

**Supplemental Table 1: Predicted phosphorylation sites for human MPG**

Amino Acids	Sequence	Putative Phospho-motif	Putative Kinase
46 - 52	HSSSDAA	XpSXXDXX	Pyruvate dehydrogenase kinase substrate motif
47 - 49	SSS	pSX[E/pS*/pT*]	Casein Kinase II substrate motif
65 - 67	PTT	P[pS/pT]X	DNA dependent Protein kinase substrate motif
65 - 68	PTTP	PXpTP	GSK3, Erk1, Erk2 and CDK5 kinase motif
65 - 68	PTTP	PX[pS/pT]P	ERK1, ERK2 Kinase substrate motif
65 - 70	PTTPGP	X[pS/pT]XXX[A/P/S/T]	G protein-coupled receptor kinase 1 substrate motif
66 - 68	TTP	X[pS/pT]P	GSK-3, ERK1, ERK2, CDK5 substrate motif
72 - 77	RSIYFS	X[pS/pT]XXX[A/P/S/T]	G protein-coupled receptor kinase 1 substrate motif
73 - 77	SIYFS	pSXXX[pS/pT]	MAPKAPK2 kinase substrate motif
73 - 77	SIYFS	pSXXXpS*	GSK3 kinase substrate motif
77 - 79	SSP	X[pS/pT]P	GSK-3, ERK1, ERK2, CDK5 substrate motif
78 - 79	SP	pSP	ERK1, ERK2 Kinase substrate motif
78 - 80	SPK	[pS/pT]P[R/K]	Growth associated histone H1 kinase substrate motif
78 - 80	SPK	[pS/pT]X[R/K]	PKA/PKC kinase substrate motif
113 - 116	NGTE	XX[pS/pT]E	G protein-coupled receptor kinase 1 substrate motif
123 - 127	ETEAY	[E/D][pS/pT]XXX	b-Adrenergic Receptor kinase substrate motif
124 - 127	TEAY	[pS/pT]XX[E/D/pS*/pY*]	Casein Kinase II substrate motif
141 - 143	RQT	[R/K]X[pS/pT]	PKA kinase substrate motif
141 - 143	RQT	[R/K]X[pS/pT]	PKC kinase substrate motif
142 - 144	QTP	X[pS/pT]P	GSK-3, ERK1, ERK2, CDK5 substrate motif
143 - 145	TPR	[pS/pT]P[R/K]	Growth associated histone H1 kinase substrate motif
143 - 145	TPR	[pS/pT]X[R/K]	PKA/PKC kinase substrate motif
150 - 157	FMKPGTLY	[M/V/L/I/F]X[R/K]XX[pS/pT]XX	Calmodulin-dependent protein kinase II substrate motif
152 - 155	KPGT	KXX[pS/pT]	PKA/PKC kinase substrate motif
154 - 158	GTLYV	XpTXpY*X	PP2C delta substrate motif
155 - 157	TLY	pTXpY*	Dual specificity protein phosphatase 6 substrate motif
171 - 173	SSQ	XpSQ	DNA dependent Protein kinase substrate motif
171 - 177	SSQDGA	XpSXXDXX	Pyruvate dehydrogenase kinase substrate motif
172 - 173	SQ	pSQ	ATM kinase substrate motif
191 - 195	ETMRQ	[E/D][pS/pT]XXX	b-Adrenergic Receptor kinase substrate motif
192 - 194	TMR	[pS/pT]X[R/K]	PKA/PKC kinase substrate motif
200 - 208	LRKGTASRV	[M/V/L/I/F][R/K/H]XX[pS/pT]XXX[M/V/L/I/F]	AMP-activated protein kinase substrate motif
201 - 204	RKGT	RXX[pS/pT]	Calmodulin-dependent protein kinase II substrate motif
201 - 204	RKGT	[R/K]XX[pS/pT]	PKA/PKC kinase substrate motif
201 - 207	RKGTASR	RXX[pS/pT]XXR	CLK1 kinase substrate motif
202 - 204	KGT	[R/K]X[pS/pT]	PKA/PKC kinase substrate motif
202 - 206	KGTAS	KXXX[pS/pT]	PKA kinase substrate motif
213 - 216	ELCS	[E/D]XX[pS/pT]	Casein Kinase I substrate motif
216 - 219	SGPS	pSXX[E/pS*/pT*]	Casein Kinase II substrate motif
218 - 220	PSK	P[pS/pT]X	DNA dependent Protein kinase substrate motif
250 - 253	EPSE	XX[pS/pT]E	G protein-coupled receptor kinase 1 substrate motif
251 - 253	PSE	P[pS/pT]X	DNA dependent Protein kinase substrate motif
280 - 282	RGS	RXpS	PKA kinase substrate motif
280 - 282	RGS	[R/K]X[pS/pT]	PKC kinase substrate motif
280 - 283	RGSP	XXpSP	GSK-3, ERK1, ERK2, CDK5 substrate motif
281 - 286	GSPWVS	X[pS/pT]XXX[A/P/S/T]	G protein-coupled receptor kinase 1 substrate motif
282 - 283	SP	pSP	ERK1, ERK2 Kinase substrate motif
282 - 286	SPWVS	pSXXX[pS/pT]	MAPK/MAPK2 kinase substrate motif
282 - 286	SPWVS	pSXXXpS*	GSK3 kinase substrate motif
285 - 291	VSVVDRV	XpSXXDXX	Pyruvate dehydrogenase kinase substrate motif
286 - 289	SVVD	pSXX[E/D]	Casein kinase II substrate motif

Predicted phosphomotif were identified using full length APNG amino acid sequence and PhosphoMotif finder software (25).