

S4 Table. Bidirectional MR analysis for the identified proteins in the main analysis: from breast cancer subtype to proteins.

protein	Luminal A-like						Luminal B-like						IVW OR (95% CI)	IVW P	IVW FDR-Adjusted P	Median (95% CI)	Median P	Median FDR-Adjusted P	Egger P	Egger FDR-Adjusted P	MR PRESSO (95% CI)
	IVW OR (95% CI)	IVW P	IVW FDR-Adjusted P	Median (95% CI)	Median P	Median FDR-Adjusted P	Egger P	Egger FDR-Adjusted P	MR PRESSO (95% CI)	MR PRESSO P	MR PRESSO FDR-Adjusted P										
ABO	1.04 (0.98 - 1.09)	0.063	0.507	1.07 (0.99 - 1.15)	0.109	0.853	1.02 (0.92 - 1.13)	0.718	0.562	1.04 (1.00 - 1.09)	0.064	0.487	1.06 (0.97 - 1.15)	0.158	0.533	1.09 (0.97 - 1.23)	0.143	0.587	1.00 (0.77 - 1.29)	0.592	
ACPL2	1.03 (0.98 - 1.07)	0.273	0.781	0.99 (0.92 - 1.07)	0.863	0.983	1.01 (0.92 - 1.12)	0.811	0.966	1.04 (0.98 - 1.07)	0.272	0.769	1.04 (0.94 - 1.14)	0.489	0.996	0.94 (0.84 - 1.06)	0.341	0.987	0.78 (0.58 - 1.04)	0.672	
ADGRF1	1.02 (0.97 - 1.06)	0.474	0.893	0.99 (0.92 - 1.08)	0.885	0.988	1.01 (0.91 - 1.11)	0.861	0.975	1.02 (0.97 - 1.06)	0.469	0.879	1.02 (0.93 - 1.12)	0.685	0.996	1.02 (0.90 - 1.15)	0.804	0.987	0.73 (0.56 - 0.95)	0.519	
ADHB1	1.03 (0.97 - 1.06)	0.474	0.893	1.00 (0.92 - 1.07)	0.773	0.849	1.00 (0.88 - 1.20)	1.218	0.732	1.03 (0.97 - 1.08)	0.468	0.879	1.03 (0.93 - 1.14)	0.656	0.996	1.03 (0.88 - 1.24)	0.839	0.987	1.20 (0.53 - 1.33)	0.666	
AGPC17	1.01 (0.97 - 1.02)	0.27	0.779	0.98 (0.98 - 1.07)	0.655	0.968	0.98 (0.98 - 1.03)	0.649	0.944	1.00 (0.92 - 1.03)	0.271	0.769	1.01 (0.93 - 1.13)	0.656	0.996	0.98 (0.87 - 1.10)	0.813	0.987	1.00 (0.85 - 1.26)	0.555	
ASP	1.00 (0.96 - 0.95)	0.897	0.983	1.02 (0.94 - 1.11)	0.671	0.968	1.04 (0.94 - 1.15)	0.475	0.892	0.981	1.00 (0.96 - 1.05)	0.897	0.981	1.00 (0.91 - 1.11)	0.936	0.996	1.03 (0.91 - 1.17)	0.64	0.987	1.56 (1.21 - 2.02)	0.001
C1GAT1C1	1.04 (1.00 - 1.09)	0.066	0.511	1.04 (0.97 - 1.13)	0.272	0.885	0.96 (0.87 - 1.06)	0.451	0.889	1.04 (1.00 - 1.09)	0.067	0.495	0.99 (0.92 - 1.08)	0.868	0.996	0.98 (0.87 - 1.10)	0.728	0.987	1.19 (0.92 - 1.54)	0.188	
C1QTNFS	1.00 (0.95 - 1.05)	0.935	0.989	1.01 (0.93 - 1.10)	0.745	0.971	1.05 (0.98 - 1.16)	0.413	0.874	1.00 (0.95 - 1.05)	0.935	0.99	0.99 (0.91 - 1.08)	0.79	0.996	1.00 (0.88 - 1.12)	0.946	0.987	1.18 (0.93 - 1.54)	0.214	
C4ORF1	1.01 (0.97 - 1.06)	0.073	0.59	1.02 (0.94 - 1.10)	0.624	0.968	1.07 (0.97 - 1.13)	0.333	0.869	1.00 (0.97 - 1.06)	0.531	0.889	1.00 (0.94 - 1.11)	0.634	0.996	1.00 (0.92 - 1.09)	0.692	0.987	1.02 (0.85 - 1.26)	0.883	
C4MC10	0.99 (0.95 - 1.04)	0.518	0.904	1.02 (0.94 - 1.10)	0.889	0.937	1.09 (0.97 - 1.21)	0.704	0.646	1.02 (0.97 - 1.06)	0.511	0.889	1.03 (0.94 - 1.11)	0.624	0.996	1.03 (0.92 - 1.15)	0.65	0.987	1.04 (0.81 - 1.35)	0.752	
CAST	1.01 (0.96 - 1.06)	0.683	0.944	0.99 (0.92 - 1.07)	0.863	0.983	0.99 (0.90 - 1.09)	0.842	0.971	1.01 (0.97 - 1.05)	0.668	0.929	0.97 (0.98 - 1.06)	0.453	0.996	0.99 (0.88 - 1.12)	0.92	0.987	1.02 (0.76 - 1.37)	0.905	
CD200	1.02 (0.97 - 1.07)	0.484	0.893	0.99 (0.91 - 1.07)	0.818	0.979	0.95 (0.85 - 1.04)	0.206	0.787	1.02 (0.97 - 1.07)	0.485	0.88	0.96 (0.85 - 1.07)	0.424	0.996	0.97 (0.85 - 1.11)	0.648	0.987	0.87 (0.61 - 1.25)	0.455	
