

**Diagnosis of Bipolar Disorder and Schizophrenia with blood-based biomarkers and neurocognition:
A multi-domain approach using machine learning**

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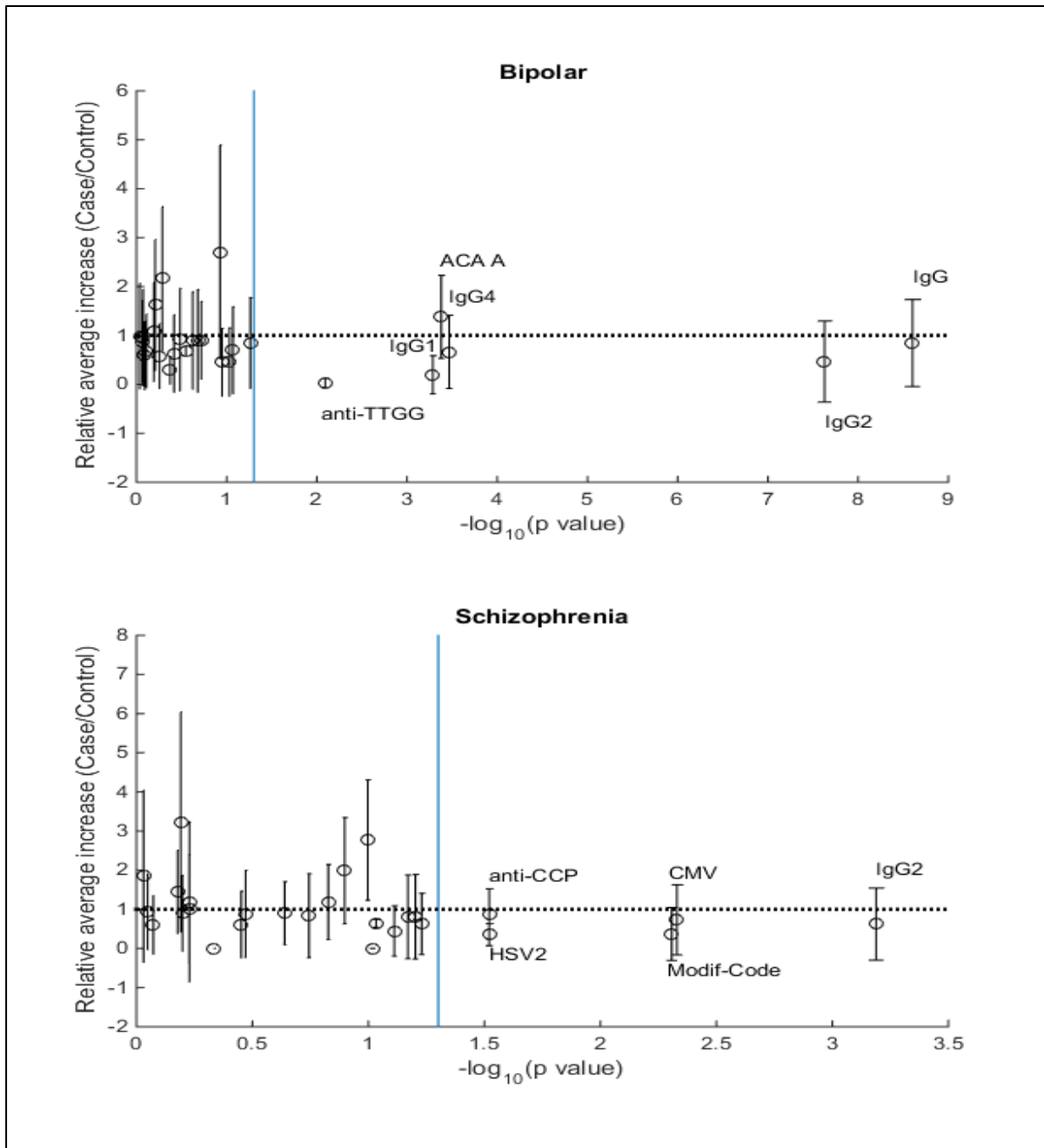


Figure S1. Relative change of blood-based markers in bipolar disorder or schizophrenia against their p-values. Plot of relative changes for measured analytes in bipolar disorder and schizophrenia. The Y axis reports the relative increase (or decrease) as the ratio (and the confidence against their p-values interval) based on analysis of log-transformed data from cases/controls. Reference vertical line corresponds to p-value threshold at a 5% significance level.

