Report: p-values and effect sizes of AgeML technical work.

Table 1: Pearson's correlation values of Standard Polygenetic Risk Scores versus different system age deltas. ** marks values that survived the Bonferroni multiple-tests correction, and * for False Discovery Rate (FDR) correction, for a significance level of $p < 0.05$.

Standard PRS	Musculoskeletal	Body	Cardiovascular	Pulmonary	Immune	Renal	Hepatic	Metabolic
Height	-0.12**	-0.07**	-0.01	-0.18**	-0.00	0.06**	0.03	-0.03
Estimated Bone Mineral Density T-Score	-0.08**	-0.02	0.01	-0.01	0.02	-0.01	-0.01	0.01
Osteoporosis	0.07**	0.03	-0.01	0.02	-0.00	0.00	0.01	-0.00
Type 2 Diabetes	0.04**	0.03	0.05**	0.03	-0.03	0.01	0.04*	0.09**
High Density Lipoprotein Cholesterol	-0.04*	0.04**	-0.02	-0.01	-0.01	-0.02	-0.03	0.12**
Psoriasis	0.03	-0.01	-0.02	-0.00	-0.01	0.00	0.02	-0.01
Venous Thromboembolic Disease	-0.03	0.01	-0.01	0.02	-0.00	0.02	-0.02	0.02
Age at Menopause	-0.02	-0.04**	-0.03	0.01	-0.04**	-0.04**	-0.03	-0.03
Bowel Cancer	0.02	0.02	-0.00	-0.01	0.02	0.00	0.02	0.02
Atrial Fibrillation	-0.02	0.01	0.02	-0.02	0.02	0.01	0.03	0.00
Schizophrenia	0.02	0.02	-0.03	0.01	0.01	-0.01	-0.01	0.02
Parkinson's Disease	-0.02	-0.01	-0.02	0.01	0.02	-0.00	-0.04*	-0.02
Ulcerative Colitis	0.02	0.01	-0.00	0.02	0.00	-0.00	-0.00	-0.02
Breast Cancer	0.02	-0.00	-0.01	0.00	-0.01	-0.00	0.00	0.01
Intraocular Pressure	0.02	0.02	0.03	0.01	-0.01	0.00	0.01	-0.02
Ischaemic Stroke	0.02	0.04**	0.09**	0.00	0.00	0.00	0.02	0.01
Prostate Cancer	-0.01	-0.00	-0.00	0.00	0.03	0.01	-0.02	-0.02
Bipolar Disorder	0.01	0.01	-0.03	0.01	-0.02	0.01	0.00	-0.00
Coeliac Disease	-0.01	0.00	0.01	-0.00	0.01	-0.01	-0.02	0.00
Type 1 Diabetes	-0.01	0.01	0.02	0.01	0.00	0.01	0.01	-0.00
Glycated Haemoglobin	-0.01	0.01	0.01	0.00	0.00	-0.00	0.01	0.07**
Age-Related Macular Degeneration	0.01	0.01	0.00	-0.01	0.00	0.01	0.01	-0.01
Primary Open Angle Glaucoma	0.01	0.00	0.00	0.01	0.00	-0.01	0.00	-0.01
Coronary Artery Disease	0.01	0.04*	0.07**	0.02	-0.00	-0.01	0.04**	0.06**
Body Mass Index	0.01	-0.00	-0.01	0.01	-0.04*	0.03	0.02	-0.01
Melanoma	0.01	-0.00	-0.02	-0.01	0.01	-0.02	0.01	0.01
Rheumatoid Arthritis	-0.01	0.01	0.00	0.00	-0.01	0.02	0.03	-0.00
Systemic Lupus Erythematosus	0.01	0.01	0.01	-0.03	0.04*	0.02	-0.00	-0.01
Hypertension	0.00	0.04**	0.13**	0.01	-0.01	-0.01	0.01	0.01
Epithelial Ovarian Cancer	0.00	0.02	-0.03	-0.00	0.02	-0.01	-0.01	0.01
Cardiovascular Disease	0.00	0.04**	0.07**	0.01	0.00	0.00	0.03*	0.05**
Alzheimer's Disease	-0.00	0.01	-0.00	-0.02	-0.02	-0.01	0.02	0.04*
Asthma	-0.00	0.01	0.03	0.04*	-0.01	0.02	0.01	0.01
Low Density Lipoprotein Cholesterol	0.00	0.07**	0.02	0.01	-0.02	-0.02	0.04*	0.16**
Crohn's Disease	0.00	-0.02	-0.01	0.02	-0.02	0.00	-0.00	-0.03
Multiple Sclerosis	-0.00	-0.01	-0.01	-0.01	0.01	-0.00	-0.02	-0.01