CD300C	0.98 (0.94 - 1.03)	0.494	0.887	0.99 (0.91 - 1.07)	0.753	0.972	0.97 (0.88 - 1.07)	0.59	0.932	0.98 (0.94 - 1.03)	0.475	0.88	0.98 (0.85 - 1.07)	0.52	0.996	0.95 (0.83 - 1.08)	0.451	0.987	0.74 (0.55 - 0.98)	0.397	
CD40L	1.01 (0.97 - 1.06)	0.073	0.59	0.97 (0.97 - 1.07)	0.47	0.94	1.00 (0.97 - 1.08)	0.494	0.989	0.98 (0.97 - 1.06)	0.395	0.99	0.98 (0.97 - 1.06)	0.539	0.996	0.98 (0.97 - 1.08)	0.531	0.987	0.98 (0.97 - 1.08)	0.511	
CLC12A	0.97 (0.93 - 1.01)	0.172	0.694	0.98 (0.91 - 1.06)	0.577	0.964	0.95 (0.86 - 1.05)	0.311	0.944	0.97 (0.92 - 1.03)	0.174	0.677	0.94 (0.85 - 1.05)	0.097	0.996	0.86 (0.76 - 0.98)	0.232	0.987	0.88 (0.62 - 1.24)	0.464	
CLK2	0.98 (0.94 - 1.03)	0.49	0.895	0.98 (0.90 - 1.06)	0.555	0.956	1.01 (0.92 - 1.12)	0.78	0.966	0.98 (0.94 - 1.03)	0.474	0.88	0.99 (0.91 - 1.08)	0.847	0.996	0.97 (0.86 - 1.09)	0.567	0.987	0.86 (0.67 - 1.12)	0.779	
CPNE1	1.00 (0.95 - 1.04)	0.904	0.983	1.01 (0.94 - 1.10)	0.705	0.97	1.04 (0.95 - 1.15)	0.44	0.885	1.00 (0.95 - 1.04)	0.067	0.495	0.99 (0.92 - 1.08)	0.868	0.996	0.98 (0.87 - 1.10)	0.728	0.987	0.19 (0.92 - 1.54)	0.183	
CST7	0.97 (0.93 - 1.02)	0.281	0.786	0.94 (0.86 - 1.01)	0.103	0.853	0.96 (0.86 - 1.07)	0.496	0.897	0.97 (0.93 - 1.02)	0.282	0.778	0.92 (0.82 - 1.05)	0.053	0.993	0.92 (0.82 - 1.03)	0.154	0.987	0.98 (0.91 - 1.08)	0.79	
DTS	1.01 (0.97 - 1.06)	0.073	0.59	0.98 (0.97 - 1.08)	0.806	0.989	0.99 (0.98 - 1.08)	0.397	0.937	1.00 (0.97 - 1.06)	0.079	0.596	0.98 (0.97 - 1.08)	0.868	0.996	1.00 (0.92 - 1.09)	0.632	0.987	1.00 (0.92 - 1.16)	0.594	
DOCK9	0.99 (0.95 - 1.04)	0.663	0.932	0.99 (0.91 - 1.07)	0.715	0.97	0.93 (0.84 - 1.03)	0.148	0.746	0.95 (0.95 - 1.04)	0.651	0.925	0.95 (0.88 - 1.03)	0.233	0.993	0.10 (0.89 - 1.12)	0.999	0.987	1.21 (0.84 - 1.56)	0.145	
DPTP	0.97 (0.92 - 1.01)	0.126	0.627	0.94 (0.97 - 1.10)	0.114	0.86	0.94 (0.85 - 1.04)	0.228	0.803	0.97 (0.92 - 1.01)	0.113	0.589	0.94 (0.86 - 1.01)	0.162	0.993	0.91 (0.81 - 1.03)	0.132	0.987	0.70 (0.54 - 0.91)	0.007	
DNMT3A	1.01 (0.97 - 1.06)	0.601	0.915	1.00 (0.92 - 1.08)	0.825	0.992	1.01 (0.92 - 1.12)	0.803	0.966	1.01 (0.96 - 1.05)	0.583	0.928	0.96 (0.94 - 1.05)	0.658	0.996	0.95 (0.86 - 1.08)	0.659	0.987	1.10 (0.80 - 1.53)	0.545	
DRAP1	1.00 (0.96 - 1.05)	0.871	0.981	1.00 (0.92 - 1.08)	0.925	0.992	1.01 (0.92 - 1.12)	0.803	0.966	1.00 (0.96 - 1.05)	0.686	0.928	1.00 (0.94 - 1.05)	0.622	0.996	0.97 (0.86 - 1.08)	0.222	0.987	0.94 (0.85 - 1.04)	0.881	
EGFR	1.01 (0.96 - 1.05)	0.871	0.981	1.00 (0.92 - 1.08)	0.771	0.992	1.01 (0.92 - 1.12)	0.803	0.966	1.00 (0.96 - 1.05)	0.686	0.928	1.00 (0.94 - 1.05)	0.622	0.996	0.97 (0.86 - 1.08)	0.222	0.987	0.94 (0.85 - 1.04)	0.881	
FAM43	0.98 (0.94 - 1.03)	0.488	0.895	0.99 (0.92 - 1.07)	0.86	0.983	1.01 (0.91 - 1.11)	0.888	0.975	0.98 (0.94 - 1.03)	0.475	0.874	0.99 (0.92 - 1.08)	0.874	0.996	1.02 (0.91 - 1.14)	0.775	0.987	0.89 (0.71 - 1.24)	0.489	
FAASL	0.96 (0.92 - 1.01)	0.1	0.592	0.98 (0.91 - 1.06)	0.603	0.968	1.00 (0.91 - 1.11)	0.989	0.997	0.98 (0.92 - 1.01)	0.085	0.532	0.96 (0.88 - 1.04)	0.332	0.996	0.97 (0.87 - 1.09)	0.599	0.987	0.93 (0.72 - 1.21)	0.594	
FGCR2A	0.92 (0.88 - 0.97)	0.003	0.59	0.92 (0.85 - 1.00)	0.043	0.772	0.89 (0.88 - 0.98)	0.024	0.542	0.92 (0.88 - 0.97)	0.001	0.082	0.92 (0.85 - 1.00)	0.416	0.982	1.04 (0.95 - 1.13)	0.536	0.987	0.86 (0.67 - 1.12)	0.266	
