Cambridge Isotope Laboratories, Inc.
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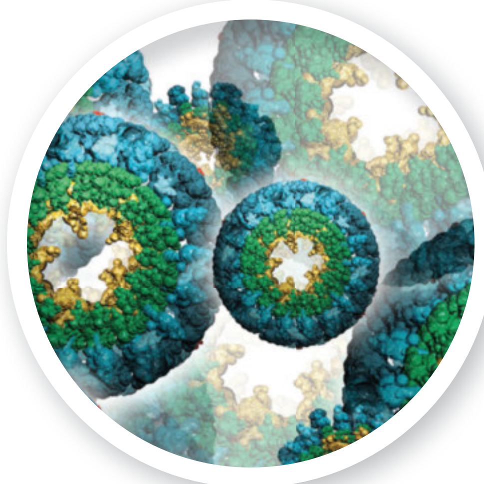
RESEARCH PRODUCTS



Stable Isotope-Labeled Peptide and Protein Reagents/Kits

Build Your Dream Standard or Choose from off the Shelf!

Bioanalytical methods require the use of isotope-enriched peptide(s) or protein(s) for their identification and quantitation. In mass spectrometry, the isotope dilution mass spectrometry (IDMS) technique is largely considered the gold standard for quantitative analysis of peptides and proteins. In nuclear magnetic resonance (NMR) spectroscopy, isotope-enriched peptides and proteins are essential to determine molecular structure and dynamics. **Cambridge Isotope Laboratories, Inc. (CIL) is pleased to offer stable isotope-labeled peptide and protein reagents and kits to aid the endeavors of the scientific research community.**

Overview

- Peptide synthesis and protein expression starting materials:
  - Protected amino acids and preloaded resins
  - Cell growth media
  - Cell-free protein expression kits
- Isotope-labeled peptides and proteins
- QC and quantitation kits for peptide/protein analysis

Peptide Reagents and Kits

Protected Amino Acids

CIL offers more than 130 isotope-enriched protected amino acids for the solid-phase synthesis of stable isotope-labeled peptides. Each compound has undergone extensive quality control testing for identity, chemical purity, and isotopic enrichment. The chemical purities are ≥98%, unless otherwise specified, while the "H" in the catalog number denotes a highly enriched amino acid of ≥99%. Package sizes range from 50 mg to 1 g; however, alternate sizes may be available. Please inquire or visit isotope.com for pricing and delivery.

Catalog No.	Description	Mass Shift from Unlabeled (Da)
CLM-818	L-Alanine-*N*-FMOC (1-^{13}C, 99%)	+1
CLM-3638	L-Alanine-*N*-FMOC (2-^{13}C, 99%)	+1
CLM-1142	L-Alanine-*N*-FMOC (3-^{13}C, 99%)	+1
NLM-614	L-Alanine-*N*-FMOC (^{15}N, 98%)	+1
CLM-7785	L-Alanine-*N*-FMOC ($^{13}C_3$, 97-99%)	+3
DLM-7316	L-Alanine-*N*-FMOC (3,3,3-D_3, 98%)	+3
DLM-8168	L-Alanine-*N*-FMOC (2,3,3,3-D_4, 98%)	+4
CNLM-4355-H	L-Alanine-*N*-FMOC ($^{13}C_3$, 99%; ^{15}N, 99%)	+4
CDNLM-7852	L-Alanine-*N*-FMOC ($^{13}C_3$, 97-99%; D_4, 97-99%; ^{15}N, 97-99%)	+8
CLM-2150	L-Alanine-*N*-*t*-BOC (1-^{13}C, 99%)	+1
CLM-2011	L-Alanine-*N*-*t*-BOC (2-^{13}C, 98-99%)	+1
CLM-2151	L-Alanine-*N*-*t*-BOC (3-^{13}C, 99%)	+1
NLM-1903	L-Alanine-*N*-*t*-BOC (^{15}N, 98%)	+1
CLM-3589	L-Alanine-*N*-*t*-BOC ($^{13}C_3$, 97-99%)	+3
DLM-2793	L-Alanine-*N*-*t*-BOC (3,3,3-D_3, 99%)	+3
CNLM-2394	L-Alanine-*N*-*t*-BOC ($^{13}C_3$, 97-99%; ^{15}N, 97-99%)	+4
NLM-8841	L-Arginine-*N*-FMOC, PBF-OH ($^{15}N_4$, 98%) contains solvent	+4
CLM-8475-H	L-Arginine-*N*-FMOC, PBF-OH ($^{13}C_6$, 99%) contains solvent	+6
CNLM-8474-H	L-Arginine-*N*-FMOC, PBF-OH ($^{13}C_6$, 99%; $^{15}N_4$, 99%) contains solvent	+10
CNLM-4354	L-Asparagine-*N*-FMOC ($^{13}C_4$, 97-99%; $^{15}N_2$, 97-99%)	+6
NLM-4204	L-Asparagine-*N*-FMOC, *N*-β-trityl ($^{15}N_2$, 98%)	+2
CNLM-6193-H	L-Asparagine-*N*-FMOC, *N*-β-trityl ($^{13}C_4$, 99%; $^{15}N_2$, 99%)	+6
CLM-4249	L-Aspartic acid-*N*-α-CBZ ($^{13}C_4$, 97-99%)	+4
CNLM-4788	L-Aspartic acid-*N*-FMOC ($^{13}C_4$, 97-99%; ^{15}N, 97-99%)	+5

