
LMR	244 (64)	0.99	(0.77 – 1.29)	0.97	9 (1)	-	-	-	143 (13)	1.42	(0.58 – 3.46)	0.44
NLR		0.83	(0.64 – 1.07)	0.15		-	-	-		1.78	(0.73 – 4.35)	0.20
PLR		0.83	(0.63 – 1.08)	0.17		-	-	-		0.87	(0.40 – 1.91)	0.73
Basophils		1.13	(0.93 – 1.39)	0.22		1.09	(0.84 – 1.41)	0.51		1.63	(1.08 – 2.45)	0.019
Eosinophils		1.08	(0.88 – 1.32)	0.46		0.97	(0.75 – 1.25)	0.79		1.15	(0.81 – 1.64)	0.43
Lymphocytes		1.02	(0.84 – 1.24)	0.86		1.11	(0.87 – 1.41)	0.41		1.33	(0.85 – 2.07)	0.21
Monocytes	IDH <sub>mut</sub> 1p/19q	1.04	(0.85 – 1.28)	0.67	IDH <sub>mut</sub> 1p/19q	0.87	(0.64 – 1.20)	0.41	IDH <sub>mut</sub> 1p/19q	0.64	(0.42 – 0.99)	0.045
Neutrophils	non-codel	1.03	(0.85 – 1.26)	0.75	non-codel	1.03	(0.83 – 1.28)	0.78	non-codel	1.14	(0.77 – 1.68)	0.51
Platelets	291 (117)	1.04	(0.86 – 1.27)	0.67	94 (69)	0.90	(0.70 – 1.15)	0.41	230 (36)	0.99	(0.70 – 1.39)	0.94
LMR		0.95	(0.79 – 1.14)	0.57		1.11	(0.85 – 1.43)	0.44		1.35	(0.92 – 1.96)	0.12
NLR		0.88	(0.73 – 1.07)	0.19		0.89	(0.71 – 1.11)	0.29		0.70	(0.43 – 1.13)	0.15
PLR		0.96	(0.80 – 1.15)	0.66		0.83	(0.65 – 1.06)	0.13		0.83	(0.53 – 1.30)	0.42
Basophils		1.00	(0.93 – 1.09)	0.91		1.04	(0.94 – 1.14)	0.44		1.11	(0.95 – 1.29)	0.18
Eosinophils		0.95	(0.87 – 1.04)	0.25		1.07	(0.97 – 1.18)	0.18		1.09	(0.95 – 1.25)	0.23
Lymphocytes		1.04	(0.96 – 1.13)	0.32		1.01	(0.91 – 1.11)	0.91		1.09	(0.94 – 1.26)	0.23
Monocytes	IDH <sub>wt</sub>	0.98	(0.91 – 1.06)	0.64	IDH <sub>wt</sub>	1.03	(0.93 – 1.13)	0.57	IDH <sub>wt</sub>	0.89	(0.78 – 1.01)	0.073
Neutrophils	699 (594)	1.02	(0.94 – 1.10)	0.69	416 (402)	0.99	(0.90 – 1.08)	0.81	364 (228)	0.99	(0.86 – 1.15)	0.91
Platelets		1.03	(0.95 – 1.11)	0.53		1.10	(1.00 – 1.22)	0.061		0.90	(0.79 – 1.02)	0.11
LMR		1.00	(0.92 – 1.09)	0.96		0.95	(0.86 – 1.05)	0.33		1.09	(0.96 – 1.24)	0.16
NLR		1.01	(0.93 – 1.10)	0.85		0.99	(0.89 – 1.10)	0.86		0.92	(0.81 – 1.04)	0.16
PLR		0.95	(0.87 – 1.03)	0.20		1.04	(0.94 – 1.15)	0.44		0.92	(0.80 – 1.05)	0.19

**Supplementary Table S10: Meta-analysis of blood cell trait polygenic scores (PGS) associations.**

Study specific results in Supplementary Table S9 were combined in a fixed-effects meta-analysis to estimate the overall effect of each blood cell trait PGS on survival. Hazard ratios (HR) correspond to a 1 standard deviation increase in the standardized PGS.

Blood Cell PGS	Cases (Events)	Meta-Analysis Estimates				Heterogeneity <sup>2</sup>	
		HR	(95% CI)	P	FDR <sup>1</sup>	Q P-value	I <sup>2</sup>
Basophils	Glioma: 3418 (2120)	1.03	(0.99 – 1.08)	0.15	0.47	0.25	0.27
Eosinophils		1.01	(0.97 – 1.06)	0.62	0.79	0.56	0
Lymphocytes		1.03	(0.99 – 1.08)	0.17	0.47	0.19	0.41
Monocytes		0.99	(0.95 – 1.04)	0.75	0.80	0.39	0
Neutrophils		1.03	(0.98 – 1.07)	0.26	0.47	0.21	0.36
Platelets		1.02	(0.98 – 1.06)	0.41	0.61	0.57	0
LMR		0.99	(0.95 – 1.04)	0.80	0.80	0.11	0.54
NLR		0.97	(0.93 – 1.01)	0.14	0.47	0.079	0.61
PLR		0.97	(0.93 – 1.02)	0.21	0.47	0.72	0
Basophils	IDH <sub>mut</sub> 1074 (325)	1.14	(1.02 – 1.29)	0.027	0.19	0.035	0.70
Eosinophils		1.09	(0.97 – 1.24)	0.16	0.24	0.17	0.44
Lymphocytes		1.10	(0.98 – 1.24)	0.10	0.19	0.19	0.40
Monocytes		0.93	(0.82 – 1.05)	0.22	0.28	0.37	0
Neutrophils		1.10	(0.98 – 1.24)	0.11	0.19	0.18	0.42
Platelets		1.03	(0.92 – 1.15)	0.60	0.68	0.75	0
LMR		1.00	(0.89 – 1.12)	0.99	1.00	0.11	0.54
NLR		0.90	(0.81 – 1.01)	0.063	0.19	0.46	0
PLR		0.91	(0.81 – 1.02)	0.089	0.19	0.79	0
Basophils	IDH <sub>mut-codel</sub> 396 (78)	1.42	(1.08 – 1.86)	0.012	0.03	0.17	0.46
Eosinophils		1.59	(1.18 – 2.14)	2.4×10 <sup>-3</sup>	0.011	0.73	0
Lymphocytes		1.65	(1.24 – 2.20)	6.4×10 <sup>-4</sup>	5.8×10 <sup>-3</sup>	0.72	0
Monocytes		1.25	(0.97 – 1.61)	0.079	0.14	0.51	0
Neutrophils		1.49	(1.13 – 1.97)	5.2×10 <sup>-3</sup>	0.016	0.029	0.79
platelet		0.84	(0.65 – 1.09)	0.20	0.25	0.20	0.38
LMR		1.02	(0.80 – 1.32)	0.85	0.85	0.45	0
NLR		0.88	(0.69 – 1.13)	0.31	0.34	0.11	0.62
PLR		0.83	(0.64 – 1.07)	0.16	0.23	0.90	0
Basophils		1.17	(1.01 – 1.36)	0.033	0.30	0.23	0.32
Eosinophils		1.05	(0.91 – 1.22)	0.48	0.68	0.68	0

