SUPPLEMENTARY MATERIALS
to the article by M.V. Shulskaya, A.Kh. Alieva, I.R. Kumakov, M.I. Shadrina, P.A. Slominsky
"A housekeeping gene search to analyze expression changes of individual genes in *Macaca mulatta*"

Table S1. A complete list of the genes included in the analysis, with references to the source

Gene	Reference	The presence of pseudogenes (including in humans, according to Ensembl)	Presence of a homologous gene (according to Ensembl)
ACTB	Ahn et al., 2008	+ (*H. sap.*)	+
ACTG1	Noriega et al., 2010	+ (*H. sap.*)	+
ACVRL1		–	+
ADGRE2		–	+
AHSA1		–	+
AKR1A1		+ (*H. sap.*)	+
ALDOA		+ (*H. sap.*)	+
ALG9		–	+
API5		+ (*H. sap.*)	+
ARHGDIA		–	+
ARHGEF7		–	+
ARL2		–	+
ATF4		–	+
ATP6V1F		+ (*H. sap.*)	No homolog
B4GALT3		–	+
CALM1		+ (*H. sap.*)	+
CCND3		+ (*H. sap.*)	+
CLTA		+ (*H. sap.*)	+
COL6A1		–	+
COPS6		–	+
COX4I1		+ (*H. sap.*)	+
COX7A2L		+ (*H. sap.*)	+
COX7C		+ (*H. sap.*)	+
CSNK2B/LY6G5B		–	+
CYB5R1		–	+
DIAPH1		–	+
DMAC2L		–	+
EEF1A1		+ (*H. sap.*)	+
EEF2		–	+
EIF1		–	+
EIF4A2		+ (*H. sap.*)	+
GABRA1		–	+
GABRA4		–	+
GABRD		–	+
GABRE		–	+
GABRG2		–	+
GAD1		–	+
GAPDH	Ahn et al., 2008	+ (*H. sap.*)	+
GP2	Noriega et al., 2010	–	+
GPAA1		+ (*H. sap.*)	+
GPX4		–	+
GRIK5		–	+
H2BC4		–	+
H6PD		–	+

Table S1 (continued)

Gene	Reference	The presence of pseudogenes (including in humans, according to Ensembl)	Presence of a homologous gene (according to Ensembl)
HAX1	Noriega et al., 2010	+ (*H. sap.*)	+
HINT1		+ (*H. sap.*)	+
HMBS		–	+
HPCAL1		–	+
HPRT1		+ (*H. sap.*)	+
HSP90AB1		+ (*H. sap.*)	+
INPP5K		–	+
LDHA		–	+
LDHB		+ (*M. mul.*)	+
MAPKAPK2		–	+
MCM3APAS		–	No homolog
MVK		–	+
NACA		+ (*H. sap.*)	+
NDUFA1		–	+
NDUFA2		–	+
NDUFA7		–	No homolog
NDUFS5		+ (*H. sap.*)	No homolog
NONO		+ (*H. sap.*)	+
NUDT3		–	+
PFDN1		+ (*H. sap.*)	+
PFDN5		+ (*H. sap.*)	+
PGK1		+ (*H. sap.*)	+
POLR2A		–	+
PPP2CB		+ (*H. sap.*)	+
PRPF8		–	+
PSMD2		+ (*H. sap.*)	+
RAC1		+ (*H. sap.*)	+
RAD23A		–	+
RAD9A		–	+
RNA18S1	Robinson et al., 2018	+ (*H. sap.*)	+
RPL10	Noriega et al., 2010	+ (*H. sap.*)	+
RPL11		+ (*H. sap.*)	+
RPL13A	Ahn et al., 2008; Noriega et al., 2010	+ (*H. sap.*)	+
RPL19	Noriega et al., 2010	+ (*H. sap.*)	+
RPL32	Ahn et al., 2008	+ (*H. sap.*)	+
RPL37	Noriega et al., 2010	+ (*M. mul.*)	+
RPLP1		+ (*H. sap.*)	+
RPS14		+ (*H. sap.*)	+
RPS18		+ (*H. sap.*)	-
RPS24		+ (*H. sap.*)	+
RPS25		+ (*H. sap.*)	+
RPS27A		+ (*M. mul.*)	+
RRAGA		–	+
RUVBL2		+ (*H. sap.*)	+
SAFB		+ (*H. sap.*)	+
SARS1		+ (*H. sap.*)	+