Table 2: p-values of Pearson's correlation values of Standard Polygenetic Risk Scores versus different system age deltas. ** marks values that survived the Bonferroni multiple-tests correction, and * for False Discovery Rate (FDR) correction, for a significance level of $p < 0.05$.

Standard PRS	Musculoskeletal	Body	Cardiovascular	Pulmonary	Immune	Renal	Hepatic	Metabolic
Height	1.2e-20**	1.2e-07**	0.43	9.2e-47**	0.97	1.4e-06**	0.014	0.031
Estimated Bone Mineral Density T-Score	1.1e-09**	0.1	0.32	0.5	0.086	0.48	0.46	0.26
Osteoporosis	1.6e-08**	0.015	0.35	0.08	0.7	0.86	0.57	0.96
Type 2 Diabetes	0.00041**	0.017	1.9e-05**	0.0084	0.041	0.44	0.0018*	1.8e-13**
High Density Lipoprotein Cholesterol	0.0017*	0.00081**	0.19	0.37	0.59	0.099	0.015	1.9e-20**
Psoriasis	0.017	0.69	0.076	0.87	0.51	0.69	0.14	0.33
Venous Thromboembolic Disease	0.021	0.34	0.62	0.23	0.73	0.18	0.097	0.22
Age at Menopause	0.064	0.00075**	0.028	0.43	0.00049**	0.00083**	0.031	0.039
Bowel Cancer	0.081	0.13	0.79	0.53	0.15	0.94	0.21	0.18
Atrial Fibrillation	0.1	0.31	0.094	0.065	0.051	0.67	0.015	0.88
Schizophrenia	0.11	0.15	0.013	0.25	0.42	0.53	0.45	0.082
Parkinson's Disease	0.15	0.51	0.049	0.56	0.18	0.91	0.003*	0.097
Ulcerative Colitis	0.18	0.64	0.73	0.054	0.98	0.82	0.78	0.17
Breast Cancer	0.19	0.73	0.47	0.91	0.58	0.92	0.8	0.54
Intraocular Pressure	0.22	0.071	0.039	0.27	0.56	0.75	0.42	0.052
Ischaemic Stroke	0.23	0.0013**	6.4e-13**	0.75	0.91	0.99	0.12	0.61
Prostate Cancer	0.24	0.77	0.83	0.97	0.021	0.3	0.12	0.21
Bipolar Disorder	0.25	0.25	0.021	0.24	0.21	0.31	0.92	0.78
Coeliac Disease	0.25	0.75	0.28	0.74	0.25	0.53	0.2	0.97
Type 1 Diabetes	0.28	0.39	0.14	0.51	0.95	0.51	0.64	0.96
Glycated Haemoglobin	0.3	0.33	0.41	0.95	0.72	0.82	0.57	3.2e-09**
Age-Related Macular Degeneration	0.39	0.61	0.69	0.6	0.89	0.28	0.69	0.27
Primary Open Angle Glaucoma	0.42	0.76	0.78	0.64	0.95	0.38	0.73	0.24
Coronary Artery Disease	0.43	0.0018*	1.2e-08**	0.14	0.77	0.37	0.00092**	9.1e-06**
Body Mass Index	0.44	0.78	0.48	0.34	0.0029*	0.017	0.076	0.45
Melanoma	0.44	0.99	0.06	0.54	0.58	0.11	0.57	0.68
Rheumatoid Arthritis	0.49	0.53	1	0.92	0.62	0.092	0.039	0.7
Systemic Lupus Erythematosus	0.61	0.57	0.56	0.0056	0.0027*	0.083	0.87	0.67
Hypertension	0.72	0.00042**	5e-24**	0.32	0.43	0.58	0.28	0.3
Epithelial Ovarian Cancer	0.72	0.22	0.019	0.93	0.23	0.4	0.61	0.41
Cardiovascular Disease	0.73	0.00078**	8.9e-08**	0.32	0.73	0.86	0.0064*	0.00031**
Alzheimer's Disease	0.74	0.34	0.77	0.18	0.22	0.59	0.14	0.0016*
Asthma	0.89	0.26	0.021	0.0027*	0.59	0.11	0.46	0.35
Low Density Lipoprotein Cholesterol	0.94	2.6e-08**	0.055	0.6	0.093	0.077	0.0037*	4.3e-37**
Crohn's Disease	0.96	0.18	0.43	0.14	0.05	0.7	0.76	0.044
Multiple Sclerosis	0.97	0.53	0.5	0.38	0.3	0.94	0.11	0.6