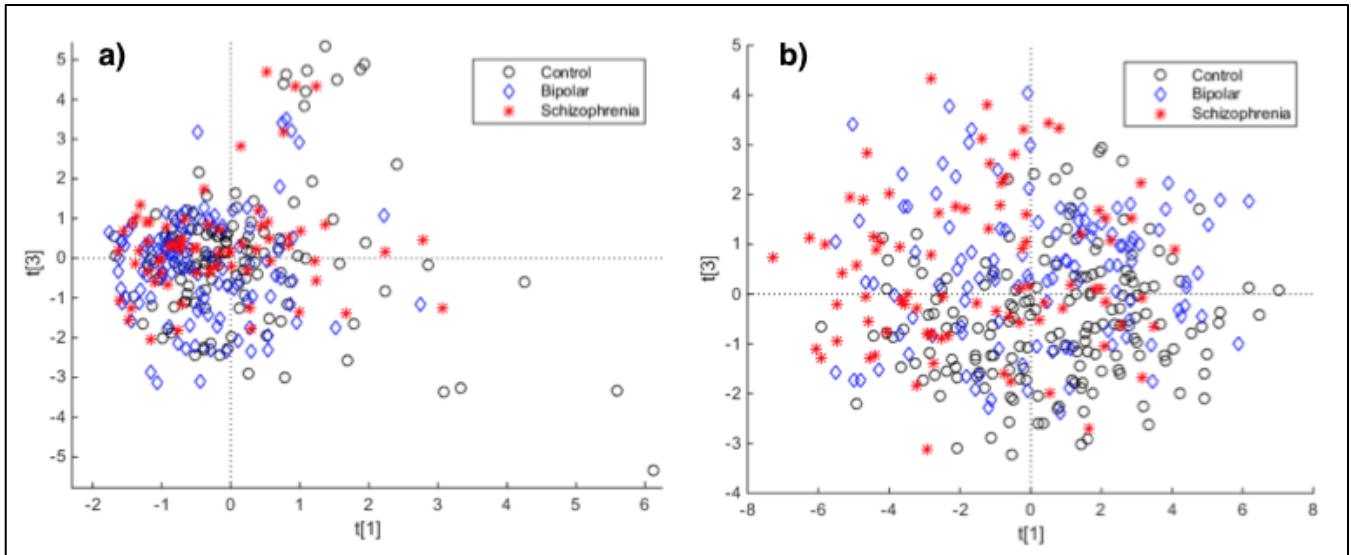


Figure S2. PCA plot showing distribution of samples from control, schizophrenia and bipolar disorder. **a)** PCA plot of blood-based markers, where 1st and 3rd components of the model are shown. Components are chosen to show better discriminatory performance. **b)** PCA plot of cognitive markers, where 1st and 3rd components of the model are shown. Components are chosen to show better discriminatory performance. $t[1]$, first component; $t[3]$, third component.

Table S1. Peripheral blood-based and cognitive biomarkers analysed and their Area Under the Curve (AUC) for discriminating bipolar disorder from controls, schizophrenia from controls, and bipolar disorder from schizophrenia.