FGF11	0.99 (0.94 - 1.03)	0.58	0.913	0.95 (0.89 - 1.03)	0.29	0.871	0.91 (0.93 - 1.01)	0.077	0.646	0.99 (0.94 - 1.03)	0.054	0.903	0.98 (0.91 - 1.07)	0.643	0.996	0.96 (0.85 - 1.09)	0.154	0.987	0.90 (0.70 - 1.16)	0.485	
FGF12	1.00 (0.95 - 1.04)	0.58	0.913	1.02 (0.92 - 1.08)	0.559	0.994	1.02 (0.93 - 1.13)	0.558	0.989	1.00 (0.95 - 1.04)	0.551	0.964	1.00 (0.94 - 1.13)	0.551	0.996	0.96 (0.85 - 1.09)	0.552	0.987	1.10 (0.85 - 1.40)	0.485	
ICAM1	1.01 (0.97 - 1.06)	0.611	0.917	1.04 (0.96 - 1.12)	0.356	0.903	1.07 (0.96 - 1.18)	0.233	0.803	1.01 (0.97 - 1.06)	0.161	0.516	1.01 (0.93 - 1.10)	0.612	0.996	1.06 (0.93 - 1.17)	0.194	0.987	1.11 (0.88 - 1.25)	0.345	
ICAM2	1.01 (0.97 - 1.06)	0.616	0.917	1.04 (0.96 - 1.13)	0.353	0.903	1.05 (0.95 - 1.16)	0.313	0.841	1.01 (0.97 - 1.06)	0.599	0.966	1.04 (0.95 - 1.15)	0.373	0.996	1.11 (0.88 - 1.25)	0.253	0.987	1.22 (0.84 - 1.58)	0.128	
ICAM3	0.99 (0.95 - 1.04)	0.813	0.982	0.98 (0.92 - 1.07)	0.829	0.979	1.02 (0.92 - 1.13)	0.732	0.962	0.98 (0.93 - 1.04)	0.488	0.854	1.01 (0.93 - 1.11)	0.377	0.996	0.97 (0.86 - 1.10)	0.637	0.987	1.20 (0.89 - 1.63)	0.111	
ICAM4	1.01 (0.97 - 1.06)	0.813	0.982	1.00 (0.92 - 1.08)	0.671	0.971	1.04 (0.97 - 1.18)	0.484	0.909	1.02 (0.97 - 1.06)	0.583	0.928	1.01 (0.93 - 1.11)	0.622	0.996	0.98 (0.87 - 1.11)	0.587	0.987	1.08 (0.76 - 1.26)	0.226	
IL1A	1.03 (0.99 - 1.08)	0.139	0.653	1.03 (0.95 - 1.12)	0.512	0.951	1.01 (0.91 - 1.11)	0.914	0.983	1.03 (0.99 - 1.08)	0.624	0.903	1.01 (0.93 - 1.12)	0.603	0.996	0.99 (0.88 - 1.11)	0.583	0.987	1.10 (0.85 - 1.42)	0.468	
IL1R1L	1.01 (0.96 - 1.10)	0.079	0.59	1.03 (0.96 - 1.12)	0.418	0.926	1.09 (0.99 - 1.21)	0.091	0.683	1.01 (0.96 - 1.05)	0.79	0.963	1.01 (0.96 - 1.11)	0.616	0.996	1.34 (1.00 - 1.79)	0.622	0.987	1.03 (0.93 - 1.13)	0.611	
IL2R	1.00 (0.96 - 1.05)	0.989	0.997	1.03 (0.98 - 1.10)	0.958	0.992	0.98 (0.98 - 1.08)	0.688	0.952	1.00 (0.96 - 1.04)	0.044	0.988	1.00 (0.93 - 1.10)	0.826	0.996	1.10 (0.85 - 1.20)	0.545	0.987	1.00 (0.93 - 1.18)	0.485	
IL3RA	0.97 (0.95 - 1.04)	0.133	0.634	0.93 (0.92 - 1.08)	0.365	0.903	1.03 (0.91 - 1.11)	0.161	0.575	1.02 (0.93 - 1.02)	0.022	0.602	0.98 (0.93 - 1.07)	0.702</							

Luminal B HER2 negative (IHC)												HER2 enriched (IHC)											
MR PRESSO P	MR PRESSO FDR-Adjusted P	IVW OR (95% CI)	IVW P	IVW FDR-Adjusted P	Median OR (95% CI)	Median P	Median FDR-Adjusted P	Egger P	Egger P	MR PRESSO OR (95% CI)	MR PRESSO P	MR PRESSO FDR-Adjusted P	IVW OR (95% CI)	IVW P	IVW FDR-Adjusted P	Median OR (95% CI)	Median P	Median FDR-Adjusted P	Egger P	Egger P	MR PRESSO P	MR PRESSO FDR-Adjusted P	
0.186	0.533	1.07 (0.96 - 1.20)	0.193	0.997	1.06 (0.92 - 1.22)	0.418	0.97	1.05 (0.97 - 1.20)	0.744	0.986	1.07 (0.96 - 1.20)	0.207	0.977	1.10 (0.97 - 1.24)	0.113	1.00	1.08 (0.92 - 1.27)	0.327	1.00	1.07 (0.95 - 3.22)	0.07	0.678	
0.497	0.969	1.00 (0.91 - 1.11)	0.959	0.997	0.92 (0.80 - 1.06)	0.24	0.959	0.95 (0.71 - 1.21)	0.605	0.983	1.00 (0.91 - 1.11)	0.959	0.996	1.01 (0.82 - 1.23)	0.953	1.00	0.95 (0.80 - 1.13)	0.533	1.00	2.05 (0.91 - 4.64)	0.083	0.69	