Table 3: Pearson's correlation values of Enhanced Polygenetic Risk Scores versus different system age deltas. ** marks values that survived the Bonferroni multiple-tests correction, and * for False Discovery Rate (FDR) correction, for a significance level of $p < 0.05$.

Enhanced PRS	Musculoskeletal	Body	Cardiovascular	Pulmonary	Immune	Renal	Hepatic	Metabolic
Height	-0.16**	-0.08*	-0.03	-0.18**	-0.03	0.05	0.02	-0.04
Coeliac Disease	-0.10**	-0.01	-0.03	-0.02	0.07	0.02	-0.02	0.00
Psoriasis	0.08	0.04	-0.05	0.06	0.02	0.00	0.01	0.03
Estimated Glomerular Filtration Rate (Creatinine Based)	0.07	-0.03	-0.00	0.02	0.00	-0.07	0.00	0.01
Osteoporosis	0.07	0.03	-0.02	-0.01	-0.02	-0.02	0.02	-0.02
Systemic Lupus Erythematosus	-0.07	-0.00	0.00	-0.06	0.09	0.05	0.00	-0.01
Estimated Bone Mineral Density T-Score	-0.06	-0.02	-0.00	0.01	0.02	0.03	-0.01	0.01
Docosahexaenoic Acid	-0.06	0.04	0.01	-0.02	0.01	0.04	0.02	0.11**
Venous Thromboembolic Disease	-0.06	-0.01	-0.04	0.01	0.00	0.03	-0.05	-0.00
Age at Menopause	-0.06	-0.07	-0.04	0.02	-0.08	-0.06	-0.07	-0.05
Total Triglycerides	0.05	0.02	-0.02	0.04	-0.04	-0.02	-0.01	0.05
Bowel Cancer	0.05	0.04	0.01	-0.00	0.01	0.06	0.01	-0.02
Estimated Glomerular Filtration Rate (Cystatin Based)	0.05	-0.07	0.03	0.03	0.07	-0.29**	0.01	0.01
Glycated Haemoglobin	0.05	0.08*	0.00	0.01	0.04	-0.03	0.02	0.26**
Omega-3 Fatty Acids	-0.05	0.04	0.02	-0.03	-0.03	0.04	0.02	0.11**
Alzheimer's Disease	0.04	0.05	0.01	0.01	-0.01	0.03	0.03	0.07*
Apolipoprotein A1	-0.04	0.03	-0.01	0.01	-0.01	-0.03	0.01	0.08*
Bipolar Disorder	0.04	0.02	-0.07	0.09*	-0.02	-0.01	-0.04	-0.00
Type 2 Diabetes	0.03	0.02	0.08	0.05	-0.06	-0.01	0.01	0.14**
Type 1 Diabetes	-0.03	-0.01	0.03	-0.05	-0.00	0.00	0.00	-0.01
Melanoma	-0.03	0.01	-0.05	0.02	0.02	0.01	0.00	-0.01
High Density Lipoprotein Cholesterol	-0.03	0.07	-0.01	0.01	-0.00	0.00	0.00	0.07*
Multiple Sclerosis	-0.03	-0.04	-0.04	0.01	0.00	-0.01	-0.00	-0.02
Intraocular Pressure	0.03	0.02	0.02	-0.01	-0.00	0.01	0.00	0.03
Ischaemic Stroke	0.02	0.03	0.11**	-0.02	0.00	0.00	0.03	0.06