Table S1 (end)

Gene	Reference	The presence of pseudogenes (including in humans, according to Ensembl)	Presence of a homologous gene (according to Ensembl)
SDC3	Noriega et al., 2010	–	+
SDHA	Ahn et al., 2008	+ (*H. sap.*)	+
SNRPA	Noriega et al., 2010	+ (*M. mul.*)	+
SNX3		+ (*H. sap.*)	+
SPAG7		+ (*H. sap.*)	+
SSR2		–	+
STK24		+ (*H. sap.*)	+
SUI1		+ (*M. mul.*)	+
TADA3		–	+
TALDO1		+ (*H. sap.*)	+
TBP		–	+
TCF25		–	+
TMED9		–	+
TTC1		–	+
UBA6		–	+
UBA52	Ahn et al., 2008	+ (*H. sap.*)	+
UBB	Noriega et al., 2010	–	+
UQCRH		+ (*H. sap.*)	+
UQCRQ		+ (*H. sap.*)	+
VEGFB		–	+
VPS72		–	+
YWHAE		+ (*H. sap.*)	+
YWHAH		–	+
YWHAZ	Ahn et al., 2008	+ (*H. sap.*)	+
ZNF592	Noriega et al., 2010	+ (*H. sap.*)	+

Note. Pseudogenes (in both rhesus macaques and humans) and the presence of a homologous gene were checked in Ensembl database (https://www.ensembl.org/Macaca_mulatta/Info/Index) for *M. mulatta*. Accessed April 28, 2025.