0.689	0.992	1.03 (0.93 - 1.13)	0.599	0.997	1.01 (0.88 - 1.16)	0.892	0.999	0.82 (0.64 - 1.04)	0.096	0.944	1.03 (0.93 - 1.13)	0.604	0.977	1.02 (0.91 - 1.16)	0.692	1.00	1.01 (0.86 - 1.18)	0.941	1.00	0.78 (0.43 - 1.44)	0.43	0.931	
0.31	0.99	1.00 (0.86 - 1.14)	0.631	0.997	1.00 (0.93 - 1.16)	0.893	0.997	1.00 (0.93 - 1.16)	0.895	0.986	1.11 (0.91 - 1.41)	0.079	0.963	1.00 (0.96 - 1.14)	0.668	0.977	1.00 (0.91 - 1.30)	0.232	1.00	1.00 (0.85 - 1.25)	0.00	0.835	
0.714	0.939	1.04 (0.96 - 1.14)	0.451	0.997	1.01 (0.88 - 1.16)	0.899	0.999	1.05 (0.82 - 1.18)	0.666	0.986	1.04 (0.91 - 1.14)	0.468	0.977	1.05 (0.91 - 1.30)	0.409	1.00	1.04 (0.91 - 1.21)	0.626	1.00	1.00 (0.86 - 1.25)	0.00	0.798	
0.937	0.983	1.01 (0.92 - 1.11)	0.826	0.997	1.01 (0.89 - 1.16)	0.836	0.998	1.25 (0.91 - 1.63)	0.038	0.881	1.01 (0.92 - 1.11)	0.828	0.988	1.03 (0.93 - 1.16)	0.66	1.00	1.49 (0.81 - 1.17)	0.984	1.00	1.49 (0.81 - 2.74)	0.195	0.816	
0.855	0.992	0.98 (0.90 - 1.08)	0.711	0.997	0.98 (0.86 - 1.11)	0.718	0.999	1.02 (0.80 - 1.29)	0.899	0.993	0.98 (0.91 - 1.07)	0.686	0.987	1.00 (0.89 - 1.13)	0.963	1.00	1.00 (0.87 - 1.16)	0.95	1.00	1.03 (0.56 - 1.88)	0.932	0.988	
0.792	0.992	0.97 (0.89 - 1.06)	0.514	0.997	1.02 (0.89 - 1.16)	0.821	0.997	0.97 (0.76 - 1.24)	0.836	0.986	0.97 (0.89 - 1.06)	0.521	0.977	1.06 (0.94 - 1.19)	0.367	1.00	1.07 (0.93 - 1.25)	0.347	1.00	1.06 (0.58 - 1.95)	0.84	0.978	
0.932	0.982	0.96 (0.93 - 1.13)	0.443	0.997	0.98 (0.91 - 1.18)	0.603	0.975	1.17 (0.97 - 1.49)	0.249	0.949	0.98 (0.94 - 1.11)	0.503	0.977	1.12 (0.94 - 1.29)	0.059	1.00	1.00 (0.87 - 1.25)	0.00	1.00	1.00 (0.87 - 1.25)	0.00	0.986	
0.582	0.887	1.03 (0.93 - 1.13)	0.628	0.997	1.04 (0.91 - 1.18)	0.603	0.976	1.06 (0.84 - 1.44)	0.629	0.986	1.03 (0.94 - 1.11)	0.612	0.977	1.08 (0.86 - 1.26)	0.344	1.00	1.08 (0.86 - 1.26)	0.344	1.00	1.02 (0.88 - 2.97)	0.119	0.726	
0.461	0.969	0.97 (0.89 - 1.06)	0.529	0.997	0.97 (0.87 - 1.11)	0.659	0.99	0.53 (0.73 - 1.19)	0.572	0.979	0.97 (0.89 - 1.06)	0.532	0.977	0.97 (0.85 - 1.10)	0.621	1.00	0.93 (0.79 - 1.09)	0.359	1.00	1.10 (0.54 - 2.23)	0.802	0.978	
0.433	0.966	0.94 (0.84 - 1.05)	0.274	0.997	0.98 (0.86 - 1.13)	0.817	0.997	0.98 (0.73 - 1.32)	0.895	0.993	0.94 (0.84 - 1.05)	0.285	0.977	0.86 (0.76 - 0.95)	0.012	1.00	0.105 (0.54 - 2.04)	0.89	0.984	0.88 (0.78 - 0.99)	0.033	1.00	
0.527	0.973	0.96 (0.86 - 1.07)	0.476	0.997	0.91 (0.78 - 1.05)	0.181	0.959	0.83 (0.63 - 1.10)	0.197	0.945	0.95 (0.86 - 1.07)	0.484	0.977	0.88 (0.78 - 0.99)	0.023	1.00	0.83 (0.45 - 1.52)	0.547	1.00	0.85 (0.45 - 1.52)	0.547	0.952	
0.394	0.999	1.00 (0.91 - 1.11)	0.949	0.997	1.00 (0.89 - 1.16)	0.979	0.999	0.99 (0.88 - 1.28)	0.986	0.986	1.00 (0.91 - 1.16)	0.968	0.977	1.00 (0.89 - 1.06)	0.909	1.00	0.99 (0.87 - 1.06)	0.944	1.00	0.99 (0.87 - 1.06)	0.944	0.954	
0.219	0.95	0.94 (0.85 - 1.05)	0.382	0.997	0.96 (0.85 - 1.05)	0.288	0.959	0.73 (0.59 - 1.02)	0.073	0.944	0.84 (0.85 - 1.05)	0.294	0.977	0.99 (0.85 - 1.12)	0.294	1.00	0.81 (0.25 - 3.57)	0.719	1.00	0.81 (0.25 - 3.57)	0.719	0.969	
0.825	0.992	0.99 (0.91 - 1.09)	0.874	0.997	0.98 (0.86 - 1.13)	0.812	0.997	0.98 (0.78 - 1.25)	0.931	0.998	0.99 (0.91 - 1.08)	0.863	0.99	0.99 (0.87 - 1.11)	0.837	1.00	0.98 (0.84 - 1.14)	0.767	1.00	1.16 (0.63 - 2.12)	0.64	0.967	
