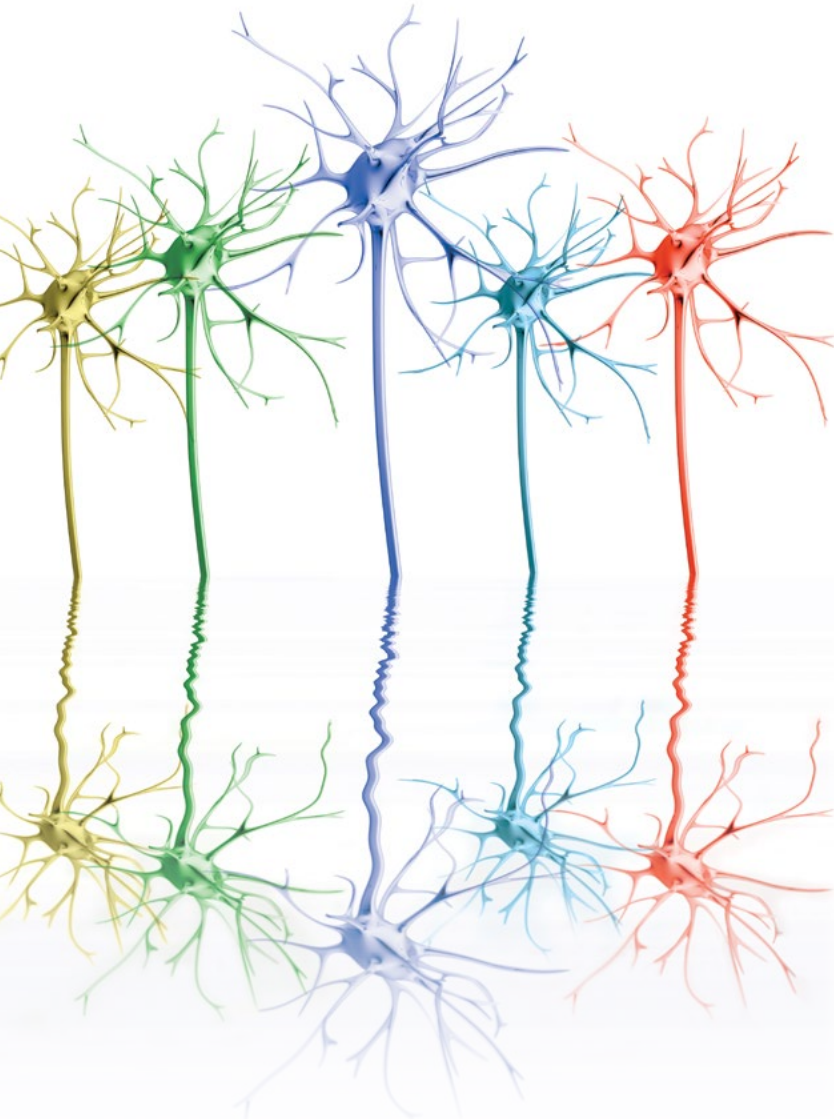




**NEW!**

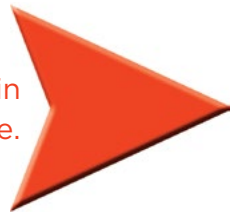
caprion.com

**INTRODUCING—CNS PROTEOCARTA™  
CEREBROSPINAL FLUID MRM PANEL FOR CNS DISEASES**



- Highly multiplexed CNS specific panel**
- Small sample size**
- Quickly customizable**
- Exceptional specificity**

For a comprehensive list of protein panels, see chart inside.



Accelerating precision medicine through proteomics and immune monitoring

# CAPRION CNS PROTEOCARTA™

Working in conjunction with the Biomarker Consortium as the selected discovery partner, Caprion developed CNS ProteoCarta™, an easily customizable and highly multiplexed assay, useful in monitoring central nervous system proteins associated with neurological disorders such as Alzheimer's and Parkinson's disease.