Lymphocytes	IDH <sub>mut- noncode1 615 (222)</sub>	1.08	(0.93 – 1.25)	0.31	0.68	0.55	0
Monocytes		0.93	(0.80 – 1.10)	0.41	0.68	0.12	0.52
Neutrophils		1.04	(0.91 – 1.20)	0.53	0.68	0.90	0
Platelets		0.99	(0.86 – 1.14)	0.84	0.95	0.66	0
LMR		1.00	(0.87 – 1.15)	0.98	0.98	0.10	0.57
NLR		0.90	(0.79 – 1.03)	0.14	0.43	0.49	0
PLR		0.90	(0.78 – 1.04)	0.14	0.43	0.60	0
Basophils	IDH <sub>wt 1479 (1224)</sub>	1.03	(0.97 – 1.09)	0.30	0.71	0.52	0
Eosinophils		1.02	(0.96 – 1.08)	0.59	0.76	0.12	0.53
Lymphocytes		1.04	(0.98 – 1.10)	0.21	0.71	0.64	0
Monocytes		0.98	(0.93 – 1.03)	0.44	0.71	0.21	0.36
Neutrophils		1.00	(0.95 – 1.06)	0.93	0.93	0.89	0
Platelets		1.02	(0.97 – 1.08)	0.44	0.71	0.052	0.66
LMR		1.01	(0.95 – 1.07)	0.81	0.91	0.24	0.31
NLR		0.98	(0.92 – 1.04)	0.47	0.71	0.48	0
PLR		0.97	(0.92 – 1.03)	0.31	0.71	0.24	0.30

<sup>1</sup> False discovery rate (FDR) was calculated for each glioma subtype, FDR<0.05 was considered statistically significant

<sup>2</sup> Heterogeneity in study-specific associations was assessed using the standard Cochran's Q test (p<0.05 were considered statistically significant) and Higgins I<sup>2</sup> statistic, which describes the percentage of variation across studies that is due to heterogeneity rather than chance



**Supplementary Table S11: Mendelian randomization results for survival in *IDH*-mutated 1p19q co-deleted subtype.** Hazard ratios (HR) and 95% confidence intervals (CI) correspond to the effect of increasing blood cell counts or cell type ratios on all-cause mortality. Results are presented for analyses using SNP effects on survival before and after index event bias correction. MR Egger estimates are presented if applicable (Egger intercept test  $p < 0.05$ ).