Table S2. Selected genes, expression in humans, rhesus macaques, and mice

Gene	Expression is not lower than the median value (BioGPS, http://biogps.org/)					Medium or high expression (according to the Ensembl database)	
	H. sapiens		*M. musculus*			*M. mulatta*	
	Whole blood	Lymphoblasts	Bone marrow	Lymph nodes	Spleen	Brain	Spleen
Genes with expression above the median in both humans and mice							
ACVRL1	+5.05	+5.65	+57.67	+110.15	+56.32	–	+
ARHGDIA	+598.85	+802.85	+1936.03	+3212.11	+3408.43	+	+
COL6A1	+4.20	+4.75	+105.13	+939.83	+121.02	–	+
CSNK2B	+879.10	+1577.50	+2951.07	+2513.62	+2007.99	+	+
CYB5R1	+50.40	–12.10	+540.37	+460.28	–286.32	+	+
DIAPH1	+20.00	–16.25	+1259.37	+724.98	+1022.96	+	+
GABRA4	+3.80	+4.25	+4.82	–4.73	+5.04	+	n/a
GABRG2	+5.10	+5.45	+5.14	+5.14	+5.14	+	–
GABRD	+3.65	+4.20	+4.64	+4.64	+4.64	+	–
GABRE	+4.10	+4.65	+4.64	+4.64	+4.64	–	+
GAD1	+4.70	+5.10	+5.10	+6.51	+5.44	+	–
GP2	+4.90	+5.55	+4.78	+4.64	+246.36	–	–
H2BC4	+92.75	+5.85	+4676.31	+3180.15	+2012.73	–	–
HPCAL1	+457.65	–54.85	+1000.98	+1177.18	+994.68	+	+
MAPKAPK2	+547.8	+190.40	+502.31	+336.17	+549.01	+	+
MCM3AP	+11.10	+72.80	+341.28	+324.28	+485.45	–	–
POLR2A	+118.7	+143.75	+4.64	+4.64	+4.65	+	+
PRPF8	+137.40	+679.80	+3238.45	+3982.82	+3942.68	+	+
RAD9A	+5.80	+18.45	+245.53	+207.72	+272.45	+	+
TADA3	+6.55	+7.00	+161.02	+134.81	+166.23	+	+
TBP	+10.90	+17.65	+203.16	+155.69	–115.77	+	+
TCF25	+4.05	+4.70	+16.23	+25.24	+20.37	+	+
TTC1	+39.60	+65.20	+215.22	+194.22	–123.29	+	+
VPS72	+107.55	+173.35	+157.73	+160.08	+188.98	+	+
YWHAH	+266.45	+385.15	+6201.50	+2587.00	+3399.63	+	+
Genes with expression above the median in only one of the two species							
ADGRE2	+389.40	+6.15	n/a	n/a	n/a	–	–
ALG9	+4.90	+17.85	+148.18	–89.14	–48.80	+	+
AHSA1	–82.15	+794.20	+14.61	+19.33	+18.58	+	+
ARHGEF7	–7.25	+9.75	–220.59	+365.30	+308.74	+	+
B4GALT3	–20.30	+76.55	+310.59	–161.12	+259.72	+	+
EEF2	–3044.60	+4083.15	+4.64	+4.64	+4.64	+	+
GABRA1	+5.50	+6.10	–4.66	–4.66	–4.64	+	n/a
H6PD	–21.60	–21.10	–110.21	+392.37	+213.01	–	+
HMBS	–5.05	+45.55	+24313.1	+355.63	+1453.10	+	+
INPP5K	–8.85	+11.15	+475.50	+496.73	+524.72	+	+
NDUFA1	+900.40	+1901.45	–9543.91	–8858.14	–8586.04	+	+
NDUFA2	+380.70	+704.70	–4795.62	–5082.55	–4311.55	–	–
NUDT3	–5.35	+19.95	+802.59	–575.85	+835.63	+	+
RAD23A	–22.02	+248.45	+4883.36	+587.89	–964.98	+	+
SDC3	–8.05	–7.60	+297.26	+903.65	+639.23	+	+
SSR2	+686.35	+667.90	–551.37	–590.66	–483.49	+	+
TMED9	+423.35	+438.60	–3298.43	–4071.73	–2638.30	+	+
UBA6	–96.15	–94.25	–197.34	–229.04	–252.69	+	+
UBB	–4760.70	–5851.40	+40390.52	+34615.40	–32161.58	+	+

Table S2 (end)

Gene	Expression is not lower than the median value (BioGPS, http://biogps.org/)					Medium or high expression (according to the Ensembl database)	
	H. sapiens		*M. musculus*			*M. mulatta*	
	Whole blood	Lymphoblasts	Bone marrow	Lymph nodes	Spleen	Brain	Spleen
Genes with expression below the median in both humans and mice							
ARL2	–64.20	+305.60	–56.04	–63.79	–47.42	+	+
ATF4	–578.95	+1933.65	+12.12	–7.72	–13.33	+	+
COPS6	–122.10	+353.15	–8.07	–7.04	–8.14	+	+
DMAC2L	–4.20	+15.60	–105.8	–61.52	–50.79	+	+
EIF1	–9.50	+12.15	+7307.08	–4563.74	–5164.80	+	+
GPX4	–471.45	+1103.90	+10106.16	–5448.84	–3559.94	+	+
GRIK5	–41.35	–67.05	–4.77	–4.70	–4.70	+	–
LDHA	–981.65	+10003.95	–4998.07	–4839.26	–3788.79	+	+
MVK	–24.65	+93.20	–8.66	–10.59	–7.51	–	+
NDUFA7	–26.10	+277.55	–1117.43	–1538.15	–1241.45	+	+
RRAGA	–173.55	+318.80	–577.09	+769.94	–677.59	+	+
VEGFB	–7.95	+43.10	–80.05	–92.77	–46.19	+	+

Note. Accessed April 28, 2025. "+" indicates expression above the median, "–" indicates expression below the median, digital values indicate the expression level according to the BioGPS database (http://biogps.org), n/a – no data available. Expression data in rhesus macaques do not use median expression and are therefore for illustrative purposes only.