Supplementary Table 1: MAP6 partners								
Category	**Partner**	**Human gene**	**Name and aliases**	**Localizations and Roles**	**MAP6 partners found in the experiment**	**Identification methods**	**Ref**	**Confidence**
Cytoskeleton	**Microtubules**	Multiple genes	α-Tubulin / β-Tubulin	-Ubiquitous, cell body, dendrites, axon -Vesicular transport, neuronal polarization, synaptic plasticity		-Co-pelleting -IF -NMR	(1-3)	Strong
	Actin	Multiple genes	F-Actin	-Ubiquitous, cell body, dendrites, axon -Cell motility, structure and plasticity		-Co-pelleting -IF -FRET	(4, 5)	Strong
	Neurofilament	Multiple genes	Neurofilament light, medium and heavy chains	-Neuronal, enriched in axons -Neuronal caliber, intracellular transport -Form spheroid aggregates in Amyotrophic Lateral Sclerosis		-Co-purification	(6)	Moderate
	Inversin	INVS	Inversin/ NPHP2 / INV / NPH2	-Ubiquitous, basal body of the cilia -Wnt signaling pathway -Nephronophthisis (ciliopathy)	Tubulin Actin 14-3-3 ζ/δ	-Peptide-affinity column	(9)	Moderate
	Bmcc1s	PRUNE2	Prune homolog 2 BMCC1 / BNIPXL / Prune2	-Enriched in the brain -Bmcc1s variant bound to microtubules -Proapoptotic -Potential biomarker of AD	Tubulin	-GST pull down -Co-IP	(10)	Strong

Cytoskeleton	**Spinophilin**	PPP1R9B	Protein Phosphatase 1 Regulatory subunit 9B / Spn / SPINO / PPP1R6 / Neurabin-2	-Ubiquitous, cell body, dendrites, axon, dendritic spines -Scaffold between membranes and cytoskeleton -Spine morphology, synaptic plasticity, neuronal migration -Decreased mRNA in MAP6 KO mice (11) -Psychiatric disorders	Tubulin/Actin Neurofilament Dynamin 1 CamKII 14-3-3 ζ/δ α-Adaptin Endophilin 1 SNAP25 Agap2 Calmodulin MAP6D1	-Co-IP	(12)	Moderate
	Tctex1	DYNLT1	T-complex testis expressed 1 / Dynein light chain Tctex-type 1	-Ubiquitous, cell body, dendrites, axon -Surface expression of Ca_v -Ca^{2+} influx -Actin remodeling in neurite -Primary cilium length		-Yeast 2 Hybrid -Co-IP	(8)	Strong
	MAP6d1	MAP6D1	MAP6 domain containing protein 1 / SL21 / STOP-like protein of 21 kDa	-Strictly neuronal -Golgi apparatus -Cytoskeleton		-Yeast 2 Hybrid -Co-IP	(13)	Strong
	MAP6	MAP6	Microtubule-Associated Protein 6 / Stable Tubule Only Polypeptide (STOP)			-Yeast 2 Hybrid -Co-IP	(13)	Strong
Endocytosis	**SNAP25**	SNAP25	Synaptosome-associated protein 25 / SEC9	-Pre-synaptic compartment -t-SNARE vesicle fusion -Calcium regulated	Tubulin	-Co-IP	(14)	High

Endocytosis	**Intersectin 1**	ITSN1	Intersectin-1 / ITSN / SH3D1A / SH3P1	-Pre and post-synaptic compartments -Adaptor protein for Clathrin-Mediated Endocytosis -GEF for CDC42 -Actin remodeling (N-WASP activation)	Dynamin 1	-GST pull-down -Co-IP	(7, 15)	Strong
	Dynamin 1 **Endophilin 1** **α-Adaptin**	DNM1	Dynamin-1 / DNM / EIEE31	-Pre and post-synaptic compartments -Vesicle neck constriction -Vesicle transport and targeting -Actin remodeling	BK_{Ca}	-GST pull-down with a mix of the 3 proteins	(16)	Moderate
		SH3GL2	Endophilin A1 / SH3 domain containing GRB2like 2 / CNSA2 / SH3P4 / EEN-B1 / SH3D2A	-Pre and post-synaptic compartments -Vesicle endocytosis -Dendritic spine morphogenesis and plasticity				
		AP2A2	α-Adaptin C / Adaptor-related protein complex 2 subunit α-2 / ADTAB / CLAPA2	-Pre and post-synaptic compartments -Vesicle recycling via Clathrin-Mediated Endocytosis				
	TMEM106B	TMEM106B	Transmembrane protein 106B / HLD16	-Membrane of lysosomes -Lysosomal function -Frontotemporal lobar degeneration		-Co-IP	(17)	Strong
	Varp	ANKRD27	Ankyrin repeat domain 27 / PP12899	-Ubiquitous, cell body, dendrites, axon -Early endosomes -GEF for Rab21 -Neurite growth		-GST pull-down	(18)	High