Continued ➤

Protected Amino Acids *(continued)*

Catalog No.	Description	Mass Shift from Unlabeled (Da)
NLM-647	L-Aspartic acid-*N*-FMOC, β-*O*-*t*-butyl ester (^{15}N, 98%)	+1
CNLM-4752-H	L-Aspartic acid-*N*-FMOC, β-*O*-*t*-butyl ester ($^{13}C_4$, 99%; ^{15}N, 99%)	+5
CNLM-2392	L-Aspartic acid-*N*-*t*-BOC, β-benzyl ester ($^{13}C_4$, 97-99%; ^{15}N, 97-99%)	+5
CLM-404	DL-Cysteine, *S*-benzyl (1-^{13}C, 99%)	+1
CNLM-7579	L-Cysteine, *N*-acetyl (cysteine-$^{13}C_3$, 97-99%; ^{15}N, 97-99%) CP ≥95%	+4
DLM-4721	L-Cysteine-*N*-FMOC, *S*-trityl (3,3-D_2, 98%)	+2
CNLM-4722-H	L-Cysteine-*N*-FMOC, *S*-trityl ($^{13}C_3$, 99%; ^{15}N, 99%)	+4
CLM-1901	L-Cysteine-*N*-*t*-BOC, *S*-benzyl (3-^{13}C, 99%)	+1
NLM-3874	L-Cysteine-*N*-*t*-BOC, *S*-*p*-Mebz (^{15}N, 98%)	+1
CLM-2182	L-Cysteine, *S*-benzyl (3-^{13}C, 99%)	+1
NLM-8960	L-Glutamic acid-*N*-FMOC, γ-*t*-butyl ester (^{15}N, 98%)	+1
CNLM-4753-H	L-Glutamic acid-*N*-FMOC, γ-*t*-butyl ester ($^{13}C_5$, 99%; ^{15}N, 99%) CP 96%	+6
NLM-1907	L-Glutamic acid-*N*-*t*-BOC, γ-benzyl ester (^{15}N, 98%)	+1
CLM-2008	L-Glutamic acid-*N*-*t*-BOC, γ-benzyl ester (1,2-$^{13}C_2$, 99%)	+2
CNLM-4356-H	L-Glutamine-*N*-FMOC ($^{13}C_5$, 99%; $^{15}N_2$, 99%)	+7
CNLM-7252-H	L-Glutamine-*N*-FMOC, *N*-γ-trityl ($^{13}C_5$, 99%; $^{15}N_2$, 99%)	+7
NLM-3419	L-Glutamine-*N*-*t*-BOC (α-^{15}N, 98%+)	+1
CLM-3777	Glycine, *N*-acetyl (2-^{13}C, 99%)	+1
NLM-4464	Glycine, *N*-acetyl (^{15}N, 98%)	+1
CNLM-4524	Glycine, *N*-acetyl ($^{13}C_2$, 97-99%; ^{15}N, 97-99%)	+3
NLM-2377	Glycine, *N*-benzoyl (^{15}N, 98%)	+1
DLM-7703	Glycine, *N*-benzoyl (benzoyl-D_5, 98%)	+5
CLM-3639	Glycine-*N*-FMOC (1-^{13}C, 99%)	+1
CLM-2387	Glycine-*N*-FMOC (2-^{13}C, 99%)	+1
NLM-694	Glycine-*N*-FMOC (^{15}N, 98%)	+1
CLM-7547	Glycine-*N*-FMOC ($^{13}C_2$, 97-99%)	+2
DLM-7339	Glycine-*N*-FMOC (2,2-D_2, 98%)	+2
CNLM-7697	Glycine-*N*-FMOC (1-^{13}C, 99%; ^{15}N, 98%)	+2
CNLM-7698	Glycine-*N*-FMOC (2-^{13}C, 99%; ^{15}N, 98%)	+2
CNLM-4357-H	Glycine-*N*-FMOC ($^{13}C_2$, 99%; ^{15}N, 99%)	+3
CDNLM-7853	Glycine-*N*-FMOC ($^{13}C_2$, 97-99%; 2,2-D_2, 97-99%; ^{15}N, 97-99%)	+5
CLM-2152	Glycine-*N*-*t*-BOC (1-^{13}C, 99%)	+1
CLM-1900	Glycine-*N*-*t*-BOC (2-^{13}C, 99%)	+1
NLM-2109	Glycine-*N*-*t*-BOC (^{15}N, 98%)	+1
DLM-2153	Glycine-*N*-*t*-BOC (2,2-D_2, 98%)	+2
CNLM-9686	Glycine-*N*-*t*-BOC (2-^{13}C, 99%; ^{15}N, 98%+)	+2
CNLM-2412	Glycine-*N*-*t*-BOC ($^{13}C_2$, 97-99%; ^{15}N, 97-99%)	+3
NLM-8010	L-Histidine-*N*-FMOC, *N*-IM-trityl ($^{15}N_3$, 98%)	+3
CLM-8043	L-Isoleucine-*N*-FMOC (1-^{13}C, 99%)	+1
NLM-391	L-Isoleucine-*N*-FMOC (^{15}N, 98%)	+1
CLM-7794	L-Isoleucine-*N*-FMOC ($^{13}C_6$, 97-99%)	+6
CNLM-4346-H	L-Isoleucine-*N*-FMOC ($^{13}C_6$, 99%; ^{15}N, 99%)	+7
NLM-2167	L-Isoleucine-*N*-*t*-BOC (^{15}N, 98%)	+1
CLM-3691	L-Leucine-*N*-FMOC (1-^{13}C, 99%)	+1