Phosphoglycerides	-0.02	0.06	0.01	0.02	-0.04	-0.03	0.02	0.14**
Primary Open Angle Glaucoma	0.02	0.02	0.02	0.01	0.00	0.01	0.00	0.04
Resting Heart Rate	0.02	-0.00	-0.02	0.03	-0.03	0.01	0.01	0.01
Phosphatidylcholines	-0.02	0.06	0.01	0.03	-0.04	-0.04	0.02	0.14**
Breast Cancer	0.02	0.01	-0.01	0.02	-0.01	0.05	-0.02	-0.02
Atrial Fibrillation	-0.02	0.00	-0.02	-0.03	0.02	-0.03	0.07	0.04
Schizophrenia	0.02	0.03	-0.01	0.04	0.02	0.02	-0.03	0.03
Total Fatty Acids	0.02	0.07	0.01	0.05	-0.06	-0.03	-0.00	0.15**
Polyunsaturated Fatty Acids	-0.01	0.09*	0.02	0.03	-0.05	0.00	0.01	0.17**
Low Density Lipoprotein Cholesterol	0.01	0.10**	-0.01	0.05	-0.05	0.03	0.03	0.23**
Age-Related Macular Degeneration	0.01	-0.01	-0.04	-0.04	-0.01	0.04	0.03	0.02
Apolipoprotein B	0.01	0.08*	0.01	0.04	-0.04	0.03	0.02	0.20**
Total Cholesterol	-0.01	0.09*	0.01	0.03	-0.04	0.02	0.03	0.19**
Omega-6 Fatty Acids	0.01	0.09*	0.01	0.06	-0.06	-0.02	0.01	0.16**
Rheumatoid Arthritis	0.01	0.02	-0.00	-0.01	-0.01	-0.00	0.05	0.01
Calcium	-0.01	0.00	0.05	0.03	-0.04	-0.03	-0.03	0.06
Prostate Cancer	0.01	-0.00	0.02	-0.00	0.04	0.03	-0.02	-0.03
Sphingomyelins	-0.01	0.09*	0.01	0.01	-0.05	0.01	0.04	0.20**
Body Mass Index	0.01	-0.02	0.02	-0.01	-0.04	0.02	0.03	0.00
Parkinson's Disease	-0.01	0.01	-0.03	0.04	-0.06	0.01	-0.02	-0.01
Remnant Cholesterol (Non-HDL, Non-LDL Cholesterol)	0.01	0.09*	0.02	0.03	-0.06	0.01	0.03	0.19**
Asthma	-0.00	0.01	0.02	-0.02	-0.04	0.07	0.02	-0.02
Coronary Artery Disease	0.00	0.04	0.09*	-0.01	0.03	-0.01	0.05	0.08*
Epithelial Ovarian Cancer	0.00	-0.01	-0.07	0.00	0.04	-0.04	-0.03	0.01
Hypertension	0.00	0.04	0.14**	-0.03	0.01	-0.02	0.01	0.06
Cardiovascular Disease	-0.00	0.03	0.05	-0.00	0.02	-0.00	0.06	0.07*

Table 4: p-values of Pearson's correlation values of Enhanced Polygenetic Risk Scores versus different system age deltas. ** marks values that survived the Bonferroni multiple-tests correction, and * for False Discovery Rate (FDR) correction, for a significance level of $p < 0.05$.