0.425	0.966	1.07 (0.97 - 1.17)	0.168	0.997	1.11 (0.97 - 1.26)	0.117	0.959	0.95 (0.75 - 1.20)	0.663	0.986	1.07 (0.98 - 1.15)	0.135	0.977	1.06 (0.88 - 1.11)	0.59	1.00	1.02 (0.87 - 1.19)	0.842	1.00	1.02 (0.87 - 1.19)	0.842	0.955	
0.026	0.915	0.93 (0.85 - 1.02)	0.122	0.997	0.92 (0.80 - 1.04)	0.191	0.959	0.86 (0.68 - 1.09)	0.224	0.945	0.93 (0.86 - 1.00)	0.08	0.977	0.97 (0.87 - 1.09)	0.568	1.00	0.95 (0.82 - 1.09)	0.448	1.00	0.98 (0.48 - 1.62)	0.69	0.967	
0.323	0.933	0.93 (0.84 - 1.04)	0.914	0.997	0.93 (0.82 - 1.04)	0.907	0.997	0.93 (0.82 - 1.04)	0.907	0.999	0.93 (0.82 - 1.04)	0.905	0.977	0.93 (0.82 - 1.04)	0.905	1.00	0.93 (0.82 - 1.04)	0.905	1.00	0.93 (0.82 - 1.04)	0.905	0.956	
0.221	0.933	0.96 (0.88 - 1.05)	0.4	0.997	0.98 (0.86 - 1.12)	0.81	0.997	1.07 (0.84 - 1.56)	0.577	0.979	0.98 (0.88 - 1.05)	0.377	0.977	1.08 (0.86 - 1.12)	0.203	1.00	1.08 (0.86 - 1.26)	0.344	1.00	1.02 (0.88 - 2.41)	0.38	0.911	
0.176	0.933	0.92 (0.92 - 1.04)	0.07	0.997	0.93 (0.81 - 1.06)	0.273	0.959	0.82 (0.65 - 1.04)	0.098	0.944	0.92 (0.85 - 0.99)	0.049	0.977	1.06 (0.94 - 1.20)	0.356	1.00	1.13 (0.93 - 1.14)	0.133	1.00	1.07 (0.38 - 1.28)	0.24	0.933	
0.867	0.992	0.99 (0.90 - 1.08)	0.772	0.997	0.98 (0.89 - 1.16)	0.808	0.997	1.01 (0.79 - 1.29)	0.943	0.998	0.99 (0.90 - 1.08)	0.775	0.977	0.94 (0.83 - 1.12)	0.313	1.00	0.59 (0.32 - 1.08)	0.086	1.00	0.65 (0.32 - 1.08)	0.086	0.69	
0.233	0.933	0.97 (0.88 - 1.06)	0.464	0.997	0.98 (0.88 - 1.12)	0.771	0.994	0.17 (0.04 - 1.16)	0.071	0.983	0.97 (0.88 - 1.06)	0.472	0.977	0.99 (0.87 - 1.12)	0.815	1.00	1.03 (0.88 - 1.21)	0.704	1.00	1.08 (0.75 - 2.54)	0.295	0.871	
0.119	0.99	1.00 (0.91 - 1.11)	0.943	0.997	1.00 (0.91 - 1.11)	0.613	0.997	1.00 (0.91 - 1.11)	0.613	0.999	1.00 (0.91 - 1.11)	0.604	0.977	1.00 (0.91 - 1.11)	0.604	1.00	1.00 (0.91 - 1.11)	0.604	1.00	1.00 (0.91 - 1.11)	0.604	0.951	
0.795	0.992	1.00 (0.92 - 1.10)	0.943	0.997	1.00 (0.91 - 1.10)	0.613	0.993	1.01 (0.92 - 1.12)	0.646	0.979	1.00 (0.91 - 1.10)	0.918	0.993	1.14 (0.91 - 1.29)	0.03	1.00	1.11 (0.95 - 1.30)	0.272	1.00	1.09 (0.91 - 1.15)	0.824	0.978	
0.32	0.95	0.98 (0.90 - 1.00)	0.716	0.997	1.00 (0.91 - 1.17)	0.651	0.989	1.00 (0.91 - 1.27)	0.991	0.998	1.00 (0.91 - 1.25)	0.631	0.984	0.98 (0.84 - 1.14)	0.799	1.00	0.90 (0.76 - 1.07)	0.243	1.00	0.95 (0.30 - 1.00)	0.051	0.677	
0.658	0.992	0.97 (0.91 - 1.07)	0.507	0.997	1.00 (0.90 - 1.19)	0.635	0.986	1.00 (0.86 - 1.19)	0.228	0.945	0.97 (0.89 - 1.06)	0.562	0.977	1.00 (0.90 - 1.25)	0.112	1.00	1.00 (0.90 - 1.15)	0.373	1.00	1.00 (0.90 - 1.15)	0.373	0.971	
0.132	0.99	1.00 (0.91 - 1.11)	0.944	0.997	1.00 (0.91 - 1.11)	0.613	0.997	1.00 (0.91 - 1.11)	0.613	0.999	1.00 (0.91 - 1.11)	0.605	0.977	1.00 (0.91 - 1.11)	0.605	1.00	1.00 (0.91 - 1.11)	0.605	1.00	1.00 (0.91 - 1.11)	0.605	0.956	
0.16	0.933	0.97 (0.88 - 1.06)	0.488	0.997	1.00 (0.91 - 1.11)	0.621	0.959	1.00 (0.91 - 1.11)	0.621	0.986	1.00 (0.91 - 1.11)	0.615	0.977	0.94 (0.83 - 1.06)	0.296	1.00	1.04 (0.82 - 1.12)	0.565	1.00	1.04 (0.82 - 1.12)	0.565	0.952	
0.871	0.992	1.06 (0.91 - 1.16)	0.268	0.997	0.99 (0.90 - 1.13)	0.893	0.999	1.17 (0.90 - 1.51)	0.236	0.955	0.98 (0.88 - 1.06)	0.487	0.977	0.94 (0.83 - 1.06)	0.296	1.00	1.04 (0.82 - 1.12)	0.565	1.00	1.04 (0.82 - 1.12)	0.565	0.952	