Catalog No.	Description	Mass Shift from Unlabeled (Da)
NLM-2397	L-Leucine-*N*-FMOC (^{15}N, 98%)	+1
CLM-7546	L-Leucine-*N*-FMOC (1,2-$^{13}C_2$, 99%)	+2
DLM-7202	L-Leucine-*N*-FMOC (5,5,5-D_3, 98%)	+3
CLM-3683	L-Leucine-*N*-FMOC ($^{13}C_6$, 97-99%)	+6
CNLM-4345-H	L-Leucine-*N*-FMOC ($^{13}C_6$, 99%; ^{15}N, 99%)	+7
DLM-7575	L-Leucine-*N*-FMOC (D_{10}, 98%)	+10
CDNLM-7854	L-Leucine-*N*-FMOC ($^{13}C_6$, 97-99%; D_{10}, 97-99%; ^{15}N, 97-99%)	+17
CLM-2155	L-Leucine-*N*-*t*-BOC·H_2O (1-^{13}C, 99%)	+1
CLM-2010	L-Leucine-*N*-*t*-BOC·H_2O (2-^{13}C, 99%)	+1
NLM-1904	L-Leucine-*N*-*t*-BOC·H_2O (^{15}N, 98%)	+1
DLM-2736	L-Leucine-*N*-*t*-BOC·H_2O (5,5,5-D_3, 98%)	+3
CNLM-2396	L-Leucine-*N*-*t*-BOC·H_2O ($^{13}C_6$, 97-99%; ^{15}N, 97-99%)	+7
DLM-3650	L-Leucine-*N*-*t*-BOC·H_2O (D_{10}, 98%)	+10
CLM-6194	L-Lysine-α-*N*-FMOC, ε-*N*-*t*-BOC (1-^{13}C, 99%)	+1
NLM-4631	L-Lysine-α-*N*-FMOC, ε-*N*-*t*-BOC ($^{15}N_2$, 96-98%)	+2
DLM-4731	L-Lysine, *N*-ε-carboxymethyl (4,4,5,5-D_4, 96-98%)	+4
CLM-7865-H	L-Lysine-α-*N*-FMOC, ε-*N*-*t*-BOC ($^{13}C_6$, 99%)	+6
CNLM-4754-H	L-Lysine-α-*N*-FMOC, ε-*N*-*t*-BOC ($^{13}C_6$, 99%; $^{15}N_2$, 99%)	+8
CLM-8166	L-Methionine-*N*-FMOC (1-^{13}C, 99%)	+1
NLM-4632	L-Methionine-*N*-FMOC (^{15}N, 98%) CP ≥95%	+1
CLM-1141	L-Methionine-*N*-FMOC (methyl-^{13}C, 99%)	+1
CNLM-4358-H	L-Methionine-*N*-FMOC ($^{13}C_5$, 99%; ^{15}N, 99%)	+6
CLM-2156	L-Methionine-*N*-*t*-BOC (methyl-^{13}C, 98%)	+1
CLM-4824	L-Phenylalanine-*N*-FMOC (1-^{13}C, 99%)	+1
NLM-1265	L-Phenylalanine-*N*-FMOC (^{15}N, 98%)	+1
DLM-7786	L-Phenylalanine-*N*-FMOC (ring-D_5, 98%)	+5
CLM-3684	L-Phenylalanine-*N*-FMOC (ring-$^{13}C_6$, 99%)	+6
DLM-8752	L-Phenylalanine-*N*-FMOC (D_8, 98%)	+8
CNLM-4362-H	L-Phenylalanine-*N*-FMOC ($^{13}C_9$, 99%; ^{15}N, 99%)	+10
CLM-2170	L-Phenylalanine-*N*-*t*-BOC (1-^{13}C, 99%)	+1
CLM-2009	L-Phenylalanine-*N*-*t*-BOC (2-^{13}C, 99%)	+1
NLM-1905	L-Phenylalanine-*N*-*t*-BOC (^{15}N, 98%)	+1
DLM-2157	L-Phenylalanine-*N*-*t*-BOC (ring-D_5, 98%)	+5
CLM-2061	L-Phenylalanine-*N*-*t*-BOC (ring-$^{13}C_6$, 99%)	+6
CLM-7859	L-Phenylalanine-*N*-*t*-BOC ($^{13}C_9$, 97-99%)	+9
CNLM-2393	L-Phenylalanine-*N*-*t*-BOC ($^{13}C_9$, 97-99%; ^{15}N, 97-99%)	+10
CLM-8044	L-Proline-*N*-FMOC (1-^{13}C, 99%)	+1
NLM-3906	L-Proline-*N*-FMOC (^{15}N, 98%)	+1
NLM-2329	L-Proline-*N*-*t*-BOC (^{15}N, 96%)	+1
CNLM-4347-H	L-Proline-*N*-FMOC ($^{13}C_5$, 99%; ^{15}N, 99%)	+6
CNLM-8403-H	L-Serine-*N*-FMOC ($^{13}C_3$, 99%; ^{15}N, 99%)	+4
CLM-8167	L-Serine-*N*-FMOC, *O*-*t*-butyl ether (1-^{13}C, 99%)	+1
NLM-4630	L-Serine-*N*-FMOC, *O*-*t*-butyl ether (^{15}N, 98%)	+1
CNLM-4755-H	L-Serine-*N*-FMOC, *O*-*t*-butyl ether ($^{13}C_3$, 99%; ^{15}N, 99%)	+4
NLM-8170	L-Threonine-*N*-FMOC, *O*-*t*-butyl ether (^{15}N, 98%)	+1
CNLM-7615	L-Threonine-*N*-FMOC, *O*-*t*-butyl ether ($^{13}C_4$, 97-99%; ^{15}N, 97-99%)	+5
NLM-3423	L-Tryptophan-*N*-FMOC (α-^{15}N, 98%)	+1

Chemical purity (CP) is 98% or greater, unless otherwise indicated.