Endocytosis	**Bri2**	ITM2B	Integral membrane protein 2B / BRI / FBD / ABRI / E25B / E3-16 / RDGCA / BRICD2B	-Ubiquitous, cell body, dendrites, axon -Transmembrane protein in ER, Golgi apparatus, plasma membrane and vesicles -Regulation of Aβ oligomerization levels -Neuron maturation -Familial British and Danish dementia	Agap2 Neurofilament SNAP25 Dynamin 1 CaMKII Endophilin 1 Tubulin	-Co-IP	(19)	Moderate
	α-Synuclein	SNCA	α-Synuclein / PD1 / NACP / PARK1 / PARK4	-Pre-synaptic compartment -Synaptic vesicles release -SNARE protein folding	Neurofilament CAMKII Actin Tubulin 14-3-3 ζ/δ	-Peptide-affinity column	(20)	Moderate
Neuro-receptors & channels	**Ca_v2.1**	CACNA1 A	Calcium voltage-gated channel subunit α-1 A / CACNL1A4 / EA2 / FHM / MHP / APCA / HPCA / SCA6	-Pre-synaptic compartment -Fast synaptic transmission -Familial Hemiplegic migraine and Episodic ataxia 2 -Spinocerebellar ataxia 6	CAMKII Intersectin 1 BK_{Ca} SNAP25 Tubulin	-Co-IP	(21)	Moderate
	Ca_v2.2	CACNA1 B	Calcium voltage-gated channel subunit α-1 B / CACNN / DYT23 / NEDNEH / CACNL1A5	-Pre-synaptic compartment -Neurotransmitter release -Fast synaptic transmission	CAMKII 14-3-3 ε Intersectin 1 BK_{Ca} SNAP25 Tubulin	-Co-IP	(8, 21)	Strong
	Ca_v2.3	CACNA1E	Calcium voltage-gated channel subunit α-1 E	-Pre-synaptic compartment -Modulation of neuronal firing	SNAP25 Tubulin	-Co-IP	(21)	Moderate
	Ca_vBeta3	CACNB3	Voltage-dependent L-type calcium channel subunit beta-3 / CAB3 / CACNLB3	-Pre- and post-synaptic compartments -L-type calcium channel subunit	CAMKII Ca_v2.1 Ca_v2.2 Ca_v2.3 SNAP25			

Neuro-receptors & channels	**Ca_vBeta4**	CACNB4	Calcium voltage-gated channel auxiliary subunit beta 4 / EA5 / EJM / CAB4 / EIG9 / EJM4 / EJM6 / CACNLB4	-Pre- and post-synaptic compartments -Possible component of P-/Q-type calcium channel	CAMKII Ca_v2.1 Ca_v2.2 Ca_v2.3 SNAP25			
	BK_{Ca}	KCNA1	Potassium voltage-gated channel subfamily A member 1 / EA1 / MK1 / AEMK / HBK1 / HUK1 / MBK1 / RBK1 / KV1.1	-Brain, plasma membrane -Tetrameric voltage-gated delayed potassium channel -Myokymia with periodic ataxia	Tubulin	-GST pull-down	(22)	Moderate
	Plexin D1	PLXND1	Plexin-D1 / PLEXD1	-Cortical, subicular and striatal neurons -Guidance receptor of Sema3E		-Co-IP	(7)	Moderate
	Neuropilin 1	NRP1	Neuropilin 1 / NP1 / NRP / BDCA4 / CD304 / VEGF165R	-Neurons -Receptor of several class 3 semaphorin -Sema3E attractive pathway -Co-receptor of PlexinD1				
	VEGFR2	KDR	Kinase insert domain receptor / FLK1 / CD309 / VEGFR	-Neurons and astrocytes -Receptor tyrosine kinase -Neurogenesis, neuronal survival, synaptic plasticity -Sema3E attractive pathway, co-receptor of plexin D1				