0.233	0.933	1.02 (0.93 - 1.13)	0.522	0.997	1.00 (0.91 - 1.13)	0.522	0.997	1.00 (0.91 - 1.13)	0.522	0.999	1.00 (0.91 - 1.13)	0.515	0.977	1.00 (0.91 - 1.13)	0.515	1.00	1.00 (0.91 - 1.13)	0.515	1.00	1.00 (0.91 - 1.13)	0.515	0.956	
0.342	0.95	0.94 (0.85 - 1.05)	0.171	0.997	0.95 (0.85 - 1.08)	0.434	0.97	0.10 (0.08 - 1.29)	0.07	0.998	0.95 (0.84 - 1.08)	0.312	0.977	0.97 (0.83 - 1.03)	0.124	1.00	0.92 (0.79 - 1.06)	0.247	1.00	1.08 (0.59 - 1.98)	0.801	0.978	
0.343	0.95	0.94 (0.85 - 1.05)	0.171	0.997	0.95 (0.85 - 1.08)	0.434	0.97	0.10 (0.08 - 1.29)	0.07	0.998	0.95 (0.84 - 1.08)	0.312	0.977	0.97 (0.83 - 1.03)	0.124	1.00	0.92 (0.79 - 1.06)	0.247	1.00	1.03 (0.56 - 1.88)	0.926	0.978	
0.343	0.95	0.94 (0.85 - 1.05)	0.171	0.997	0.95 (0.85 - 1.08)	0.434	0.97	0.10 (0.08 - 1.29)	0.07	0.998	0.95 (0.84 - 1.08)	0.312	0.977	0.97 (0.83 - 1.03)	0.124	1.00	0.92 (0.79 - 1.06)	0.247	1.00	1.01 (0.59 - 1.88)	0.926	0.978	
0.343	0.95	0.94 (0.85 - 1.05)	0.171	0.997	0.95 (0.85 - 1.08)	0.434	0.97	0.10 (0.08 - 1.29)	0.07	0.998	0.95 (0.84 - 1.08)	0.312	0.977	0.97 (0.83 - 1.03)	0.124	1.00</							

Triple negative														
MR PRESSO OR (95% CI)	MR PRESSO P	MR PRESSO FDR-Adjusted P	INW OR (95% CI)	INW P	INW FDR-Adjusted P	Median OR (95% CI)	Median P	Median FDR-Adjusted P	INW FDR-Adjusted P (95% CI)	Egger P	Egger FDR-Adjusted P	MR PRESSO OR (95% CI)	MR PRESSO P	MR PRESSO FDR-Adjusted P
1.10 (0.99 - 1.22)	0.159	0.992	1.04 (0.96 - 1.13)	0.343	0.999	1.00 (0.89 - 1.13)	0.965	1.00	1.00 (0.78 - 1.27)	0.999	1.00	1.04 (0.96 - 1.13)	0.332	0.985
1.01 (0.82 - 1.23)	0.956	0.997	1.02 (0.94 - 1.11)	0.635	0.999	1.05 (0.93 - 1.19)	0.41	1.00	1.06 (0.82 - 1.36)	0.66	1.00	1.02 (0.94 - 1.11)	0.639	0.999
1.02 (0.92 - 1.14)	0.687	0.992	1.00 (0.92 - 1.09)	0.972	0.999	0.97 (0.86 - 1.10)	0.66	1.00	1.01 (0.78 - 1.31)	0.926	1.00	1.00 (0.92 - 1.09)	0.972	0.999
1.03 (0.94 - 1.12)	0.592	0.992	1.00 (0.96 - 1.04)	0.381	0.999	1.00 (0.89 - 1.13)	0.959	1.00	1.01 (0.84 - 1.15)	0.446	1.00	1.04 (0.97 - 1.11)	0.588	0.974
1.04 (0.93 - 1.12)	0.592	0.992	1.00 (0.94 - 1.13)	1.543	0.999	1.01 (0.89 - 1.14)	0.409	1.00	1.11 (0.86 - 1.43)	0.443	1.00	1.03 (0.97 - 1.14)	0.548	0.999
1.05 (0.93 - 1.14)	0.621	0.992	0.99 (0.91 - 1.08)	0.846	0.999	1.03 (0.91 - 1.16)	0.631	1.00	0.98 (0.77 - 1.25)	0.899	1.00	0.99 (0.92 - 1.07)	0.824	0.999
1.06 (0.98 - 1.03)	0.831	0.992	1.01 (0.93 - 1.10)	0.733	0.999	1.01 (0.89 - 1.14)	0.903	1.00	0.96 (0.75 - 1.22)	0.726	1.00	1.01 (0.94 - 1.10)	0.719	0.999
1.06 (0.99 - 1.13)	0.182	0.992	0.99 (0.91 - 1.07)	0.732	0.999	0.98 (0.87 - 1.11)	0.756	1.00	0.96 (0.76 - 1.24)	0.781	1.00	0.99 (0.91 - 1.07)	0.735	0.999
1.11 (1.03 - 1.13)	0.598	0.992	1.00 (0.94 - 1.09)	0.367	0.999	1.00 (0.89 - 1.14)	0.906	1.00	1.03 (0.81 - 1.38)	0.580	1.00	1.03 (0.93 - 1.16)	0.376	0.997
1.08 (0.98 - 1.11)	0.177	0.992	0.98 (0.90 - 1.05)	0.559	0.999	0.95 (0.84 - 1.08)	0.433	1.00	1.09 (0.84 - 1.38)	0.549	1.00	0.98 (0.80 - 1.06)	0.633	0.999
0.97 (0.85 - 1.10)	0.647	0.992	1.02 (0.94 - 1.10)	0.706	0.999	1.07 (0.95 - 1.20)	0.281	1.00	1.33 (0.95 - 1.70)	0.02	1.00	1.02 (0.94 - 1.10)	0.686	0.999
0.86 (0.76 - 0.97)	0.066	0.992	0.95 (0.88 - 1.03)	0.246	0.999	0.95 (0.85 - 1.07)	0.416	1.00	1.92 (0.72 - 1.17)	0.492	1.00	0.95 (0.88 - 1.03)	0.218	0.947