Protected Amino Acids *(continued)*

Catalog No.	Description	Mass Shift from Unlabeled (Da)
DLM-6113	L-Tryptophan-*N*-FMOC (indole-D_5, 98%)	+5
CNLM-6077	L-Tryptophan-*N*-FMOC ($^{13}C_{11}$, 97-99%; $^{15}N_2$, 97-99%)	+13
NLM-1906	L-Tyrosine-*N*-*t*-BOC, *O*-benzyl ether (^{15}N, 98%)	+1
DLM-2303	L-Tyrosine-*N*-*t*-BOC, *O*-benzyl ether (ring-D_4, 98%)	+4
NLM-8169	L-Tyrosine-*N*-FMOC, *O*-*t*-butyl ether (^{15}N, 98%)	+1
CNLM-4349-H	L-Tyrosine-*N*-FMOC, *O*-*t*-butyl ether ($^{13}C_9$, 99%; ^{15}N, 99%)	+10
NLM-7888	L-Valine, *N*-acetyl (^{15}N, 98%)	+1
CLM-3640	L-Valine-*N*-FMOC (1-^{13}C, 99%)	+1
NLM-4243	L-Valine-*N*-FMOC (^{15}N, 98%)	+1
CLM-7793	L-Valine-*N*-FMOC ($^{13}C_5$, 97-99%)	+5
CNLM-4348-H	L-Valine-*N*-FMOC ($^{13}C_5$, 99%; ^{15}N, 99%)	+6
DLM-7784	L-Valine-*N*-FMOC (D_8, 98%)	+8
CLM-2158	L-Valine-*N*-*t*-BOC (1-^{13}C, 99%)	+1
NLM-2060	L-Valine-*N*-*t*-BOC (^{15}N, 98%)	+1
CNLM-2395	L-Valine-*N*-*t*-BOC ($^{13}C_5$, 97-99%; ^{15}N, 97-99%)	+6
DLM-3651	L-Valine-*N*-*t*-BOC (D_8, 98%)	+8

"H" denotes an enrichment of ≥99%, as measured by GC-MS.

➤ Please inquire if you desire an alternate labeling pattern or protecting group. For complete listing and additional information, please visit the "Amino Acids" section of isotope.com/products.

Example References

Ndao, M.; Goobes, G.; Emani, P.S.; et al. **2018**. A REDOR ssNMR investigation of the role of an *N*-terminus lysine in R5 silica recognition. *Langmuir, 34(29),* 8678-8884.

LeBlanc, A.; Michaud, S.A.; Percy, A.J.; et al. **2017**. Multiplexed MRM-based protein quantitation using two different stable isotope-labeled peptide isotopologues for calibration. *J Proteome Res, 16(7),* 2527-2536.

Percy, A.J.; Hardie, D.B.; Jardim, A.; et al. **2017**. Multiplexed panel of precisely quantified salivary proteins for biomarker assessment. *Proteomics, 17(6).*

Fernández-Fernández, M.; Rodríguez-González, P.; García Alonso, J.I. **2016**. A simplified calculation procedure for mass isotopomer distribution analysis (MIDA) based on multiple linear regression. *J Mass Spectrom, 51(10),* 980-987.

Delgado, D.A.; Doherty, K.; Cheng, Q.; et al. **2016**. Distinct membrane disruption pathways are induced by 40-residue β-amyloid peptides. *J Biol Chem, 291(23),* 12233-12244.

Wang, D.; Krilich, J.; Baudys, J.; et al. **2015**. Optimization of peptide substrates for botulinum neurotoxin E improves detection sensitivity in the Endopep-MS assay. *Anal Biochem, 468,* 15-21.

Lee, M.; Hong, M. **2014**. Cryoprotection of lipid membranes for high-resolution solid-state NMR studies of membrane peptides and proteins at low temperature. *J Biomol NMR, 59,* 263-277.

Mirzaei, H.; Knijnenburg, T.A.; Kim, B.; et al. **2013**. Systematic measurement of transcription factor-DNA interactions by targeted mass spectrometry identifies candidate gene regulatory proteins. *Proc Natl Acad Sci U S A, 110(9),* 3645-3650.

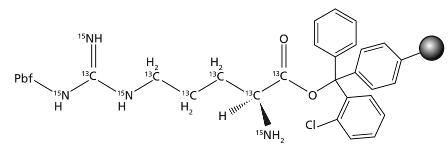
Chambers, A.G.; Percy, A.J.; Yang, J.; et al. **2013**. Multiplexed quantitation of endogenous proteins in dried blood spots by multiple reaction monitoring-mass spectrometry. *Mol Cell Proteomics,12(3),* 781-791.

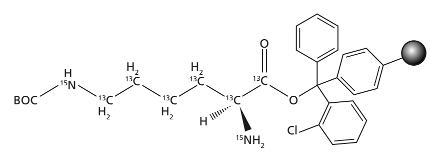
Rienstra, C.; Hohwy, M.; Mueller, L.; et al. **2002**. Determination of multiple torsion-angle constraints in U-^{13}C,^{15}N-labeled peptides: 3D 1H-^{15}N-^{13}C-1H dipolar chemical shift NMR spectroscopy in rotating solids. *JACS, 124,* 11908-11922.