Enhanced PRS	Musculoskeletal	Body	Cardiovascular	Pulmonary	Immune	Renal	Hepatic	Metabolic
Height	1.7e-08**	0.0081*	0.35	8.9e-11**	0.28	0.11	0.5	0.18
Coeliac Disease	0.00034**	0.61	0.24	0.56	0.022	0.53	0.55	0.9
Psoriasis	0.0076	0.15	0.093	0.049	0.43	0.89	0.8	0.36
Estimated Glomerular Filtration Rate (Creatinine Based)	0.011	0.23	0.86	0.51	0.99	0.011	0.87	0.63
Osteoporosis	0.015	0.25	0.47	0.69	0.55	0.55	0.54	0.53
Systemic Lupus Erythematosus	0.02	0.88	0.92	0.048	0.0016	0.071	0.91	0.72
Estimated Bone Mineral Density T-Score	0.027	0.4	0.88	0.65	0.4	0.37	0.82	0.81
Docosahexaenoic Acid	0.027	0.16	0.77	0.45	0.83	0.14	0.42	0.00014**
Venous Thromboembolic Disease	0.032	0.67	0.2	0.61	0.92	0.26	0.091	0.95
Age at Menopause	0.045	0.019	0.17	0.53	0.0067	0.031	0.0095	0.11
Total Triglycerides	0.083	0.52	0.59	0.17	0.13	0.58	0.8	0.07
Bowel Cancer	0.085	0.2	0.61	0.91	0.71	0.047	0.68	0.59
Estimated Glomerular Filtration Rate (Cystatin Based)	0.087	0.011	0.24	0.32	0.011	2.4e-25**	0.84	0.72
Glycated Haemoglobin	0.095	0.0037*	0.99	0.6	0.15	0.23	0.57	7.9e-20**
Omega-3 Fatty Acids	0.11	0.16	0.43	0.31	0.33	0.2	0.49	0.00019**
Alzheimer's Disease	0.16	0.06	0.74	0.62	0.76	0.26	0.25	0.013*
Apolipoprotein A1	0.18	0.22	0.71	0.85	0.71	0.25	0.85	0.0073*
Bipolar Disorder	0.2	0.42	0.015	0.0016*	0.56	0.76	0.15	0.89
Type 2 Diabetes	0.23	0.42	0.0039	0.09	0.028	0.76	0.61	1.7e-06**
Type 1 Diabetes	0.24	0.65	0.3	0.11	0.88	0.93	0.87	0.69
Melanoma	0.25	0.75	0.066	0.59	0.44	0.65	0.93	0.86
High Density Lipoprotein Cholesterol	0.3	0.022	0.74	0.83	0.9	1	0.87	0.015*
Multiple Sclerosis	0.35	0.12	0.2	0.8	0.88	0.83	0.93	0.43
Intraocular Pressure	0.37	0.47	0.48	0.7	0.98	0.75	0.97	0.24
Ischaemic Stroke	0.4	0.24	8.9e-05**	0.48	0.99	0.86	0.37	0.041
Phosphoglycerides	0.45	0.047	0.75	0.4	0.12	0.22	0.44	8.6e-07**
Primary Open Angle Glaucoma	0.46	0.41	0.49	0.71	0.99	0.61	0.92	0.22
Resting Heart Rate	0.46	0.92	0.45	0.31	0.22	0.74	0.69	0.67
Phosphatidylcholines	0.49	0.032	0.7	0.34	0.16	0.18	0.46	7.6e-07**
Breast Cancer	0.5	0.84	0.77	0.58	0.82	0.071	0.52	0.43
Atrial Fibrillation	0.5	0.88	0.6	0.31	0.55	0.38	0.012	0.18
Schizophrenia	0.55	0.24	0.76	0.14	0.58	0.48	0.22	0.27
Total Fatty Acids	0.56	0.015	0.81	0.058	0.038	0.29	0.96	5.9e-08**
Polyunsaturated Fatty Acids	0.61	0.0016*	0.56	0.24	0.088	0.97	0.69	1.1e-09**
Low Density Lipoprotein Cholesterol	0.67	0.00024**	0.75	0.073	0.11	0.33	0.34	3.5e-16**
Age-Related Macular Degeneration	0.67	0.66	0.18	0.12	0.74	0.2	0.33	0.42
Apolipoprotein B	0.68	0.0041*	0.79	0.2	0.12	0.26	0.45	4.3e-12**
Total Cholesterol	0.69	0.0011*	0.62	0.33	0.15	0.39	0.23	6.5e-12**
Omega-6 Fatty Acids	0.71	0.0026*	0.65	0.052	0.049	0.52	0.69	1.1e-08**
Rheumatoid Arthritis	0.72	0.49	0.88	0.76	0.67	0.89	0.11	0.74
Calcium	0.76	0.95	0.088	0.25	0.2	0.22	0.34	0.027
Prostate Cancer	0.77	0.96	0.53	0.99	0.12	0.31	0.39	0.36
Sphingomyelins	0.78	0.0025*	0.84	0.82	0.11	0.77	0.17	2.3e-12**
Body Mass Index	0.8	0.38	0.44	0.7	0.12	0.58	0.3	0.87
Parkinson's Disease	0.81	0.6	0.32	0.14	0.035	0.85	0.55	0.67
Remnant Cholesterol (Non-HDL, Non-LDL Cholesterol)	0.83	0.0017*	0.43	0.36	0.05	0.68	0.36	2.1e-11**
Asthma	0.91	0.74	0.49	0.48	0.18	0.021	0.54	0.49
Coronary Artery Disease	0.92	0.12	0.0015*	0.73	0.27	0.6	0.081	0.0034*
Epithelial Ovarian Cancer	0.93	0.71	0.012	0.89	0.12	0.15	0.35	0.63
Hypertension	0.98	0.21	7.2e-07**	0.31	0.78	0.41	0.83	0.043
Cardiovascular Disease	0.98	0.25	0.057	0.9	0.46	0.98	0.05	0.012*