## 1 PROTEOCARTA™ HUMAN CSF ASSAY SPECIFICATIONS

Multiplexed Analytes		142 Proteins (320 peptides)
Sample Amount		75 ul
Quantification		2 Transition per peptide
Sensitivity		1 ng/ml - 25 ug/ml
Precision (Median CV)	Internal Standards	11%
	Peptide Transitions	20%

## 2 PROTEOCARTA™ PANEL ADVANTAGES

Caprion's MRM assay panels have several significant advantages over other protein/biomarker quantification methods, including HPLC and antibody based ELISA assays.

- Highly Multiplexed (142 Proteins)
- Developed Specifically for CSF
- Easily & Rapidly Expandable -  
*Add new proteins in 8 to 12 weeks*
- Small Sample Volumes (75 ul/sample)
- No antibodies required
- Exceptional molecular specificity
- Sensitive (ng protein/ml)

Technology Characteristics	MRM-MS Assays	Immuno-Assays
Multiplexing Ability	High (100+)	Limited
Adding Multiple Novel Analytes	Easy (weeks)	Difficult
Antibodies Required	No	Yes
Measurement Type	Direct	Indirect
Sample Volume	75 ul	100 ul - 500ul +
Specificity	Very High	High

No.	UniProt_ID	Gene	Protein Description
1.	A1BG_HUMAN	A1BG	Alpha-1B-glycoprotein precursor
2.	AFAM_HUMAN	AFM	Afamin precursor
3.	FETUA_HUMAN	AHSG	Alpha-2-HS-glycoprotein precursor
4.	ALDOA_HUMAN	ALDOA	Fructose-bisphosphate aldolase A
5.	AMBP_HUMAN	AMBP	Protein AMBP precursor
6.	APLP2_HUMAN	APLP2	Amyloid-like protein 2 precursor
7.	APOB_HUMAN	APOB	Apolipoprotein B-100 precursor
8.	APOD_HUMAN	APOD	Apolipoprotein D precursor
9.	APOE_HUMAN	APOE	Apolipoprotein E precursor
10.	A4_HUMAN	APP	Amyloid beta A4 protein precursor
11.	B2MG_HUMAN	B2M	Beta-2-microglobulin precursor
12.	B3GN1_HUMAN	B3GNT1	N-acetyllactosaminide beta-1,3-N-acetylglucosaminyltransferase
13.	BACE1_HUMAN	BACE1	Beta-secretase 1 precursor
14.	BASP1_HUMAN	BASP1	Brain acid soluble protein 1
15.	BTD_HUMAN	BTD	Biotinidase precursor
16.	C1QB_HUMAN	C1QB	Complement C1q subcomponent subunit B precursor
17.	CO2_HUMAN	C2	Complement C2 precursor
18.	CO3_HUMAN	C3	Complement C3 precursor
19.	CO4A_HUMAN	C4A	Complement C4-A precursor
20.	CO5_HUMAN	C5	Complement C5 precursor
21.	CO6_HUMAN	C6	Complement component C6 precursor
22.	CO8B_HUMAN	C8B	Complement component C8 beta chain precursor
23.	CAH1_HUMAN	CA1	Carbonic anhydrase 1
24.	CA2D1_HUMAN	CACNA2D1	Voltage-dependent calcium channel subunit alpha-2/delta-1 precursor
25.	CADM3_HUMAN	CADM3	Cell adhesion molecule 3 precursor
26.	CATA_HUMAN	CAT	Catalase
27.	CCKN_HUMAN	CCK	Cholecystokinin precursor
28.	CD14_HUMAN	CD14	Monocyte differentiation antigen CD14 precursor
29.	CD59_HUMAN	CD59	CD59 glycoprotein precursor
30.	CAD13_HUMAN	CDH13	Cadherin-13 precursor
31.	CFAB_HUMAN	CFB	Complement factor B precursor
32.	CMGA_HUMAN	CHGA	Chromogranin-A precursor
33.	SCG1_HUMAN	CHGB	Secretogranin-1 precursor
34.	CH3L1_HUMAN	CHI3L1	Chitinase-3-like protein 1 precursor
35.	CSTN1_HUMAN	CLSTN1	Calsyntenin-1 precursor
36.	CSTN3_HUMAN	CLSTN3	Calsyntenin-3 precursor
37.	CLUS_HUMAN	CLU	Clusterin precursor
38.	CNDP1_HUMAN	CNDP1	Beta-Ala-His dipeptidase precursor
39.	CNTN1_HUMAN	CNTN1	Contactin-1 precursor
40.	CNTN2_HUMAN	CNTN2	Contactin-2 precursor
41.	CNTP2_HUMAN	CNTNAP2	Contactin-associated protein-like 2 precursor
42.	COCH_HUMAN	COCH	Cochlin precursor
43.	CERU_HUMAN	CP	Ceruloplasmin precursor
44.	CRP_HUMAN	CRP	C-reactive protein precursor
45.	CYTC_HUMAN	CST3	Cystatin-C precursor
46.	DIAC_HUMAN	CTBS	Di-N-acetylchitobiase precursor
47.	CATD_HUMAN	CTSD	Cathepsin D precursor
48.	CATL1_HUMAN	CTSL	Cathepsin L1 precursor

