

Macaque Protein	Rat UniProt	Symbol	AGM	AGM p-value	PT	PT p-value	Comp.	Ref
ENSMMUP00000005100	P02770	ALB	0.578	0.007	0.239	0.001	CSF	(22, 25)
ENSMMUP00000006233	P13596	NCAM1	1.625	0.002	-0.445	0.406	CSF	(28)
ENSMMUP00000013572	P13221	GOT1	2.017	0.000	1.045	0.006	CSF	(22)
ENSMMUP00000026593	Q62718	NTM	2.490	0.000	-0.296	0.687	CSF	(28)
ENSMMUP00000005100	P02770	ALB	-1.753	0.001	3.938	0.000	PL	(22, 25)
ENSMMUP00000021966	Q5M7U6	ACTR2	-0.620	0.007	-0.144	0.529	LN	(26)
ENSMMUP00000008052	P07943	AKR1B1	-1.156	0.002	-0.749	0.030	LN	(22)
ENSMMUP00000001151	Q5U362	ANXA4	-1.168	0.000	-1.151	0.000	LN	(26)
ENSMMUP00000004753	P15999	ATP5A1	-0.659	0.004	-0.195	0.339	LN	(20)
ENSMMUP00000009052	Q5X132	CAPZB	-0.806	0.000	-0.407	0.017	LN	(20)
ENSMMUP00000014181	Q5XIM9	CCT2	-0.210	0.622	-0.954	0.004	LN	(32)
ENSMMUP00000038741	Q6P502	CCT3	-0.972	0.000	-0.510	0.004	LN	(76)
ENSMMUP00000013774	P11442	CLTC	-0.836	0.000	-0.409	0.003	LN	(28)
ENSMMUP00000008640	Q6P6R2	DLD	-1.144	0.008	-0.676	0.053	LN	(76)
ENSMMUP00000016692	P47942	DPYSL2	0.299	0.107	-0.460	0.000	LN	(22, 28, 76)
ENSMMUP00000012348	P07323	ENO2	0.121	0.829	-0.555	0.007	LN	(21, 22)
ENSMMUP00000015794	P15429	ENO3	-0.703	0.104	-0.469	0.002	LN	(26)
ENSMMUP00000004809	P63245	GNB2L1	-1.120	0.000	-0.598	0.003	LN	(26)
ENSMMUP00000006906	P06761	HSPA5	-0.473	0.007	-0.467	0.000	LN	(76)
ENSMMUP00000007731	P48721	HSPA9	-0.361	0.190	-0.489	0.001	LN	(24)
ENSMMUP00000005514	P42930	HSPBL2	-0.277	0.447	-0.816	0.001	LN	(32)
ENSMMUP00000022609	P11762	LGALS1	-0.596	0.029	-0.660	0.001	LN	(32)
ENSMMUP00000021173	P48679	LMNA	-0.026	0.913	-0.552	0.000	LN	(26)
ENSMMUP00000012976	P04636	MDH2	-0.973	0.000	-0.490	0.005	LN	(22)
ENSMMUP00000002254	P11598	PDIA3	-0.483	0.006	-0.561	0.000	LN	(19, 32, 76)
ENSMMUP00000006757	P31044	PEBP1	-0.653	0.004	-0.559	0.000	LN	(20)
ENSMMUP00000011500	Q35244	PRDX6	-0.690	0.000	-0.247	0.240	LN	(22)
ENSMMUP00000037874	P29315	RNH1	-0.754	0.000	-0.482	0.005	LN	(21)
ENSMMUP00000018959	P50137	TKT	-0.758	0.000	-0.502	0.001	LN	(22)
ENSMMUP00000041371	P48500	TPI1P1	-0.815	0.001	-0.445	0.037	LN	(20, 21, 28)
ENSMMUP00000006872	P48500	TPI1P1	-0.697	0.000	-0.336	0.000	LN	(20, 21, 28)
ENSMMUP00000026582	P46462	VCP	-0.870	0.002	-0.446	0.000	LN	(19)
ENSMMUP00000001290	Q5RKI0	WDR1	0.357	0.109	-0.312	0.004	LN	(20)
ENSMMUP00000017350	P35213	YWHAB	-0.728	0.003	-0.386	0.009	LN	(20)
ENSMMUP00000008547	P63102	YWHAZ	-0.834	0.000	-0.335	0.035	LN	(28)
ENSMMUP00000040852	Q5I0M7		-1.179	0.000	-0.515	0.107	LN	(20)
ENSMMUP00000001238	P07943		-1.013	0.003	-1.010	0.001	LN	(22)
ENSMMUP00000010110	Q5I0M7		-0.954	0.001	-0.115	0.807	LN	(20)
ENSMMUP00000010407	Q5I0M7		-0.801	0.002	-0.667	0.011	LN	(20)
ENSMMUP00000002527	P06761		-0.776	0.004	-0.701	0.001	LN	(76)
ENSMMUP000000020340	Q06647		-0.145	0.692	-0.633	0.009	LN	(19)
ENSMMUP00000006904	P06761		0.178	0.489	-0.527	0.009	LN	(76)
ENSMMUP00000001942	Q9ER34	ACO2	0.280	0.160	0.405	0.001	C	(24, 26)
ENSMMUP00000005100	P02770	ALB	0.105	0.510	0.226	0.001	C	(22, 25)
ENSMMUP00000016692	P47942	DPYSL2	-0.067	0.703	0.417	0.000	C	(22, 28, 76)
ENSMMUP00000007731	P48721	HSPA9	0.025	0.868	0.207	0.000	C	(24)
ENSMMUP00000005514	P42930	HSPBL2	-0.095	0.623	0.752	0.000	C	(32)
ENSMMUP00000011635	P23565	INA	-0.582	0.000	0.437	0.000	C	(26)
ENSMMUP00000022609	P11762	LGALS1	-1.007	0.001	0.193	0.414	C	(32)
ENSMMUP00000021173	P48679	LMNA	-0.130	0.556	0.268	0.000	C	(26)
ENSMMUP00000012976	P04636	MDH2	0.398	0.045	0.175	0.001	C	(22)
ENSMMUP00000000856	P12839	NEFM	-0.582	0.000	0.437	0.000	C	(25)
ENSMMUP00000013742	P04182	OAT	0.609	0.060	0.426	0.000	C	(22)
ENSMMUP00000002254	P11598	PDIA3	0.032	0.775	-0.240	0.001	C	(19, 32, 76)
ENSMMUP00000004676	P18422	PSMA3	-0.538	0.001	0.015	0.932	C	(25)
ENSMMUP00000018959	P50137	TKT	-0.137	0.131	0.155	0.000	C	(22)