Blood Trait	MR Estimator	N <sub>SNP</sub> <sup>1</sup>	Unadjusted			Adjusted for Index Event Bias		
			HR	(95% CI)	P	HR	(95% CI)	P
Basophils	IVW-MRE	143	13.98	(1.63 – 120.3)	0.016	13.18	(1.55 – 112.2)	0.018
	Maximum likelihood		14.00	(2.24 – 87.8)	$4.8 \times 10^{-3}$	13.56	(2.16 – 85.2)	$5.4 \times 10^{-3}$
	Weighted median		46.24	(2.10 – 1018.1)	0.015	32.02	(1.32 – 779.0)	0.033
	RAPS		16.48	(1.72 – 158.1)	0.015	15.05	(1.57 – 144.5)	0.019
	PRESSO		13.98	(1.63 – 120.3)	0.017	13.18	(1.55 – 112.2)	0.020
Eosinophils	IVW-MRE	369	3.83	(1.63 – 9.00)	$2.0 \times 10^{-3}$	3.87	(1.65 – 9.09)	$1.9 \times 10^{-3}$
	Maximum likelihood		3.82	(1.74 – 8.39)	$8.5 \times 10^{-4}$	3.84	(1.74 – 8.45)	$8.4 \times 10^{-4}$
	Weighted median		5.15	(1.35 – 19.68)	0.017	5.27	(1.35 – 20.62)	0.017
	RAPS		3.67	(1.47 – 9.14)	$5.3 \times 10^{-3}$	3.68	(1.47 – 9.20)	$5.4 \times 10^{-3}$
	PRESSO		3.83	(1.63 – 9.00)	$2.2 \times 10^{-3}$	3.87	(1.65 – 9.09)	$2.1 \times 10^{-3}$
Lymphocytes	IVW-MRE	411	4.33	(2.16 – 8.65)	$3.4 \times 10^{-5}$	4.36	(2.18 – 8.73)	$3.2 \times 10^{-5}$
	Maximum likelihood		4.40	(2.21 – 8.77)	$2.6 \times 10^{-5}$	4.41	(2.21 – 8.78)	$2.5 \times 10^{-5}$
	Weighted median		1.27	(0.36 – 4.43)	0.71	1.32	(0.36 – 4.81)	0.68
	RAPS		5.71	(2.68 – 12.17)	$6.6 \times 10^{-6}$	5.56	(2.61 – 11.85)	$9.0 \times 10^{-6}$
	PRESSO		4.32	(2.16 – 8.65)	$4.2 \times 10^{-5}$	4.36	(2.18 – 8.73)	$3.9 \times 10^{-5}$
Monocytes	IVW-MRE	473	1.13	(0.97 – 1.32)	0.11	1.13	(0.97 – 1.32)	0.11
	Maximum likelihood		1.13	(0.98 – 1.30)	0.087	1.13	(0.98 – 1.30)	0.089
	Weighted median		1.12	(0.96 – 1.29)	0.15	1.12	(0.97 – 1.28)	0.13
	RAPS		1.13	(0.97 – 1.32)	0.12	1.13	(0.97 – 1.32)	0.12
	PRESSO		1.13	(0.97 – 1.32)	0.11	1.13	(0.97 – 1.32)	0.11
Neutrophils	IVW-MRE	293	4.71	(1.72 – 12.91)	$2.6 \times 10^{-3}$	4.51	(1.66 – 12.26)	$3.2 \times 10^{-3}$
	Maximum likelihood		4.70	(1.85 – 11.96)	$1.2 \times 10^{-3}$	4.50	(1.77 – 11.49)	$1.6 \times 10^{-3}$
	Weighted median		5.33	(1.21 – 23.46)	0.027	4.96	(1.07 – 22.98)	0.041
	RAPS		4.05	(1.37 – 12.02)	0.012	3.87	(1.32 – 11.38)	0.014
	MR Egger		28.45	(2.29 – 353.4)	$9.7 \times 10^{-3}$	26.94	(2.22 – 327.5)	0.010
	PRESSO		4.71	(1.72 – 12.91)	$2.8 \times 10^{-3}$	4.51	(1.66 – 12.26)	$3.5 \times 10^{-3}$
Platelets	IVW-MRE	659	0.84	(0.67 – 1.05)	0.13	0.83	(0.66 – 1.04)	0.10
	Maximum likelihood		0.86	(0.69 – 1.06)	0.16	0.84	(0.67 – 1.04)	0.11
	Weighted median		0.77	(0.58 – 1.03)	0.076	0.75	(0.57 – 1.00)	0.052
	RAPS		0.83	(0.65 – 1.07)	0.16	0.82	(0.64 – 1.06)	0.13
	PRESSO		0.84	(0.67 – 1.05)	0.13	0.83	(0.66 – 1.04)	0.10
LMR	IVW-MRE	446	1.10	(0.53 – 2.30)	0.80	1.13	(0.54 – 2.36)	0.75
	Maximum likelihood		1.10	(0.54 – 2.23)	0.80	1.13	(0.55 – 2.30)	0.74

	Weighted median		0.88	(0.26 – 2.98)	0.83	0.90	(0.26 – 3.04)	0.86
	RAPS		1.02	(0.48 – 2.20)	0.95	1.06	(0.49 – 2.29)	0.88
	PRESSO		1.10	(0.53 – 2.30)	0.80	1.13	(0.54 – 2.36)	0.75
	IVW-MRE		0.50	(0.16 – 1.56)	0.23	0.50	(0.16 – 1.58)	0.24
	Maximum likelihood		0.50	(0.17 – 1.44)	0.20	0.50	(0.17 – 1.46)	0.20
NLR	Weighted median	248	0.91	(0.17 – 4.83)	0.91	0.71	(0.13 – 3.90)	0.70
	RAPS		0.47	(0.14 – 1.54)	0.21	0.48	(0.15 – 1.60)	0.23
	PRESSO		0.50	(0.16 – 1.56)	0.23	0.50	(0.16 – 1.58)	0.24
	IVW-MRE		0.50	(0.24 – 1.04)	0.065	0.51	(0.25 – 1.07)	0.074
	Maximum likelihood		0.51	(0.25 – 1.02)	0.056	0.52	(0.26 – 1.04)	0.063
PLR	Weighted median	465	0.53	(0.17 – 1.65)	0.27	0.67	(0.22 – 2.06)	0.49
	RAPS		0.50	(0.23 – 1.09)	0.082	0.52	(0.24 – 1.12)	0.10
	PRESSO		0.50	(0.24 – 1.04)	0.066	0.51	(0.25 – 1.07)	0.074

<sup>1</sup> Number of instruments using in the survival analysis is smaller due to the removal of variants with  $\text{abs}(\log(\text{HR})) > 2.5$

Abbreviations:

IVW-MRE	Inverse variance weighted multiplicative random effect
RAPS	Robust adjusted profile score
PRESSO	Pleiotropy Residual Sum and Outlier
LMR	Lymphocyte to monocyte ratio
NLR	Neutrophil to lymphocyte ratio
PLR	Platelet to lymphocyte ratio

**Supplementary Table S12: Associations between blood cell trait polygenic scores (PGS) and tumor immune microenvironment (TIME) features in TCGA.** Associations for selected blood cell trait PGS with heritable TIME traits identified in TCGA by Sayaman et al. (2021). Association analyses were conducted stratified by IDH mutation status. Each continuous TME phenotype was analyzed using linear regression with adjustment for age, sex, and genetic ancestry principal components. Heterogeneity in PGS effects by IDH status were assessed using Cochran's Q test.