Table 5: Difference of healthy control group deltas and disease deltas, computed as $\mu_{\Delta^{system}_{disease}} - \mu_{\Delta^{system}_{controls}}$, across different systems. * marks the tests surviving the False Discovery Rate correction, and ** marks the ones surviving Bonferroni correction, for a significance value of $p < 0.05$.

SYSTEM	CIR	END	MBD	MUS	NVS	RSP	NEO	BLD
MUSKULOSKELETAL	0.00	0.16	0.24	-0.07	0.18	0.03	-0.24	-0.04
BODY	0.11	-0.41**	0.25	-0.26**	0.02	-0.05	-0.47**	-0.30
CARDIOVASCULAR	0.86**	-0.27	-0.33**	-0.27**	-0.36	-0.25**	-0.37**	-0.16
PULMONARY	0.23**	0.27	0.38**	-0.13	0.01	0.60**	-0.28**	-0.08
IMMUNE	-0.15	-0.10	0.29**	-0.07	0.05	-0.11	-0.14	-0.19
RENAL	-0.01	-0.03	0.03	0.07	0.23	0.05	-0.19	-0.13
HEPATIC	-0.08	-0.19	0.29	0.06	0.12	0.08	-0.11	0.06
METABOLIC	-0.20	-0.08	0.12	-0.28**	-014	-0.18	-0.37**	-0.08

Table 6: p-values of the t-Student's test between control group deltas and disease deltas, across different systems. * marks the tests surviving the False Discovery Rate correction, and ** marks the ones surviving Bonferroni correction, for a significance value of $p < 0.05$.

SYSTEM	CIR	END	MBD	MUS	NVS	RSP	NEO	BLD
MUSKULOSKELETAL	0.94	0.056	0.013*	0.21	0.07	0.55	0.0017*	0.81
BODY	0.087	6.5E-6**	0.013*	1.7E-5**	0.83	0.39	4.2E-9**	0.073
CARDIOVASCULAR	4E-47**	9.6E-4*	2.8E-4**	3.5E-7**	2.5E-4*	5.9E-6**	2.2E-7**	0.29
PULMONARY	5.7E-4**	0.0031*	2.4E-4**	0.021*	0.97	6.5E-21**	3.3E-4**	0.63
IMMUNE	9.9E-4*	0.13	1.4E-4**	0.11	0.56	0.012*	0.016*	0.12
RENAL	0.89	0.81	0.75	0.2	0.035	0.37	0.02*	0.47
HEPATIC	0.16	0.02*	0.0014*	0.26	0.22	0.16	0.11	0.69
METABOLIC	0.0011*	0.36	0.18	1.8E-7**	0.19	0.0017*	6.3E-7**	0.6