Signal transduction	**zDHHC13**	ZDHHC13	Zinc finger DHHC-type palmitoyltransferase 13	-Wide cellular expression -Golgi apparatus and vesicles -Palmitoyltransferase	SNAP25	-Yeast 2 Hybrid	(23)	Moderate
	zDHHC17	ZDHHC17	Zinc finger DHHC-type palmitoyltransferase 17 / HIP14	-Golgi apparatus and vesicles -Palmitoyltransferase specific of a subset of neuronal proteins (SNAP25, HTT, PSD95)		-Yeast 2 Hybrid -His pull-down		Strong
	ABHD17A	ABHD17A	Depalmitoylase α/β hydrolase domain-containing protein 17A / FAM108A1	-Plasma membrane, Golgi, vesicles -Depalmitoylase		-Over-expression (induces delocalization of MAP6 from vesicles)	(24)	Moderate
	ABHD17B	ABHD17B	Depalmitoylase α/β hydrolase domain-containing protein 17B / FAM108B1	-Plasma membrane, Golgi, vesicles -Depalmitoylase				
	ABHD17C	ABHD17C	Depalmitoylase α/β hydrolase domain-containing protein 17C / FAM108C1	-Plasma membrane, Golgi, vesicles -Depalmitoylase				
	APT1	LYPLA1	Acyl-protein-thioesterase 1 / APT-1 / hAPT1 / Lysophospholipase A1 / LPL-1 / LysoPLA1	-Wide expression, cytosolic -Depalmitoylase -Dendritic spine morphogenesis -Notch and Wnt signaling		-Multiplexed mass spectrometry -Palmitoylation assay	(25, 26)	High
	Calmodulin	CALM1	CaM / CAM2 / CAM3 / CAMB / CAMC / CAMI / PHKD / CPVT4 / DD132 / CALML2 / CAMIII	-Ubiquitous -Ca^{2+} signaling -Synaptic transmission and plasticity	Actin 14-3-3 CaMKII Endophilin 1 Tubulin CAMKII	-Affinity-column -Peptide spots -Sepharose-affinity column -GST pull down	(1, 27, 28)	Strong

Signal transduction	**Rac1**	RAC1	Rac family small GTPase 1 / MIG5 / MRD48 / TC-25 / p21-Rac1	-Plasma membrane-bound small GTPase -Cytoskeletal rearrangement -Axon growth and guidance		-Avi-tag Pull-down	(29)	Moderate
	Rac2	RAC2	Rac family small GTPase 2 / Gx / EN-7 / IMD73A / IMD73B / IMD73C / HSPC022 / p21-Rac2	-Plasma membrane-bound small GTPase -Cytoskeletal rearrangement				
	14-3-3 ζ/δ	YWHAZ	Tyrosine 3-monooxygenase / tryptophan 5-monooxygenase activation protein zeta / HEL4 /KCIP-1 /HEL-S-3 / HEL-S-93 / POPCHAS	-Ubiquitous, cytosolic -Binding to phosphoserine-containing proteins -Cell signaling -Neurogenesis -Neurodevelopmental defects -Neuropsychiatric disorders	Actin CaMKII Calmodulin Neurofilament Spinophilin Tubulin	-Tandem affinity purification	(30)	Moderate
	CAMKII	Multiple genes	Calcium/calmodulin-dependent protein kinase II	-Post-synaptic compartment -Serine/threonine kinase -Dendritic spine and synapse formation -Synaptic plasticity -Autosomal Dominant Mental Retardation		-CaMKII-phospho sites (S198 and S491)	(5)	Strong
	Agap2	AGAP2	ArfGAP with GTPase domain / ankyrin repeat and PH domain 2	-Cytosolic, nuclear -GTPase -Anti-apoptotic (NGF, phosphoinositide 3-kinase)	PI3K	-Co-IP	(31)	Moderate
	Src	SRC	SRC proto-oncogene, non-receptor tyrosine kinase / ASV / SRC1 / THC6 / c-SRC / p60-Sr	-Cell body, dendrites, axon -Non-receptor tyrosine kinase -NMDA receptor activation		-GST pull-down	(7)	Moderate