0.88 (0.79 - 0.97)	0.058	0.992	0.97 (0.89 - 1.05)	0.466	0.999	0.97 (0.87 - 1.10)	0.675	1.00	1.00 (0.78 - 1.29)	0.983	1.00	0.97 (0.89 - 1.05)	0.476	0.999
0.93 (0.87 - 0.92)	0.278	0.992	0.93 (0.85 - 1.09)	0.939	0.999	0.93 (0.85 - 1.09)	0.936	1.00	1.00 (0.78 - 1.29)	0.963	1.00	0.93 (0.87 - 1.05)	0.529	0.977
0.99 (0.83 - 1.12)	0.592	0.992	0.99 (0.85 - 1.03)	1.42	0.999	0.95 (0.84 - 1.08)	0.436	1.00	1.00 (0.78 - 1.39)	0.762	1.00	0.99 (0.85 - 1.03)	0.154	0.886
0.99 (0.91 - 1.07)	0.769	0.992	0.99 (0.91 - 1.08)	0.847	0.999	0.96 (0.86 - 1.08)	0.503	1.00	0.94 (0.74 - 1.20)	0.634	1.00	0.99 (0.94 - 1.05)	0.784	0.999
0.96 (0.83 - 1.11)	0.618	0.992	0.99 (0.88 - 1.08)	0.651	0.999	1.02 (0.92 - 1.20)	0.447	1.00	1.20 (0.90 - 1.60)	0.214	1.00	0.98 (0.88 - 1.08)	0.655	0.999
0.97 (0.90 - 1.03)	0.374	0.992	1.01 (0.93 - 1.10)	0.791	0.999	1.02 (0.91 - 1.15)	0.708	1.00	0.94 (0.74 - 1.20)	0.615	1.00	1.01 (0.93 - 1.10)	0.789	0.999
0.93 (0.87 - 1.02)	0.327	0.992	0.99 (0.86 - 1.02)	0.72	0.999	0.99 (0.86 - 1.02)	0.718	1.00	1.00 (0.78 - 1.30)	0.771	1.00	0.96 (0.88 - 1.02)	0.37	0.997
0.96 (0.88 - 1.04)	0.38	0.992	0.98 (0.88 - 1.04)	0.301	0.999	1.01 (0.89 - 1.13)	0.922	1.00	0.96 (0.74 - 1.23)	0.757	1.00	0.96 (0.88 - 1.04)	0.293	0.974
1.06 (0.94 - 1.20)	0.408	0.992	1.03 (0.95 - 1.12)	0.502	0.999	1.03 (0.92 - 1.17)	0.579	1.00	1.18 (0.93 - 1.51)	0.175	1.00	1.03 (0.96 - 1.10)	0.416	0.997
0.94 (0.83 - 1.06)	0.359	0.992	0.96 (0.88 - 1.04)	0.35	0.999	0.95 (0.84 - 1.07)	0.381	1.00	0.87 (0.63 - 1.11)	0.265	1.00	0.96 (0.89 - 1.04)	0.321	0.981
0.99 (0.87 - 1.12)	0.827	0.992	1.00 (0.92 - 1.09)	0.997	0.999	0.95 (0.84 - 1.07)	0.405	1.00	0.80 (0.63 - 1.02)	0.071	1.00	1.00 (0.92 - 1.08)	0.97	0.999
0.99 (0.87 - 1.15)	0.349	0.992	0.99 (0.87 - 1.04)	0.349	0.999	0.99 (0.87 - 1.04)	0.343	1.00	0.99 (0.78 - 1.02)	0.042	1.00	0.99 (0.87 - 1.04)	0.342	0.999
1.14 (1.04 - 1.26)	0.056	0.992	0.99 (0.91 - 1.08)	0.818	0.999	1.00 (0.88 - 1.13)	0.963	1.00	0.94 (0.74 - 1.19)	0.592	1.00	0.99 (0.92 - 1.06)	0.785	0.999
0.98 (0.84 - 1.14)	0.811	0.992	0.97 (0.89 - 1.05)	0.436	0.999	1.01 (0.90 - 1.14)	0.836	1.00	0.95 (0.74 - 1.21)	0.661	1.00	0.97 (0.90 - 1.04)	0.364	0.997
0.96 (0.82 - 1.12)	0.628	0.992	0.99 (0.91 - 1.08)	0.828	0.999	1.01 (0.90 - 1.14)	0.866	1.00	0.97 (0.74 - 1.24)	0.833	1.00	0.99 (0.92 - 1.07)	0.806	0.999
1.10 (0.96 - 1.24)	0.162	0.992	0.99 (0.86 - 1.02)	0.168	0.999	0.93 (0.83 - 1.06)	0.28	1.00	0.96 (0.75 - 1.22)	0.735	1.00	0.93 (0.88 - 0.99)	0.041	0.667
1.00 (0.88 - 1.06)	0.738	0.992	0.99 (0.88 - 1.04)	0.546	0.999	0.99 (0.88 - 1.04)	0.545	1.00	1.00 (0.78 - 1.24)	0.644	1.00	0.96 (0.88 - 1.04)	0.349	0.999
0.94 (0.86 - 0.92)	0.213	0.992	0.99 (0.92 - 1.08)	0.89	0.999	1.05 (0.96 - 1.22)	0.199	1.00	1.12 (0.88 - 1.42)	0.375	1.00	0.99 (0.92 - 1.07)	0.876	0.999
0.97 (0.87 - 1.08)	0.58	0.992	0.99 (0.90 - 1.09)	0.823	0.999	1.08 (0.96 - 1.23)	0.213	1.00	1.25 (0.96 - 1.62)	0.099	1.00	0.99 (0.90 - 1.09)	0.825	0.999
0.99 (0.90 - 1.10)	0.885	0.992	1.01 (0.93 - 1.10)	0.839	0.999	0.99 (0.88 - 1.11)	0.883	1.00	1.08 (0.86 - 1.38)	0.532	1.00	1.01 (0.94 - 1.08)	0.815	0.999