Module	TME Trait	PGS	IDH mutant				IDH wildtype				P <sub>het</sub>
			Beta	SE	P	FDR	Beta	SE	P	FDR	
Expression Signature (ES)	Bcell mg IGJ	Basophils	-0.008	0.034	0.809	0.839	0.038	0.067	0.572	0.854	0.539
		Eosinophils	-0.005	0.036	0.885	0.991	0.008	0.061	0.896	0.939	0.852
		Lymphocytes	0.032	0.036	0.366	0.528	-0.024	0.064	0.701	0.818	0.437
		Neutrophils	0.062	0.035	0.077	0.197	-0.009	0.072	0.901	0.970	0.372
		Platelets	-0.036	0.032	0.252	0.655	-0.024	0.059	0.688	0.917	0.850
		PLR	-0.046	0.033	0.166	0.307	0.034	0.063	0.587	0.748	0.258
	CD8 CD68 ratio	Basophils	-0.083	0.069	0.232	0.719	0.086	0.077	0.262	0.854	0.101
		Eosinophils	0.080	0.073	0.274	0.991	0.006	0.069	0.936	0.939	0.460
		Lymphocytes	-0.052	0.072	0.472	0.574	0.010	0.073	0.894	0.900	0.547
		Neutrophils	-0.0002	0.072	0.997	0.997	0.022	0.082	0.788	0.964	0.838
		Platelets	-0.028	0.064	0.657	0.836	-0.118	0.067	0.077	0.729	0.330
		PLR	0.108	0.067	0.112	0.223	-0.055	0.072	0.442	0.652	0.098
	LYMPHS PCA 16704732	Basophils	0.027	0.020	0.179	0.719	-0.026	0.040	0.514	0.854	0.235
		Eosinophils	0.018	0.021	0.396	0.991	-0.037	0.036	0.307	0.683	0.189
		Lymphocytes	0.019	0.021	0.377	0.528	-0.066	0.037	0.074	0.209	0.046
		Neutrophils	0.026	0.021	0.221	0.428	-0.060	0.042	0.155	0.964	0.068
		Platelets	0.023	0.019	0.217	0.655	0.053	0.034	0.123	0.729	0.449
		PLR	-0.019	0.020	0.349	0.444	0.079	0.036	0.032	0.299	0.019
	PD1	Basophils	0.041	0.053	0.443	0.719	-0.057	0.072	0.427	0.854	0.273
		Eosinophils	0.034	0.056	0.542	0.991	-0.044	0.065	0.495	0.769	0.359
Lymphocytes		0.054	0.056	0.338	0.525	-0.066	0.067	0.327	0.532	0.170	
Neutrophils		0.129	0.055	0.019	0.090	-0.054	0.075	0.476	0.964	0.049	
Platelets		-0.031	0.050	0.534	0.732	-0.032	0.062	0.599	0.883	0.984	

		PLR	-0.069	0.052	0.186	0.307	0.063	0.066	0.344	0.567	0.117
IFN Response	Activated Dendritic Cells (ES)	Basophils	-0.004	0.034	0.903	0.903	-0.019	0.055	0.723	0.854	0.813
		Eosinophils	-0.008	0.036	0.820	0.991	-0.049	0.049	0.319	0.683	0.503
		Lymphocytes	0.057	0.036	0.115	0.354	-0.112	0.050	0.027	0.192	6.4E-03
		Neutrophils	0.043	0.036	0.229	0.428	-0.030	0.057	0.605	0.964	0.282
		Platelets	-0.056	0.032	0.082	0.655	0.004	0.047	0.932	0.988	0.294
		PLR	-0.091	0.033	0.007	0.164	0.109	0.050	0.030	0.299	8.9E-04
		Basophils	-0.040	0.053	0.451	0.719	-0.053	0.101	0.600	0.854	0.910
	Attractor Metagene - IFIT3	Eosinophils	-0.034	0.056	0.546	0.991	-0.131	0.091	0.150	0.683	0.362
		Lymphocytes	0.073	0.056	0.189	0.354	-0.162	0.095	0.090	0.228	0.033
		Neutrophils	0.031	0.055	0.572	0.794	0.048	0.107	0.658	0.964	0.892
		Platelets	-0.075	0.049	0.131	0.655	-0.110	0.087	0.209	0.729	0.723
		PLR	-0.103	0.052	0.048	0.164	0.133	0.094	0.158	0.363	0.028
	GP11 Immune IFN	Basophils	-0.005	0.016	0.760	0.828	-0.012	0.024	0.606	0.854	0.796
		Eosinophils	0.003	0.017	0.854	0.991	-0.031	0.022	0.155	0.683	0.217
		Lymphocytes	0.029	0.017	0.087	0.354	-0.053	0.022	0.018	0.169	3.3E-03
		Neutrophils	0.017	0.017	0.308	0.507	0.0004	0.026	0.986	0.986	0.585
		Platelets	-0.017	0.015	0.270	0.655	-0.021	0.021	0.309	0.729	0.856
		PLR	-0.029	0.016	0.069	0.164	0.035	0.022	0.114	0.363	0.019
	IFN signature 21978456	Basophils	-0.034	0.038	0.368	0.719	-0.031	0.072	0.664	0.854	0.970
		Eosinophils	-0.026	0.040	0.510	0.991	-0.083	0.064	0.199	0.683	0.455
Lymphocytes		0.055	0.040	0.167	0.354	-0.123	0.067	0.068	0.209	0.022	
Neutrophils		0.016	0.040	0.693	0.794	0.036	0.076	0.642	0.964	0.817	
Platelets		-0.053	0.035	0.136	0.655	-0.080	0.062	0.202	0.729	0.708	
PLR		-0.070	0.037	0.061	0.164	0.093	0.067	0.167	0.363	0.034	
IFN Cluster 21214954	Basophils	-0.014	0.029	0.641	0.828	-0.019	0.051	0.706	0.854	0.921	
	Eosinophils	-0.015	0.031	0.620	0.991	-0.056	0.046	0.226	0.683	0.461	
	Lymphocytes	0.048	0.031	0.114	0.354	-0.094	0.048	0.053	0.209	0.013	
	Neutrophils	0.024	0.030	0.425	0.626	0.021	0.055	0.705	0.964	0.957	