Preloaded Resins

Through collaboration with New England Peptide, Inc. (NEP), CIL is pleased to offer synthesis-ready, preloaded resins to aid the solid-phase synthesis of stable isotope-labeled tryptic peptides. The resins are prepared from isotopically labeled, protected amino acids with the highest chemical, isotopic, and chiral purity available. Please inquire for pricing and unit sizes.

Catalog No.	Description	Mass Shift from Unlabeled (Da)
SRPR-ARG-CN	Synthesis-Ready Preloaded Resin L-Arginine (PBF) ($^{13}C_6$, 99%; $^{15}N_4$, 99%)-2ClTrt Resin	+10
SRPR-LYS-CN	Synthesis-Ready Preloaded Resin L-Lysine (BOC) ($^{13}C_6$, 99%; $^{15}N_2$, 99%)-2ClTrt Resin	+8





➤ Please contact us if an alternate preloaded resin would be beneficial to your research needs.

Isotope-Labeled Peptides

Catalog No.	Description
CNLM-6245	Glutathione (glycine-$^{13}C_2$, 98%+; ^{15}N, 96-99%) 65-70% net peptide/peptide purity 85-90%
CNLM-6245-HP	Glutathione (glycine-$^{13}C_2$, 98%+; ^{15}N, 96-99%) 90%+ net peptide/peptide purity 95%+
CNLM-8782	Glutathione disulfide (glycines-$^{13}C_2$, 98%+; ^{15}N, 96-99%) 65-70% net peptide/peptide purity 90%+

Example References

Nazari, M.; Bokhart, M.T.; Loziuk, P.L.; et al. **2018**. Quantitative mass spectrometry imaging of glutathione in healthy and cancerous hen ovarian tissue sections by infrared matrix-assisted laser desorption electrospray ionization (IR-MALDESI). *Analyst, 143(3),* 654-661.

D'Allesandro, A.; Nemkov, T.; Yoshida, T.; et al. **2017**. Citrate metabolism in red blood cells stored in additive solution-3. *Transfusion, 57(2),* 325-336.

Wisnewski, A.V.; Liu, J.; Nassar, A.F. **2016**. Identification of novel reaction products of methylene-bis-phenylisocyanate ("MDI") with oxidized glutathione in aqueous solution and also during incubation of MDI with a murine hepatic S9 fraction. *Toxicol In Vitro, 36,* 97-104.

Chemical purity (CP) is 98% or greater, unless otherwise indicated.

PeptiQuant™ Assay Kits

CIL offers PeptiQuant™ Assay Kits from MRM Proteomics Inc. for QC and biomarker assessment using bottom-up LC-MS/MS methodologies. The QC kits are designed to evaluate the performance of an LC-MS platform, either alone or in combination with a human or mouse plasma proteomic workflow. The biomarker assessment kits (BAKs) are intended to help researchers screen target panels of candidate protein disease biomarkers in human or mouse plasma samples.

Regarding the methodology, the original PeptiQuant kits utilize stable isotope-labeled standard (SIS) peptide mixtures, while the new PeptiQuant Plus kits employ mixtures of synthetic SIS and natural (NAT) peptides in the post-digestion spike of sample or surrogate matrices. Quantitation is performed via reverse standard curves in the original kits and forward curves in the Plus kits (approaches described in PubMed IDs: 27341553 and 28516774). The new PeptiQuant Plus kits provide improved depth and precision of targeted protein quantitation. Further, these have been rigorously characterized according to the complete set of CPTAC (Clinical Proteomic Tumor Analysis Consortium) guidelines and are available for viewing on the CPTAC Assay Portal.

MRM Proteomics

PeptiQuant Plus Kits

Biomarker Assessment Kits (BAKs)

	Catalog No.	Description	Unit Size
	BAK-A6490-125	PeptiQuant Plus Human Plasma Proteomics Kit for Agilent 6490 and 1290 UPLC	20, 50, or 100 samples
	BAK-A6495-125	PeptiQuant Plus Human Plasma Proteomics Kit for Agilent 6495 and 1290 UPLC	20, 50, or 100 samples
	BAK-SC6500-125	PeptiQuant Plus Human Plasma Proteomics Kit for SCIEX QTRAP® 6500 and 1290 UPLC	20, 50, or 100 samples
	BAK-QE-125	PeptiQuant Plus Human Plasma Proteomics Kit for Thermo Scientific™ Q Exactive™ Plus and 1290 UPLC	20, 50, or 100 samples
	M-BAK-A6490-125	PeptiQuant Plus Mouse Plasma Proteomics Kit for Agilent 6490 and 1290 UPLC	20, 50, or 100 samples
	M-BAK-A6495-125	PeptiQuant Plus Mouse Plasma Proteomics Kit for Agilent 6495 and 1290 UPLC	20, 50, or 100 samples
	M-BAK-SC6500-125	PeptiQuant Plus Mouse Plasma Proteomics Kit for SCIEX QTRAP 6500 and 1290 UPLC	20, 50, or 100 samples
NEW!	M-BAK-6545-125-2*	PeptiQuant Plus Mouse Plasma Proteomics Kit for Agilent 6545	20, 50, or 100 samples

*The -2 demarcation refers to an alternate set of 125 target proteins.