Signal transduction	**p85/PI3K**	PIK3R1	Phosphoinositide-3-kinase regulatory subunit 1 / p85 / AGM7 / GRB1 / IMD36 / p85-ALPHA	-Ubiquitous, cytosolic -Subunit of PI3K -AKT/mTOR signaling pathway		-GST pull-down	(7)	Moderate
	TNK2	TNK2	Tyrosine kinase non-receptor 2 / ACK / ACK1 / p21cdc42Hs	-Cytosolic -Non-receptor tyrosine kinase -EGF signaling pathway -Severe autosomal recessive infantile-onset epilepsy	Actin Neurofilament CaMKII Tubulin α-Adaptin	-Immuno-affinity column	(32)	High
	Presenilin 1	PSEN1	Presenilin-1 / AD3 / FAD / PS1 / S182 / ACNINV3	-Plasma membrane, endosomes -Catalytic subunit of the γ-secretase complex -Alzheimer Disease	Actin CaMKII Tubulin	-GST pull down	(33)	Moderate
Nuclear receptors & effectors	**Coup-TF1**	NR2F1	Nuclear Receptor subfamily 2 group F member 1 / EAR-3 / SVP44 / BBSOAS / ERBAL3	-Nuclear, transcription factor -Neuronal differentiation and development -Bosch-Boonstra optic atrophy syndrome		-Yeast 2 Hybrid	(34)	High
	RAR-beta	RARB	Retinoic Acid Receptor beta / HAP / RRB2 / NR1B2 / MCOPS12	-Nuclear -Neuronal differentiation -Intellectual disability -Motor impairment				High
	RAR-gamma	RARG	Retinoic Acid Receptor Gamma / RARC / NR1B3	-Nuclear -Neuronal differentiation				High
	RORB	RORB	Retinoic Orphan Acid Receptor β / EIG15 / NR1F2 /RZR-BETA / bA133M9.1	-Nuclear -Neurogenesis, axon growth -Genetic Generalized Epilepsy				Moderate

	SLX4IP	SLX4IP	SLX4 interacting protein / C20orf94 / bA204H22.1 / bA254M13.1 / dJ1099D15.3	-Nuclear -DNA maintenance and repair	14-3-3 ζ/δ Actin Tubulin	-Tandem affinity purification	(35)	Moderate
	TIA1	TIA1	T cell intracellular antigen / TIA1 cytotoxic granule associated RNA-binding protein / WDM / ALS26	-Nuclear, cytoplasmic stress granules -Prion-related RNA-binding protein -mRNA splicing -Welander distal myopathy	α-Adaptin SNAP25	-Immuno-affinity column	(36)	Moderate
	HERC2	HERC2	HECT and RLD domain containing E3 ubiquitin protein ligase 2 / D15F37S1 / jdf2 / SHEP1 / p528	-Nuclear, cytoplasmic -E3 ubiquitin ligase -Mental retardation, autosomal recessive 38 (MRT38)		-Co-IP -Proteomic -Bioinformatic	(37)	Moderate

Supplementary Table 1: MAP6 partners.

We classified MAP6 partners along the following categories: **Cytoskeleton, Endocytosis, Neuro-receptors & channels, Signal transduction, Nuclear receptors & effectors**. For each partner, the following information is given: Name of the human gene, Aliases, Localizations and roles, Other MAP6 partners found in the same experiment that highlights the partner, Identification method, References of the published work showing the interaction, Confidence of the interaction (Moderate when a single technique was used and with numerous partners found in the study; High when a single technique was used and with only a few partners found in the study; Strong when multiple techniques were used or when multiple independent works exist).

Abbreviations: IF (immunofluorescence assay), NMR (nuclear magnetic resonance), Co-IP (co-immunoprecipitation assay), GST (Glutathione S-transferase).

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