		Platelets	-0.037	0.027	0.170	0.655	-0.044	0.045	0.331	0.729	0.903
		PLR	-0.062	0.028	0.030	0.164	0.069	0.048	0.151	0.363	0.019
	IFN signature 19272155	Basophils	-0.036	0.037	0.327	0.719	-0.034	0.069	0.629	0.854	0.974
		Eosinophils	-0.030	0.039	0.447	0.991	-0.081	0.062	0.195	0.683	0.483
		Lymphocytes	0.052	0.039	0.179	0.354	-0.121	0.065	0.065	0.209	0.022
		Neutrophils	0.013	0.038	0.737	0.794	0.031	0.074	0.677	0.964	0.829
		Platelets	-0.053	0.034	0.123	0.655	-0.074	0.060	0.220	0.729	0.759
		PLR	-0.070	0.036	0.055	0.164	0.093	0.065	0.153	0.363	0.028
	Module3 IFN score	Basophils	-0.021	0.035	0.540	0.796	-0.034	0.063	0.597	0.854	0.864
		Eosinophils	-0.017	0.037	0.639	0.991	-0.084	0.057	0.142	0.683	0.324
		Lymphocytes	0.055	0.036	0.134	0.354	-0.114	0.060	0.058	0.209	0.016
		Neutrophils	0.030	0.036	0.408	0.626	0.020	0.068	0.764	0.964	0.902
		Platelets	-0.046	0.032	0.155	0.655	-0.053	0.055	0.338	0.729	0.910
		PLR	-0.068	0.034	0.045	0.164	0.098	0.059	0.098	0.363	0.014
Leukocyte Subset ES	NK CD56dim cells (ES)	Basophils	0.005	0.014	0.715	0.828	-0.003	0.032	0.923	0.943	0.813
		Eosinophils	0.006	0.015	0.688	0.991	-0.012	0.029	0.664	0.902	0.568
		Lymphocytes	0.026	0.015	0.078	0.354	-0.056	0.029	0.056	0.209	0.012
		Neutrophils	0.036	0.015	0.015	0.090	-0.034	0.033	0.312	0.964	0.056
		Platelets	-0.017	0.013	0.194	0.655	-0.023	0.027	0.403	0.753	0.852
		PLR	-0.012	0.014	0.369	0.450	0.042	0.029	0.145	0.363	0.088
	Th17 cells (ES)	Basophils	0.016	0.019	0.387	0.719	-0.018	0.035	0.607	0.854	0.391
		Eosinophils	0.005	0.020	0.784	0.991	0.004	0.032	0.901	0.939	0.970
		Lymphocytes	0.017	0.020	0.398	0.530	-0.006	0.034	0.870	0.900	0.570
		Neutrophils	0.050	0.019	0.010	0.090	-0.037	0.038	0.330	0.964	0.041
		Platelets	-0.017	0.017	0.327	0.655	-0.021	0.031	0.498	0.872	0.912
		PLR	-0.036	0.018	0.047	0.164	0.011	0.033	0.749	0.843	0.215
	Th2 cells (ES)	Basophils	-0.006	0.017	0.729	0.828	-0.022	0.030	0.464	0.854	0.637
		Eosinophils	0.011	0.017	0.536	0.991	-0.008	0.027	0.774	0.939	0.563
		Lymphocytes	-0.008	0.018	0.663	0.714	-0.004	0.028	0.900	0.900	0.901