Quality Control (QC) Kits

	Catalog No.	Description	Unit Size
NEW!	LCMSP-QC-6490-INJ	PeptiQuant Plus Human Plasma Daily QC Kit for Agilent 6490 and 1290 UPLC	10, 20, or 50 injections
NEW!	LCMSP-QC-6495-INJ	PeptiQuant Plus Human Plasma Daily QC Kit for Agilent 6495 and 1290 UPLC	10, 20, or 50 injections
NEW!	LCMSP-QC-6500-INJ	PeptiQuant Plus Human Plasma Daily QC Kit for Sciex QTRAP 6500 and 1290 UPLC	10, 20, or 50 injections
NEW!	LCMSP-QC-QE-INJ	PeptiQuant Plus Human Plasma Daily QC Kit for Thermo Scientific Q Exactive Plus and 1290 UPLC	10, 20, or 50 injections
NEW!	WFPK-A6490-P	PeptiQuant Plus Human Plasma Workflow QC Kit for Agilent 6490 and 1290 UPLC	1 or 2 runs
NEW!	WFPK-A6495-P	PeptiQuant Plus Human Plasma Workflow QC Kit for Agilent 6495 and 1290 UPLC	1 or 2 runs
NEW!	WFPK-SC6500-P	PeptiQuant Plus Human Plasma Workflow QC Kit for Sciex 6500 and 1290 UPLC	1 or 2 runs
NEW!	WFPK-QE-P	PeptiQuant Plus Human Plasma Workflow QC Kit for Thermo Scientific Q Exactive Plus and 1290 UPLC	1 or 2 runs

➤ Please inquire if custom or alternate LC-MS/MS platforms are desired from the current panel offerings (available upon request). Visit the "MRM PeptiQuant Assay Kits" section of isotope.com/products for complete product listings.

➤ Please inquire on the availability of the original PeptiQuant kits.

Example References

LeBlanc, A.; Michaud, S.A.; Percy, A.J.; et al. **2017**. Multiplexed MRM-based protein quantitation using two different stable isotope-labeled peptide isotopologues for calibration. *J Proteome Res, 16(7),* 2527-2536.

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Protein Expression Reagents and Kits

Cell Growth Media

A diverse array of isotope-labeled prokaryotic and eukaryotic cell growth media for the production of isotope-enriched recombinant protein is available from CIL.

Bacterial Cell Growth Media

Celtone®, BioExpress®, E. coli-OD2, and Spectra 9

Catalog No.	Description
CGM-1030P-C	Celtone Base Powder (^{13}C, 98%+)
CGM-1030P-N	Celtone Base Powder (^{15}N, 98%+)
CGM-1030P-D	Celtone Base Powder (D, 97%+)
CGM-1030P-CN	Celtone Base Powder (^{13}C, 98%+; ^{15}N, 98%+)
CGM-1030P-DN	Celtone Base Powder (D, 97%+; ^{15}N, 98%+)
CGM-1030P-CDN	Celtone Base Powder (^{13}C, 98%+; D, 97%+; ^{15}N, 98%+)
CGM-1030P-U	Celtone Base Powder (unlabeled)
CGM-1050P-C	Celtone Plus Base Powder (^{13}C, 97-99%)
CGM-1050P-N	Celtone Plus Base Powder (^{15}N, 97-99%)
CGM-1050P-D	Celtone Plus Base Powder (D, 97%+)
CGM-1050P-DN	Celtone Plus Base Powder (D, 97-99%; ^{15}N, 97-99%)
CGM-1050P-CDN	Celtone Plus Base Powder (^{13}C, 97-99%; D, 97-99%; ^{15}N, 97-99%)
CGM-1050P-U	Celtone Plus Base Powder (unlabeled)
CGM-1040-C	Celtone Complete Medium (^{13}C, 98%+)
CGM-1040-N	Celtone Complete Medium (^{15}N, 98%+)
CGM-1040-D	Celtone Complete Medium (D, 97%+)
CGM-1040-CN	Celtone Complete Medium (^{13}C, 98%+; ^{15}N, 98%+)
CGM-1040-DN	Celtone Complete Medium (D, 97%+; ^{15}N, 98%+)
CGM-1040-CDN	Celtone Complete Medium (^{13}C, 98%+; D, 97%+; ^{15}N, 98%+)
CGM-1040-U	Celtone Complete Medium (unlabeled)
CGM-1000-C	BioExpress Cell Growth Media (^{13}C, 98%) 10x concentrate
CGM-1000-N	BioExpress Cell Growth Media (^{15}N, 98%) 10x concentrate
CGM-1000-D	BioExpress Cell Growth Media (D, 98%) 10x concentrate
CGM-1000-CN	BioExpress Cell Growth Media (^{13}C, 98%; ^{15}N, 98%) 10x concentrate
CGM-1000-CD	BioExpress Cell Growth Media (^{13}C, 98%; D, 98%) 10x concentrate
CGM-1000-DN	BioExpress Cell Growth Media (D, 98%; ^{15}N, 98%) 10x concentrate
CGM-1000-CDN	BioExpress Cell Growth Media (^{13}C, 98%; ^{15}N, 98%; D 98%) 10x concentrate
CGM-1000-U	BioExpress Cell Growth Media (unlabeled) 10x concentrate
CGM-1020-SL-C	*E. coli*-OD2 (^{13}C, 98%)
CGM-1020-SL-N	*E. coli*-OD2 (^{15}N, 98%)
CGM-1020-SL-D	*E. coli*-OD2 (D, 98%)
CGM-1020-SL-CN	*E. coli*-OD2 (^{13}C, 98%; ^{15}N, 98%)
CGM-1020-SL-CDN	*E. coli*-OD2 (^{13}C, 98%; D, 98%; ^{15}N, 98%)
CGM-1020-SL-U-S	*E. coli*-OD2 (unlabeled)
CGM-3030-C	Spectra 9 (^{13}C, 98%)
CGM-3030-N	Spectra 9 (^{15}N, 98%)
CGM-3030-D	Spectra 9 (D, 97%+)
CGM-3030-CN	Spectra 9 (^{13}C, 98%; ^{15}N, 98%)
CGM-3030-DN	Spectra 9 (D, 97%+; ^{15}N, 98%+)
CGM-3030-CDN	Spectra 9 (^{13}C, 98%; D, 97%+; ^{15}N, 98%)
CGM-3030-U	Spectra 9 (unlabeled)