**Supplemental Table S1.** Proteins significantly altered by morphine in AGMs or PTs, and are in the Morphine database (34). Macaque ensemble protein identifiers, columns “AGM” and “PT” indicate

the  $\text{Log}_2$  ratio of post- versus pre-morphine administration. Comp. refers to the compartment that the protein change was observed in (CSF – cerebral spinal fluid; PL – plasma; LN – lymph node; C – colon).

Antibodies used for flow cytometry staining

Antigen specificity	Clone	Conjugate(s)	Vendor
CD3	SP34-2	Pacific Blue, Alexa 700	BD Biosciences
CD3-zeta	FITC	6B10.2	Santa Cruz Biotech
CD4	S3.5	Qdot 605	Invitrogen
CD8	3B5	PECy5.5	Invitrogen
CD11b	ICRF44	PE Cy7	BD Biosciences
CD11c	B-LY6	V450	BD Biosciences
CD14	RMO52	ECD	Beckman Coulter
CD16	3G8	APC	Invitrogen
CD19	HIB19.1	Alexa 700	BD Biosciences
CD20	2H7	PE	BD Biosciences
CD25	M-A251	APC Cy7	BD Biosciences
CD28	CD28.2	APC	BD Biosciences
CD33	HIM3-4	FITC	BD Biosciences
CD38	HIT2	Alexa 700	eBiosciences
CD45RA	2H4	ECD	Beckman Coulter
CD56	NCAM16.2	FITC	BD Biosciences
CD124	HIL4R-M57	PE	BD Biosciences
CD127	hIL-7R-M21	PE	BD Biosciences
CD195 (CCR5)	2D7	APC Cy7	BD Biosciences
CD197 (CCR7)	3D12	APC	R&D
CD197 (CCR7)	3D12	PE Cy7	BD Biosciences
foxP3	PCH101	Pacific Blue	eBiosciences
HLA-DR	L243	APC Cy7, PE Cy7	BD Biosciences
Integrin beta-7	FIB504	Biotin	eBiosciences
ki-67	B56	PE	BD Biosciences
Streptavidin anti-biotin	Q10121MP	Qdot 655	Invitrogen
TCR gamma delta	B1.1	FITC	eBiosciences

**Supplemental Table S2.** Antibodies used for flow cytometry experiments.