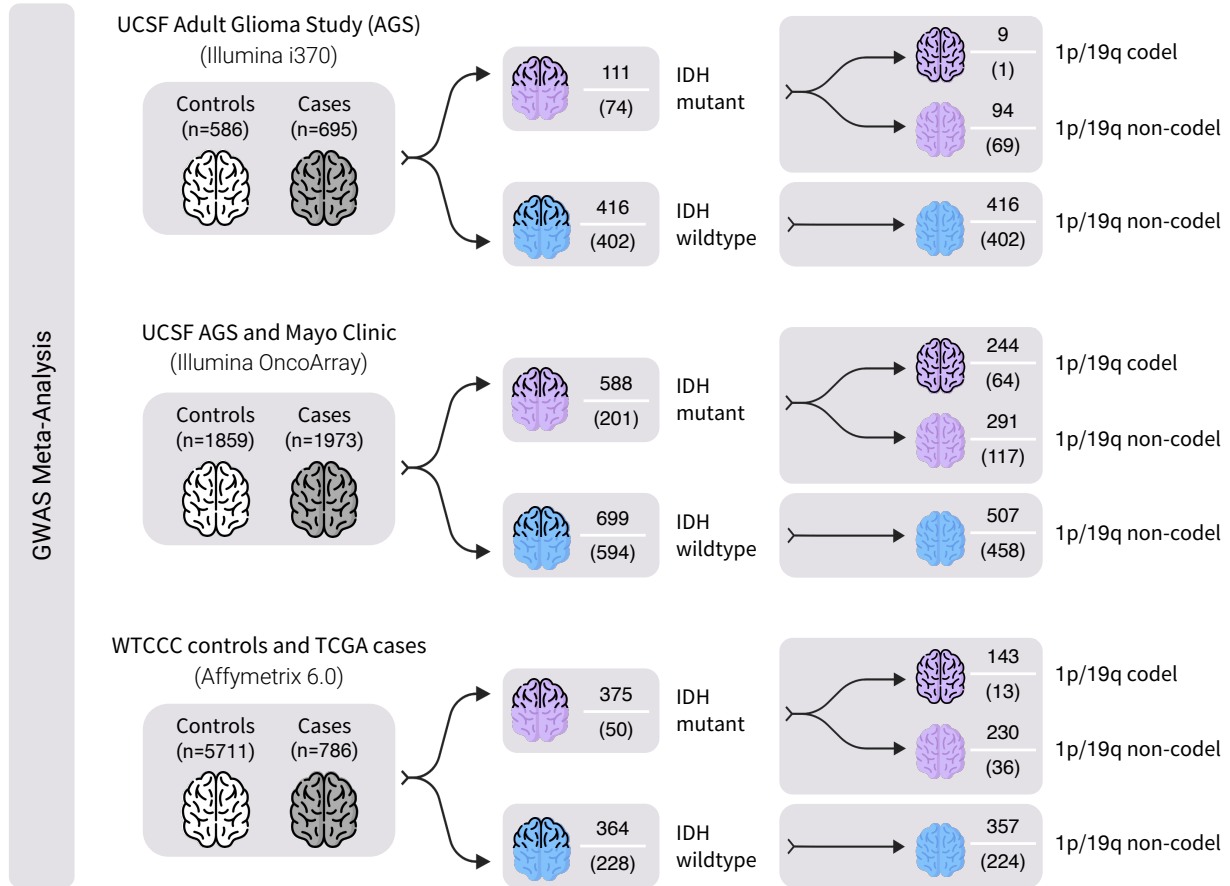
		Neutrophils	-0.004	0.017	0.807	0.837	-0.060	0.031	0.056	0.964	0.117
		Platelets	0.005	0.015	0.768	0.896	-0.029	0.026	0.269	0.729	0.270
		PLR	0.026	0.016	0.106	0.223	0.007	0.028	0.803	0.843	0.544
Macrophage/ Monocyte	Attractor Metagene - G SIGLEC9	Basophils	0.089	0.071	0.215	0.719	0.029	0.104	0.782	0.854	0.634
		Eosinophils	-0.0004	0.075	0.995	0.995	-0.015	0.093	0.876	0.939	0.906
		Lymphocytes	0.116	0.075	0.125	0.354	-0.085	0.097	0.380	0.532	0.101
		Neutrophils	0.147	0.074	0.048	0.151	-0.064	0.109	0.559	0.964	0.110
		Platelets	-0.043	0.067	0.516	0.732	0.043	0.089	0.633	0.886	0.440
		PLR	-0.160	0.070	0.023	0.164	0.140	0.095	0.143	0.363	0.011
		Basophils	0.056	0.064	0.384	0.719	-0.005	0.075	0.943	0.943	0.536
	MHC2 signature 21978456	Eosinophils	0.078	0.067	0.243	0.991	0.055	0.068	0.413	0.723	0.809
		Lymphocytes	0.104	0.067	0.122	0.354	-0.073	0.070	0.303	0.532	0.069
		Neutrophils	0.127	0.066	0.056	0.158	-0.079	0.079	0.319	0.964	0.046
		Platelets	-0.002	0.060	0.967	0.967	0.012	0.065	0.850	0.988	0.867
		PLR	-0.066	0.063	0.293	0.391	0.153	0.069	0.028	0.299	0.019
		Basophils	0.007	0.006	0.237	0.719	-0.028	0.010	0.006	0.109	2.6E-03
		Eosinophils	-0.004	0.006	0.535	0.991	-0.010	0.009	0.266	0.683	0.561
T-cell/ Cytotoxic	CD8 T cells (ES)	Lymphocytes	0.007	0.006	0.267	0.440	-0.031	0.009	0.001	0.037	8.3E-04
		Neutrophils	0.007	0.006	0.223	0.428	-0.016	0.011	0.152	0.964	0.064
		Platelets	-0.005	0.005	0.374	0.655	-0.002	0.009	0.837	0.988	0.776
		PLR	-0.010	0.006	0.070	0.164	0.013	0.010	0.160	0.363	0.032
		Basophils	0.007	0.015	0.641	0.828	-0.006	0.023	0.793	0.854	0.637
		Eosinophils	0.001	0.016	0.972	0.995	-0.008	0.021	0.700	0.902	0.741
	Cytotoxic cells (ES)	Lymphocytes	0.022	0.016	0.156	0.354	-0.053	0.021	0.014	0.169	4.4E-03
		Neutrophils	0.031	0.015	0.043	0.151	0.004	0.025	0.856	0.970	0.357
		Platelets	-0.013	0.014	0.357	0.655	-0.006	0.020	0.760	0.967	0.787
		PLR	-0.019	0.015	0.186	0.307	0.030	0.021	0.168	0.363	0.059
	Eosinophils (ES)	Basophils	0.002	0.007	0.722	0.828	0.008	0.014	0.580	0.854	0.727
		Eosinophils	-0.004	0.007	0.528	0.991	-0.009	0.013	0.489	0.769	0.762