# Cerebrospinal Fluid MRM Panel for CNS Diseases

CNS ProteoCarta™ allows you to detect and quantify 142 proteins in human Cerebrospinal fluid (CSF) in a single multiplexed Multiple Reaction Monitoring (MRM) assay, requiring only 75 ul of CSF, an often times difficult-to-obtain specimen. Samples are detected down to approximately 1 ng/mL without the use of antibodies.

The 142 proteins typically detected by CNS ProteoCarta™ can be easily modified to include additional proteins within just 8-12 weeks, as Caprion only needs the protein sequence.

No.	UniProt_ID	Gene	Protein Description
50.	DAG1_HUMAN	DAG1	Dystroglycan precursor
51.	FBLN3_HUMAN	EFEMP1	EGF-containing fibulin-like extracellular matrix protein 1 precursor
52.	ENOG_HUMAN	ENO2	Gamma-enolase
53.	ENPP2_HUMAN	ENPP2	Ectonucleotide pyrophosphatase/phosphodiesterase family member 2 precursor
54.	EXTL2_HUMAN	EXTL2	Exostosin-like 2
55.	THRB_HUMAN	F2	Prothrombin precursor
56.	FABPH_HUMAN	FABP3	Fatty acid-binding protein, heart
57.	FAM3C_HUMAN	FAM3C	Protein FAM3C precursor
58.	FBLN1_HUMAN	FBLN1	Fibulin-1 precursor
59.	FMOD_HUMAN	FMOD	Fibromodulin precursor
60.	VTDB_HUMAN	GC	Vitamin D-binding protein precursor
61.	GFAP_HUMAN	GFAP	Glial fibrillary acidic protein
62.	GOLM1_HUMAN	GOLM1	Golgi membrane protein 1
63.	AATC_HUMAN	GOT1	Aspartate aminotransferase, cytoplasmic
64.	AATM_HUMAN	GOT2	Aspartate aminotransferase, mitochondrial precursor
65.	GRIA4_HUMAN	GRIA4	Glutamate receptor 4 precursor
66.	HBA_HUMAN	HBA1	Hemoglobin subunit alpha
67.	HBB_HUMAN	HBB	Hemoglobin subunit beta
68.	HEMO_HUMAN	HPX	Hemopexin precursor
69.	IBP2_HUMAN	IGFBP2	Insulin-like growth factor-binding protein 2 precursor
70.	IGSF8_HUMAN	IGSF8	Immunoglobulin superfamily member 8 precursor
71.	I18BP_HUMAN	IL18BP	Interleukin-18-binding protein precursor
72.	ITIH1_HUMAN	ITIH1	Inter-alpha-trypsin inhibitor heavy chain H1 precursor
73.	ITIH5_HUMAN	ITIH5	Inter-alpha-trypsin inhibitor heavy chain H5 precursor
74.	KLK10_HUMAN	KLK10	Kallikrein-10 precursor
75.	KLK11_HUMAN	KLK11	Kallikrein-11 precursor
76.	KLK6_HUMAN	KLK6	Kallikrein-6 precursor
77.	KNG1_HUMAN	KNG1	Kininogen-1 precursor
78.	L1CAM_HUMAN	L1CAM	Neural cell adhesion molecule L1 precursor
79.	LAMB2_HUMAN	LAMB2	Laminin subunit beta-2 precursor
80.	LPHN1_HUMAN	LPHN1	Latrophilin-1 precursor
81.	A2GL_HUMAN	LRG1	Leucine-rich alpha-2-glycoprotein precursor
82.	LRC4B_HUMAN	LRRC4B	Leucine-rich repeat-containing protein 4B precursor
83.	LTBP2_HUMAN	LTBP2	Latent-transforming growth factor beta-binding protein 2 precursor
84.	MUC18_HUMAN	MCAM	Cell surface glycoprotein MUC18 precursor
85.	TRFM_HUMAN	MFI2	Melanotransferrin precursor
86.	MOG_HUMAN	MOG	Myelin-oligodendrocyte glycoprotein precursor
87.	NBL1_HUMAN	NBL1	Neuroblastoma suppressor of tumorigenicity 1 precursor
88.	NCAM1_HUMAN	NCAM1	Neural cell adhesion molecule 1 precursor
89.	NCAM2_HUMAN	NCAM2	Neural cell adhesion molecule 2 precursor
90.	NCAN_HUMAN	NCAN	Neurocan core protein precursor
91.	NICA_HUMAN	NCSTN	Nicastrin precursor
92.	NEGR1_HUMAN	NEGR1	Neuronal growth regulator 1 precursor
93.	NELL2_HUMAN	NELL2	Protein kinase C-binding protein NELL2 precursor
94.	NEO1_HUMAN	NEO1	Neogenin precursor
95.	NGF_HUMAN	NGF	Beta-nerve growth factor precursor
96.	NPTX1_HUMAN	NPTX1	Neuronal pentraxin-1 precursor