Biomarkers	BD N=98	SZ N=58	CT N=123	p	AUC BD vs. CT	AUC SZ vs. CT	AUC BP vs. SZ
Blood-based Biomarkers							
Continuous Biomarkers							
C-Reactive protein (CRP)	4.56(26.66)	4.41(29.94)	4.96(27.73)	0.845	0.67	0.50	0.65
Immunoglobulin G (IgG)	10.13(2.05)	12.05(2.44)	12.16(2.49)	<0.001	0.74	0.53	0.67
Immunoglobulin G Subclass 1 (IgG1)	5.18(2.38)	6.79(2.31)	6.36(2.74)	<0.001	0.70	0.54	0.72
Immunoglobulin G Subclass 2 (IgG2)	3.65(2.1.48)	3.70(2.28)	4.21(2.41)	0.007	0.62	0.60	0.53
Immunoglobulin G Subclass 3 (IgG3)	686.39(275.38)	701.47(219.99)	743.79(265.78)	0.477	0.55	0.52	0.53
Immunoglobulin G Subclass 4 (IgG4)	339.54(220.72)	441.77(230.09)	383.09(250.03)	0.185	0.53	0.57	0.61
Immunoglobulin M (IgM)	1.03(2.44)	0.97(2.43)	1.53(2.45)	0.338	0.54	0.57	0.53
Categorical Biomarkers							
Anti-nuclear factor (ANF)	45.92(45/98)	29.31(17/58)	42.28(52/123)	0.107	0.50	0.57	0.58
Antibodies anti-DNA (anti-DNA)	8.16(2/98)	3.45(2/58)	3.25(4/123)	0.172	0.53	0.51	0.52
Antibodies anti-DNA (anti-DNA)	2.04(2/98)	1.72(1/58)	3.25(4/123)	0.821	0.51	0.50	0.51
Soluble extractable nuclear antigens antibodies (anti-ENA)	1.02(1/98)	1.72(1/58)	1.63(2/123)	0.921	0.50	0.51	0.50
Anti-neutrophil cytoplasmic antibodies (ANCA)	9.18(9/98)	5.17(3/58)	6.50(8/123)	0.744	0.51	0.50	0.51
Anti-cardiolipin antibodies (ACA)	3.06(3/98)	10.34(6/58)	17.89(22/123)	0.001	0.57	0.54	0.54
Anti-cardiolipin antibodies (AMA)	3.06(3/98)	3.45(2/58)	8.13(7/123)	0.193	0.53	0.52	0.50
Beta-2 glycoprotein 1 antibodies (anti-beta2gp1G)	1.02(1/98)	0.00(0/58)	0.00(0/123)	0.350	0.51	0.50	0.51
Beta-2 glycoprotein 1 antibodies (anti-beta2gp1M)	3.06(3/98)	0.00(0/58)	3.25(4/123)	0.191	0.50	0.52	0.52
Rheumatoid factor (RF)	19.39(19/98)	25.86(15/58)	30.08(37/123)	0.176	0.55	0.51	0.54
Anti-citrullinated protein antibodies (anti-CCP)	7.14(7/98)	18.97(11/58)	6.50(8/123)	0.071	0.51	0.55	0.56
Anti-myelin antibodies (anti-Myelin)	0.00(0/98)	1.72(1/58)	0.00(0/123)	0.344	0.52	0.50	0.53
Anti-myelin associated glycoprotein antibodies (anti-MAG)	1.02(1/98)	0.00(0/58)	1.63(2/123)	0.385	0.53	0.51	0.51
Anti-tissue transglutaminase (anti-TTG)	1.02(1/98)	3.45(2/58)	1.63(2/123)	0.081	0.53	0.51	0.52
Antibodies anti-Gliadin (anti-Gliadin)	3.06(3/98)	10.34(6/58)	3.25(4/123)	0.034	0.51	0.54	0.55
Herpes simplex virus 1 (HSV1)	64.29(63/98)	56.90(33/58)	68.29(84/123)	0.331	0.52	0.56	0.54
Herpes simplex virus 2 (HSV2)	23.47(23/98)	8.62(5/58)	26.83(33/123)	0.010	0.52	0.59	0.57
Cytomegalovirus (CMV)	58.16(57/98)	55.17(32/58)	67.48(83/123)	0.190	0.55	0.56	0.51
Toxoplasma Gondii IgG	79.59(78/98)	63.79(37/58)	56.10(69/123)	0.001	0.62	0.54	0.58