T-cell/ Cytotoxic		Lymphocytes	0.002	0.007	0.802	0.832	0.012	0.013	0.371	0.532	0.497	
		Neutrophils	0.003	0.007	0.676	0.794	0.010	0.015	0.512	0.964	0.673	
		Platelets	-0.007	0.006	0.229	0.655	0.000	0.012	0.973	0.988	0.569	
		PLR	-0.003	0.007	0.670	0.734	0.004	0.013	0.749	0.843	0.634	
		Macrophages (ES)	Basophils	0.019	0.021	0.379	0.719	0.013	0.040	0.739	0.854	0.908
			Eosinophils	-0.005	0.022	0.807	0.991	-0.013	0.036	0.709	0.902	0.850
			Lymphocytes	0.039	0.022	0.080	0.354	-0.030	0.037	0.419	0.533	0.111
			Neutrophils	0.051	0.022	0.019	0.090	-0.023	0.042	0.590	0.964	0.118
			Platelets	-0.004	0.020	0.846	0.911	-0.018	0.034	0.591	0.883	0.712
			PLR	-0.038	0.021	0.067	0.164	0.043	0.037	0.239	0.459	0.053
		Neutrophils (ES)	Basophils	0.021	0.016	0.192	0.719	0.021	0.032	0.501	0.854	0.981
			Eosinophils	0.020	0.017	0.233	0.991	-0.002	0.029	0.939	0.939	0.505
			Lymphocytes	0.038	0.016	0.023	0.328	-0.023	0.030	0.446	0.543	0.076
			Neutrophils	0.047	0.016	0.004	0.090	-0.005	0.033	0.875	0.970	0.156
			Platelets	-0.002	0.015	0.905	0.938	0.014	0.027	0.598	0.883	0.602
			PLR	-0.035	0.015	0.024	0.164	0.019	0.029	0.521	0.729	0.104
		NK cells (ES)	Basophils	0.004	0.006	0.462	0.719	-0.008	0.012	0.484	0.854	0.339
			Eosinophils	-0.001	0.006	0.840	0.991	-0.011	0.010	0.312	0.683	0.440
			Lymphocytes	0.0005	0.006	0.937	0.937	-0.017	0.011	0.109	0.235	0.149
			Neutrophils	0.002	0.006	0.713	0.794	-0.003	0.012	0.792	0.964	0.690
			Platelets	-0.006	0.005	0.282	0.655	-0.009	0.010	0.394	0.753	0.808
	PLR		-0.003	0.006	0.566	0.660	0.009	0.011	0.415	0.646	0.322	
	T helper cells (ES)	Basophils	0.008	0.008	0.347	0.719	-0.040	0.015	0.008	0.109	5.0E-03	
		Eosinophils	-0.004	0.009	0.630	0.991	-0.025	0.013	0.060	0.683	0.183	
		Lymphocytes	0.007	0.009	0.428	0.545	-0.012	0.014	0.413	0.533	0.266	
		Neutrophils	0.010	0.008	0.253	0.442	-0.024	0.016	0.136	0.964	0.063	
		Platelets	-0.002	0.008	0.761	0.896	-0.013	0.013	0.306	0.729	0.463	
		PLR	-0.003	0.008	0.682	0.734	0.014	0.014	0.309	0.541	0.276	
		Basophils	0.011	0.011	0.318	0.719	-0.045	0.023	0.056	0.519	0.030	