No.	UniProt_ID	Gene	Protein Description
97.	NPTX2_HUMAN	NPTX2	Neuronal pentraxin-2 precursor
98.	NPTXR_HUMAN	NPTXR	Neuronal pentraxin receptor
99.	NRCAM_HUMAN	NRCAM	Neuronal cell adhesion molecule precursor
100.	NRX1A_HUMAN	NRXN1	Neurexin-1 precursor
101.	NRX2A_HUMAN	NRXN2	Neurexin-2 precursor
102.	NRX3A_HUMAN	NRXN3	Neurexin-3 precursor
103.	MIME_HUMAN	OGN	Mimecan precursor
104.	AMD_HUMAN	PAM	Peptidyl-glycine alpha-amidating monooxygenase precursor
105.	PPN_HUMAN	PAPLN	Papilin precursor
106.	PIMT_HUMAN	PCMT1	Protein-L-isoaspartate(D-aspartate) O-methyltransferase
107.	PCSK1_HUMAN	PCSK1N	ProSAAS precursor
108.	PDYN_HUMAN	PDYN	Proenkephalin-B precursor
109.	PGRP2_HUMAN	PGLYRP2	N-acetylmuramoyl-L-alanine amidase precursor
110.	KPYM_HUMAN	PKM	Pyruvate kinase PKM
111.	PLMN_HUMAN	PLG	Plasminogen precursor
112.	PLDX1_HUMAN	PLXDC1	Plexin domain-containing protein 1 precursor
113.	PRDX1_HUMAN	PRDX1	Peroxiredoxin-1
114.	PRDX2_HUMAN	PRDX2	Peroxiredoxin-2
115.	PRDX3_HUMAN	PRDX3	Thioredoxin-dependent peroxide reductase, mitochondrial precursor
116.	PRDX6_HUMAN	PRDX6	Peroxiredoxin-6
117.	PTGDS_HUMAN	PTGDS	Prostaglandin-H2 D-isomerase precursor
118.	PTPRN_HUMAN	PTPRN	Receptor-type tyrosine-protein phosphatase-like N precursor
119.	PVRL1_HUMAN	PVRL1	Poliovirus receptor-related protein 1 precursor
120.	SCG2_HUMAN	SCG2	Secretogranin-2 precursor
121.	SCG3_HUMAN	SCG3	Secretogranin-3 precursor
122.	A1AT_HUMAN	SERPINA1	Alpha-1-antitrypsin precursor
123.	AACT_HUMAN	SERPINA3	Alpha-1-antichymotrypsin precursor
124.	KAIN_HUMAN	SERPINA4	Kallistatin precursor
125.	PEDF_HUMAN	SERPINF1	Pigment epithelium-derived factor precursor
126.	NEUS_HUMAN	SERPINI1	Neuroserpin precursor
127.	SE6L1_HUMAN	SEZ6L	Seizure 6-like protein precursor
128.	SIAE_HUMAN	SIAE	Sialate O-acetyltransferase precursor
129.	SLIK1_HUMAN	SLITRK1	SLIT and NTRK-like protein 1 precursor
130.	SODC_HUMAN	SOD1	Superoxide dismutase [Cu-Zn]
131.	SODE_HUMAN	SOD3	Extracellular superoxide dismutase [Cu-Zn] precursor
132.	SORC1_HUMAN	SORCS1	VPS10 domain-containing receptor SorCS1 precursor
133.	SPRL1_HUMAN	SPARCL1	SPARC-like protein 1 precursor
134.	SPON1_HUMAN	SPON1	Spondin-1 precursor
135.	OSTP_HUMAN	SPP1	Osteopontin precursor
136.	TGFB1_HUMAN	TGFB1	Transforming growth factor beta-1 precursor
137.	TIMP1_HUMAN	TIMP1	Metalloproteinase inhibitor 1 precursor
138.	TNR21_HUMAN	TNFRSF21	Tumor necrosis factor receptor superfamily member 21 precursor
139.	TTHY_HUMAN	TTR	Transthyretin precursor
140.	UBB_HUMAN	UBB	Polyubiquitin-B precursor
141.	VASN_HUMAN	VASN	Vasorin precursor
142.	VGF_HUMAN	VGF	Neurosecretory protein VGF precursor