Minimal Media Reagents

for E. coli growths

Catalog No.	Description
NLM-467	Ammonium chloride (^{15}N, 99%)
NLM-713	Ammonium sulfate ($^{15}N_2$, 99%)
DLM-4-99	Deuterium oxide (D, 99%)
DLM-4-99.8	Deuterium oxide (D, 99.8%)
DLM-4	Deuterium oxide (D, 99.9%)
CLM-1396	D-Glucose ($^{13}C_6$, 99%)
DLM-2062	D-Glucose (1,2,3,4,5,6,6-D_7, 97-98%)
CDLM-3813	D-Glucose ($^{13}C_6$, 99%; 1,2,3,4,5,6,6-D_7, 97-98%)
CLM-1510	Glycerol ($^{13}C_3$, 99%)
DLM-558	Glycerol (D_8, 99%)

Insect Cell Growth Media *BioExpress® 2000*

Catalog No.	Description
CGM-2000-CN	BioExpress 2000 (^{13}C, 98%; ^{15}N, 98%)
CGM-2000-N	BioExpress 2000 (^{15}N, 98%)
CGM-2000-U	BioExpress 2000 (unlabeled)
CGM-2000-CUSTOM	BioExpress 2000 (custom)*

*The labeled amino acids must be specified at the time of request for a custom media quote or order.

Yeast Cell Growth Media *OD2 Media*

Catalog No.	Description
CGM-4020-SL-C	Yeast-OD2 (^{13}C, 98%)
CGM-4020-SL-N	Yeast-OD2 (^{15}N, 98%)
CGM-4020-SL-CN	Yeast-OD2 (^{13}C, 98%; ^{15}N, 98%)
CGM-4020-SL-U	Yeast-OD2 (unlabeled)

Mammalian Cell Growth Media *BioExpress® 6000*

Catalog No.	Description
CGM-6000-N	BioExpress 6000 (^{15}N, 98%)
CGM-6000-CN	BioExpress 6000 (^{13}C, 98%; ^{15}N, 98%)
CGM-6000-U	BioExpress 6000 (unlabeled)
CGM-6000-CUSTOM	BioExpress 6000 (custom)*

*The labeled amino acids must be specified at the time of request for a custom media quote or order.

➤ Please visit the "Cell Growth Media" section of isotope.com/products for complete product listings and additional information.

Please see references on next page ➤

Kits for Cell-Free Protein Expression *Wheat Germ Cell-Free Expression Kits (CellFree Sciences, CFS)*

Wheat germ cell-free protein expression systems have been used over the years to address many different needs in basic research and applied sciences. CFS is the world's only commercial manufacturer of kits and reagents used in wheat germ-based, cell-free protein expression. CFS' proprietary wheat germ embryo extract, WEPRO®, is the critical ingredient that allows reproducible production of protein in high yield.

CFS offers several starter kits to characterize yield and protein quality. These kits enable multiple small-scale reactions that typically yield microgram amounts of protein. Each kit contains a positive control that yields about 30 µg of DHFR. The Premium Plus Expression Kit for MS is perfectly suited to produce isotope-enriched protein for bottom-up LC-MS studies.

Catalog No.	Description	Contents	Specification
CFS-PRK-S24	Protein Research Kit (S)	Premixed transcription and translation reagents for protein expression. Reaction scale is 226 µL.	24 reactions
CFS-PRK-H24	Protein Research Kit (H)	Premixed transcription and translation reagents for His-fusion protein expression. Reaction scale is 226 µL.	24 reactions
CFS-PRK-G24	Protein Research Kit (G)	Premixed transcription and translation reagents for GST-fusion protein expression. Reaction scale is 226 µL.	24 reactions
CFS-TRI-PLE-BD	Proteoliposome BD Expression Kit	WGE7240, transcription buffer LM, NTP mix, SP6 RNA polymerase, RNase inhibitor, creatine kinase, pEU-E01-T1R1 plasmid, SUB-AMIX SGC S1-S4, asolectin liposome. Reaction scale is 2.5 mL.	6 reactions
CFS-EDX-PLUS	Premium PLUS Expression Kit	Expression vector, primers for DNA preparation by PCR, positive control, and reaction cups. Reaction scale is 226 µL.	8 reactions
CFS-EDX-PLUS-MS	Premium PLUS Expression Kit for MS	$^{13}C/^{15}N$-labeled lysine and arginine for MS applications.	16 reactions
CFS-EDX-PLE-PLUS	Proteoliposome Premium PLUS Expression Kit	Expression vector, primers for DNA preparation by PCR, prepared apolection-liposomes, positive control, and reaction cups. Reaction scale is 226 µL.	8 reactions

➤ Please visit the "CellFree Protein Expression" section of isotope.com/products and cfscience.com for additional information on these and other products.