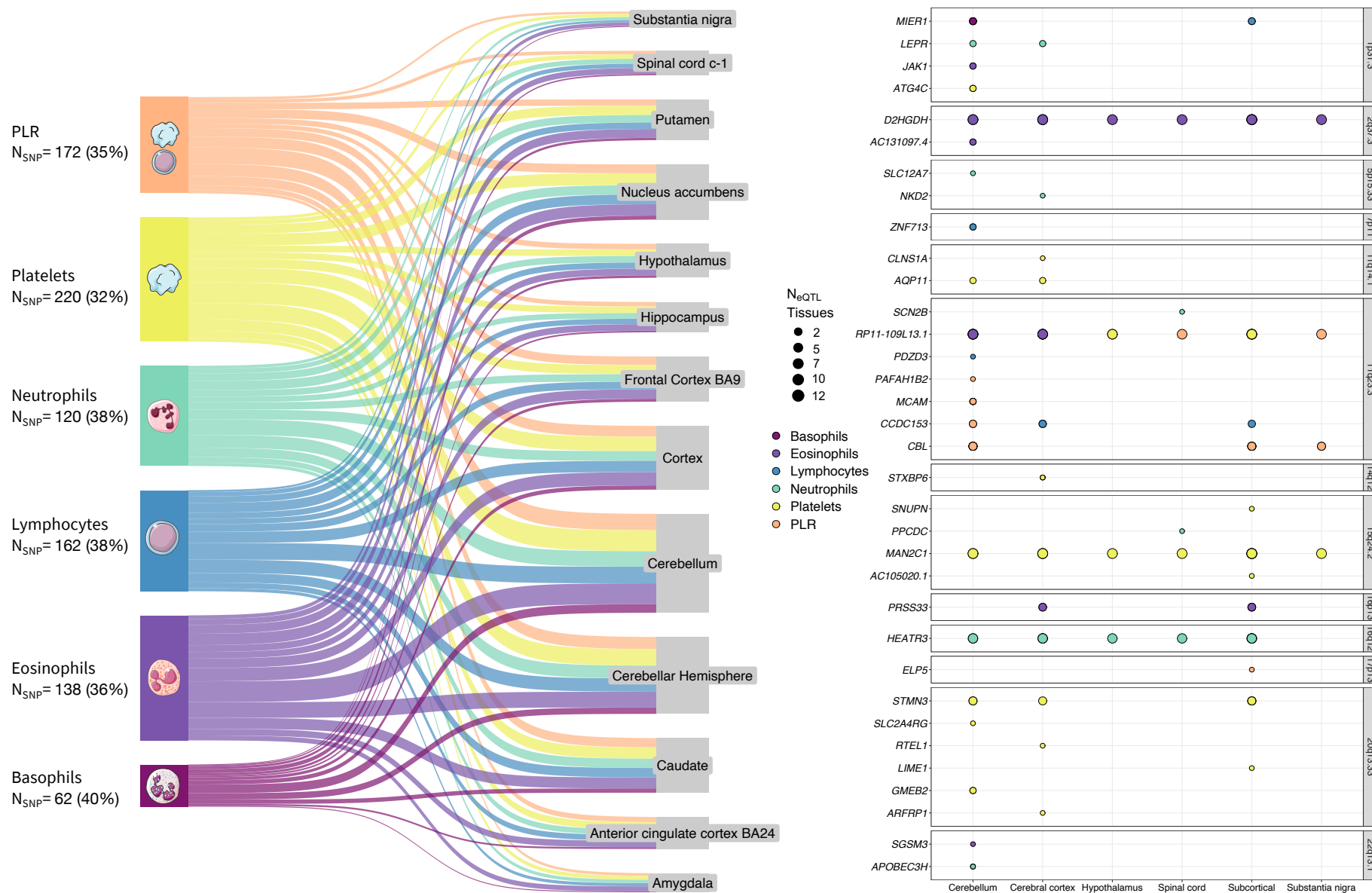
T-cell/ Cytotoxic	T-CM cells (ES)	Eosinophils	0.014	0.011	0.218	0.991	-0.031	0.021	0.141	0.683	0.059
		Lymphocytes	0.014	0.011	0.218	0.381	-0.027	0.022	0.236	0.471	0.106
		Neutrophils	0.015	0.011	0.191	0.428	0.002	0.025	0.948	0.983	0.640
		Platelets	0.007	0.010	0.462	0.722	-0.026	0.021	0.218	0.729	0.152
		PLR	-0.002	0.011	0.869	0.869	0.012	0.022	0.588	0.748	0.575
	T-EM cells (ES)	Basophils	0.008	0.007	0.250	0.719	-0.008	0.019	0.657	0.854	0.418
		Eosinophils	0.001	0.007	0.927	0.995	-0.028	0.017	0.101	0.683	0.120
		Lymphocytes	0.019	0.007	0.006	0.178	-0.017	0.018	0.331	0.532	0.055
		Neutrophils	0.018	0.007	0.009	0.090	0.011	0.020	0.584	0.964	0.735
		Platelets	-0.005	0.006	0.464	0.722	-0.026	0.016	0.110	0.729	0.217
	Tfh cells (ES)	PLR	-0.008	0.007	0.241	0.353	-0.003	0.017	0.843	0.843	0.819
		Basophils	-0.007	0.008	0.402	0.719	-0.020	0.019	0.314	0.854	0.547
		Eosinophils	-0.007	0.009	0.404	0.991	0.017	0.018	0.341	0.683	0.220
		Lymphocytes	-0.005	0.009	0.538	0.602	-0.016	0.018	0.380	0.532	0.594
		Neutrophils	0.003	0.009	0.693	0.794	0.007	0.021	0.723	0.964	0.859
	Th1 cells (ES)	Platelets	0.005	0.008	0.549	0.732	-0.018	0.017	0.297	0.729	0.230
		PLR	0.002	0.008	0.790	0.819	0.004	0.018	0.813	0.843	0.914
		Basophils	-0.003	0.010	0.769	0.828	-0.008	0.017	0.645	0.854	0.797
Eosinophils		-0.008	0.010	0.455	0.991	-0.013	0.015	0.387	0.723	0.758	
Lymphocytes		0.006	0.010	0.522	0.602	-0.025	0.015	0.104	0.235	0.086	
TGF- $\beta$	TGFB PCA 17349583	Neutrophils	0.004	0.010	0.723	0.794	-0.014	0.017	0.412	0.964	0.373
		Platelets	-0.008	0.009	0.353	0.655	-0.001	0.014	0.970	0.988	0.646
		PLR	-0.011	0.009	0.252	0.353	0.003	0.015	0.837	0.843	0.439
		Basophils	0.031	0.033	0.352	0.719	0.029	0.073	0.686	0.854	0.982
		Eosinophils	0.007	0.035	0.833	0.991	-0.035	0.066	0.596	0.879	0.571
		Lymphocytes	0.051	0.035	0.151	0.354	-0.021	0.068	0.755	0.846	0.348
		Neutrophils	0.076	0.035	0.028	0.113	-0.086	0.076	0.261	0.964	0.053
Platelets	-0.008	0.031	0.802	0.898	-0.001	0.063	0.988	0.988	0.922		
PLR	-0.040	0.033	0.227	0.353	0.078	0.067	0.246	0.459	0.114		



**Supplementary Figure S1: Overview of glioma study populations.** For each study analyses were restricted to participants of predominantly European ancestry. Genome-wide association analyses from each study were combined using fixed effects meta-analysis and the results summary statistics were used for all Mendelian randomization analyses. For each molecular subtype, the number of mortality events is reported in brackets. Chromosome 1p/19q co-deletion typically does not occur in IDH wildtype tumors, therefore information on this molecular marker is not always present or assessed for this subtype.



**Supplementary Figure S2: Effects on gene expression in brain tissues.** Prevalence of expression quantitative trait loci (eQTL) in GTEx v8 brain tissues among genetic instruments for blood cell traits and eGenes in regions linked to glioma susceptibility.



**Supplementary Figure S3: Regional association and z-score plots for colocated signals.** In each plot the LD is calculated with respect to the shared fine-mapped variant, indicated by the black diamond. For chromosome 20q13.33, the lead telomere length variant (rs13038527) is also shown, although the signal for telomere length did not colocalize.