# CAPRION CNS PROTEOCARTA™

## Cerebrospinal Fluid MRM Panel for CNS Diseases

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Caprion's ProteoCarta™ MRM technology platform allows for targeted analysis of proteins of interest rather than processing enormous amounts of data that typically result from non-targeted approaches.

### 1 MULTIPLE REACTION MONITORING

Multiple reaction monitoring (MRM) using mass spectrometry (sometimes called Selected Reaction Monitoring, SRM) is a highly sensitive and selective method for the targeted quantitation of protein/peptide abundances in complex biological samples including CSF. The use of quantitative proteomics is increasing and has been undergoing nearly exponential growth and was chosen as the **“Method of the Year” by Nature Methods in its January 2013 issue.**

Unlike traditional mass spectrometry, which attempts to detect all proteins in a biological sample in an unfocused fashion, Multiple Reaction Monitoring (MRM) is highly selective (targeted), allowing researchers to fine tune an instrument to specifically look for peptides, or protein fragments, of interest. This approach allows for **greater specificity, sensitivity, speed and quantitation** of an analyte of interest (e.g. biomarker candidate).

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### 2 ABOUT CAPRION

Caprion is a premier mass spectrometry -based Proteomic Service Provider to over 50 pharma and biotech partners. Our ProteoCarta™ Platform allows unbiased discovery, detection, and quantification of up to thousands of proteins in various sample types (blood, tissue, CSF, etc). Targeted analysis of between 1 and 300 proteins is also possible by MRM/SRM in order to verify and validate significant proteins in thousands of samples.

#### Caprion's rapidly growing business offers:

- Biomarker services
- Target discovery
- Multiplexed Multiple Reaction Monitoring (MRM/SRM)
- Differential expression studies
- Host cell protein, PK and microbiome analysis
- Custom analysis of plasma, CSF, cells, and tissue

#### Caprion's CNS experience includes studies of:

- Alzheimer's Disease
- Huntington's Disease
- Schizophrenia