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Cell Growth Media *(continued from previous page)*

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Rhima, M.; Neil, L.C.; Gardner, K.H. **2003**. Optimization of BioExpress® supplementation of M9 cultures. (Application Note 12)

Isotope-Labeled Proteins

We offer a number of isotope-labeled recombinant proteins for MS and NMR research. In MS studies, these can be added to samples at the beginning of experimental workflows to help control or correct for analytical variability. This is toward improving the accuracy of protein quantification. For NMR spectroscopy, these proteins are used to assess NMR spectrometer performance, aid the development of new pulse sequences, and for training purposes. Please inquire for quantity and pricing.

Catalog No.	Description	Concentration and Composition
NLM-9539	Human apolipoprotein A-1 (^{15}N, 98%)	~1.2 mg/mL in PBS (pH 7.4), CP >90%
CNLM-9513	Human IGF-1 (Lys-$^{13}C_6$, $^{15}N_2$, 99%; Arg-$^{13}C_6$, $^{15}N_2$, 99%)	10 µg/mL in 20 mM sodium phosphate (pH 7) with 10 mg/mL trehalose
NEX-UB1-CN	Human ubiquitin (^{13}C, 95%; ^{15}N, 95%)*	0.25, 0.5, or 1 mM in 90% H_2O/10% D_2O with 0.02% NaN_3 and 20 mM sodium phosphate (pH 7.2)
NEX-UB1-N	Human ubiquitin (^{15}N, 95%)*	0.25, 0.5, or 1 mM in 90% H_2O/10% D_2O with 0.02% NaN_3 and 20 mM sodium phosphate (pH 7.2)
NEX-MBP1-CN	*E. coli* maltose binding protein (^{13}C, 95%; ^{15}N, 95%)*	0.25, 0.5, or 1 mM in 90% H_2O/10% D_2O with 0.02% NaN_3 and 20 mM sodium phosphate (pH 7.2)
NEX-XF1-CN	X-filtered NOESY NMR standard (^{13}C, 95%; ^{15}N, 95%)*	Mixture of labeled and unlabeled 16 kDa protein (*A. fulgidus* antitoxin vapB21 homodimer). 1 mM protein in 90% H_2O/10% D_2O with 20 mM NH4OAc (pH 5.5), 100 mM NaCl, 5 mM $CaCl_2$, and 0.02% NaN_3
NEX-GB1-CN	GB1 (^{13}C, 95%; ^{15}N, 95%)*	0.25, 0.5, or 1 mM in 50 mM sodium phosphate (pH 5.5), 10% D_2O, 0.02% NaN_3
NEX-CAL-CN	Calbindin-D9k (^{13}C, 95%; ^{15}N, 95%)*	0.25, 0.5, or 1 mM in 50 mM ammonium acetate (pH 6.0), 10% D_2O, 0.02% NaN_3
NEX-SH3-CN	SH3 Domain (^{13}C, 95%; ^{15}N, 95%)*	0.25, 0.5, or 1 mM in 50 mM sodium citrate (pH 3.5), 10% D_2O, 0.02% NaN_3

* Alternate labels are available; please inquire.

➤ Please visit the “Protein Standards” section of isotope.com/products for additional information.

Example References

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Protein/Peptide Standard Mix

CIL is proud to offer ProteusQC™, a new and versatile standard for MS-based bottom-up quantitative proteomics. It comprises a balanced mix of human ^{15}N-enriched apolipoprotein A-1 (ApoA-1) together with six ^{13}C/^{15}N-enriched ApoA-1 tryptic peptides. ProteusQC can be used to index retention times, evaluate digestion efficiency (of ApoA-1), assess system suitability, and perform absolute/relative protein quantification. The peptides derived from the ^{15}N-labeled ApoA-1 SIS protein can also serve as global internal standards for the endogenous proteins in the user’s target panel, as was demonstrated previously for an array of moderate abundance proteins in MRM and PRM applications. Please inquire for pricing.

Catalog No.	Description	Unit Size
CNLM-9919	ProteusQC (labeled ApoA-1 + 6 labeled ApoA-1 tryptic peptides)	10 µL

➤ Please visit the “Protein Standards” section of isotope.com/products for additional information.

Example References

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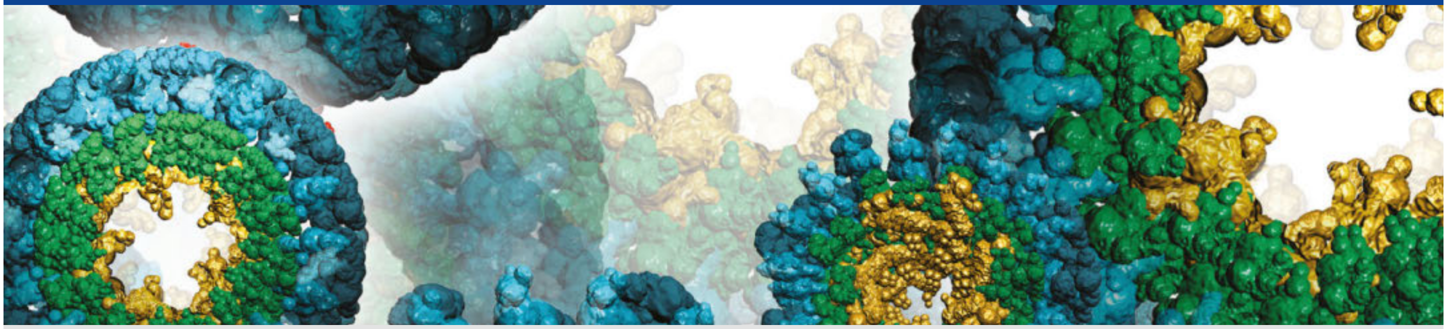

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