1.00 (0.87 - 1.15)	0.997	0.992	1.01 (0.95 - 1.11)	0.061	0.999	0.98 (0.87 - 1.09)	0.031	1.00	0.89 (0.70 - 1.13)	0.332	1.00	0.93 (0.86 - 1.00)	0.051	0.706
1.01 (0.93 - 1.14)	0.592	0.992	1.01 (0.93 - 1.10)	0.783	0.999	0.95 (0.88 - 1.11)	0.906	1.00	0.95 (0.74 - 1.21)	0.651	1.00	0.99 (0.91 - 1.04)	0.726	0.999
0.97 (0.88 - 1.06)	0.549	0.992	0.96 (0.89 - 1.05)	0.374	0.999	0.95 (0.85 - 1.06)	0.372	1.00	1.00 (0.79 - 1.28)	0.988	1.00	0.96 (0.91 - 1.02)	0.226	0.95
1.00 (0.92 - 1.08)	0.518	0.992	1.00 (1.00 - 1.17)	0.064	0.999	1.16 (0.93 - 1.31)	0.012	1.00	1.09 (0.88 - 1.39)	0.469	1.00	1.08 (1.00 - 1.17)	0.056	0.711
0.94 (0.88 - 1.00)	0.136	0.992	0.99 (0.86 - 1.01)	0.083	0.999	0.97 (0.85 - 1.01)	0.076	1.00	0.86 (0.76 - 1.09)	0.207	1.00	0.93 (0.87 - 0.98)	0.044	0.666
1.01 (0.93 - 1.13)	0.377	0.992	0.99 (0.87 - 1.03)	0.77	0.999	0.98 (0.87 - 1.03)	0.661	1.00	1.00 (0.78 - 1.28)	0.770	1.00	1.00 (0.93 - 1.04)	0.551	0.999
0.98 (0.88 - 0.99)	0.754	0.992	0.96 (0.88 - 1.04)	0.349	0.999	0.97 (0.86 - 1.08)	0.565	1.00	1.16 (0.81 - 1.48)	0.222	1.00	0.96 (0.88 - 1.03)	0.299	0.974
0.98 (0.86 - 1.13)	0.824	0.992	0.97 (0.89 - 1.05)	0.458	0.999	0.97 (0.86 - 1.09)	0.581	1.00	0.96 (0.75 - 1.22)	0.748	1.00	0.97 (0.91 - 1.03)	0.334	0.985
1.04 (0.97 - 1.11)	0.362	0.992	1.04 (0.95 - 1.12)	0.505	0.999	1.05 (0.93 - 1.18)	0.407	1.00	1.06 (0.86 - 1.35)	0.638	1.00	1.03 (0.96 - 1.10)	0.418	0.997
0.90 (0.83 - 0.97)	0.058	0.992	0.98 (0.87 - 1.03)	0.184	0.999	0.97 (0.87 - 1.09)	0.639	1.00	1.08 (0.89 - 1.21)	0.305	1.00	0.95 (0.89 - 1.00)	0.668	0.741
1.00 (0.90 - 1.00)	0.302	0.992	0.99 (0.87 - 1.03)	0.93	0.999	0.99 (0.87 - 1.03)	0.655	1.00	1.00 (0.78 - 1.23)	0.525	1.00	1.00 (0.90 - 1.00)	0.327	0.997
1.00 (0.90 - 1.10)	0.519	0.992	0.99 (0.90 - 1.08)	0.804	0.999	1.00 (0.89 - 1.14)	0.963	1.00	1.24 (0.96 - 1.59)	0.596	1.00	0.99 (0.90 - 1.08)	0.806	0.999
1.03 (0.92 - 1.16)	0.61	0.992	1.01 (0.93 - 1.09)	0.892	0.999	0.96 (0.85 - 1.08)	0.479	1.00	0.89 (0.70 - 1.13)	0.34	1.00	1.01 (0.93 - 1.09)	0.885	0.999
0.93 (0.89 - 0.97)	0.029	0.992	0.96 (0.89 - 1.05)	0.405	0.999	0.95 (0.85 - 1.07)	0.435	1.00	0.92 (0.72 - 1.18)	0.515	1.00	0.96 (0.89 - 1.05)	0.412	0.997
1.01 (0.93 - 1.13)	0.392	0.992	0.99 (0.85 - 1.02)	0.707	0.999	0.94 (0.83 - 1.02)	0.218	1.00	0.92 (0.72 - 1.21)	0.521	1.00	0.93 (0.87 - 0.99)	0.33	0.617
0.91 (0.86 - 0.96)	0.283	0.992	0.99 (0.85 - 1.01)	0.363	0.999	0.99 (0.83 - 1.03)	0.039	1.00	1.00 (0.78 - 1.24)	0.204	1.00	1.04 (0.86 - 1.12)	0.372	0.997
0.91 (0.84 - 0.99)	0.028	0.992	0.91 (0.83 - 0.98)	0.019	0.973	0.90 (0.80 - 1.00)	0.06	1.00	0.82 (0.64 - 1.05)	0.12	1.00	0.91 (0.85 - 0.97)	0.008	0.464
0.91 (0.84 - 0.99)	0.085	0.992	0.99 (0.86 - 1.01)	0.081	0.999	0.92 (0.82 - 1.03)	0.141	1.00	0.89 (0.70 - 1.13)	0.346	1.00	0.93 (0.86 - 1.00)	0.058	0.711
0.96 (0.77 - 1.19)	0.708	0.992	0.99 (0.89 - 1.04)	0.84	0.999	1.00 (0.86 - 1.12)	0.206	1.00	1.03 (0.79 - 1.28)	0.976	1.00	0.99 (0.92 - 1.07)	0.822	0.999
1.00 (0.92 - 1.09)	0.96	0.992	1.04 (0.96 - 1.13)	0.326	0.999	1.02 (0.90 - 1.15)	0.813	1.00	0.89 (0.70 - 1.14)	0.351	1.00	0.94 (0.86 - 1.13)	0.345	0.999
0.96 (0.86 - 0.97)	0.475	0.992	1.03 (0.94 - 1.13)	0.567	0.999	1.09 (0.96 - 1.24)	0.199	1.00	1.18 (0.90 - 1.56)	0.233	1.00	1.03 (0.94 - 1.13)	0.	