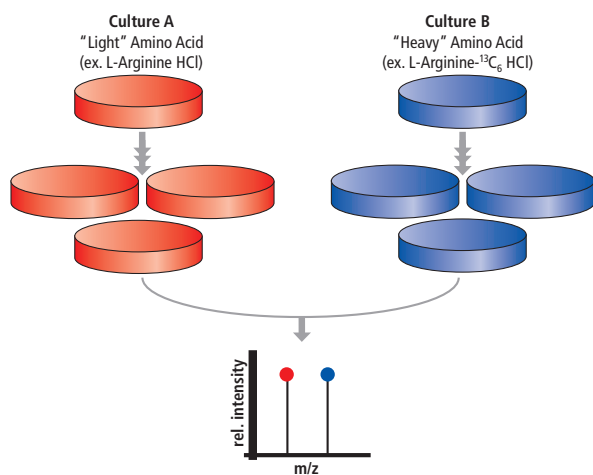


# Metabolic Protein Labeling



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## Stable Isotope Labeling with Amino Acids—SILAC



Stable isotope labeling with amino acids in cell culture (SILAC), has recently gained popularity for its ability to compare the expression levels of hundreds of proteins in a single experiment. SILAC was developed at CEBI<sup>1</sup> as a simple and accurate approach for MS-based quantitative proteomics. The method relies on the incorporation of unlabeled and D, <sup>13</sup>C, and/or <sup>15</sup>N-labeled amino acids added to the growth media of separately cultured cell lines, giving rise to cells containing either “light” or “heavy” proteins, respectively. Upon mixing lysates collected from these cells, digests of the protein populations are analyzed by mass spectrometry. Using this method, one can compare the expression levels for hundreds of proteins.

This valuable and robust proteomics tool is being used in many different applications. Here are a few examples:

- Biomarker discovery<sup>2</sup>
- Peptide turnover kinetics<sup>3</sup>
- Complete proteome analysis<sup>4</sup>

Primary “Light” Amino Acids	
Cat. No.	Description
A6969	L-Arginine HCl
I7403	L-Isoleucine
L8912	L-Leucine
L8662	L-Lysine HCl
M5308	L-Methionine
T8441	L-Threonine
T8566	L-Tyrosine
V0513	L-Valine

Additional Products of Interest	
F0392	Fetal Bovine Serum Dialyzed
G7513	L-Glutamine solution
P4333	Penicillin-Streptomycin solution (100x) Stabilized
T3924	Trypsin-EDTA solution
L5750	Sodium dodecyl sulfate
S2127	Sodium carbonate
O9830	Ammonium bicarbonate
I6125	Iodoacetamide
S8157	Silver nitrate
A6283	Acetic acid, glacial
M3641	Methanol
B2025	Brilliant Blue G - Colloidal Concentrate

Visit [sigma-aldrich.com](http://sigma-aldrich.com) for a complete list of cell culture products.

Primary “Heavy” Amino Acids	
Cat. No.	Description
600113	L-Arginine- <sup>15</sup> N <sub>4</sub> HCl
608033	L-Arginine- <sup>13</sup> C <sub>6</sub> , <sup>15</sup> N <sub>4</sub> HCl
643440	L-Arginine- <sup>13</sup> C <sub>6</sub> HCl
608092	L-Isoleucine- <sup>13</sup> C <sub>6</sub> , <sup>15</sup> N
486825	L-Leucine-5,5,5-d <sub>3</sub>
608068	L-Leucine- <sup>13</sup> C <sub>6</sub> , <sup>15</sup> N
605239	L-Leucine- <sup>13</sup> C <sub>6</sub>
608041	L-Lysine- <sup>13</sup> C <sub>6</sub> , <sup>15</sup> N <sub>2</sub> HCl
616192	L-Lysine-4,4,5,5-d <sub>4</sub> HCl
643459	L-Lysine- <sup>13</sup> C <sub>6</sub> HCl
299154	L-Methionine- <sup>13</sup> C <sub>4</sub> , d <sub>3</sub> ( <i>methyl-<sup>13</sup>C, d<sub>3</sub>)</i>
300616	L-Methionine-d <sub>3</sub> ( <i>methyl-d</i> <sub>3</sub> )
608106	L-Methionine- <sup>13</sup> C <sub>5</sub> , <sup>15</sup> N
608149	L-Methionine-1- <sup>13</sup> C, d <sub>3</sub> ( <i>carboxy-<sup>13</sup>C, <i>methyl-d</i><sub>3</sub>)</i>
607770	L-Threonine- <sup>13</sup> C <sub>4</sub> , <sup>15</sup> N
489794	L-Tyrosine- <sup>13</sup> C <sub>6</sub> ( <i>phenyl-<sup>13</sup>C<sub>6</sub>)</i>
492868	L-Tyrosine- <sup>13</sup> C <sub>9</sub>
607991	L-Tyrosine- <sup>13</sup> C <sub>9</sub> , <sup>15</sup> N
600148	L-Valine- <sup>13</sup> C <sub>5</sub> , <sup>15</sup> N

### Coming Soon

#### DMEM and RPMI 1640 deficient media for SILAC

For bulk inquiries, please contact Isotec at (800) 448-9760 • (937) 859-1808

#### References

1. Ong S.E. et al. (2002). *Mol Cell Proteomics* **1**, 376–86.
2. Gronborg M. et al. (2006). *Mol Cell Proteomics* **5**, 157–171.
3. Milner E., Barnea E., Beer I, and Admon, A. (2006). *Mol Cell Proteomics* **5**: 357–365.
4. de Godoy LM, Olsen JV, de Souza GA, Li G, Mortensen P, Mann M. (2006). *Genome Biol.* 7(6): R50.





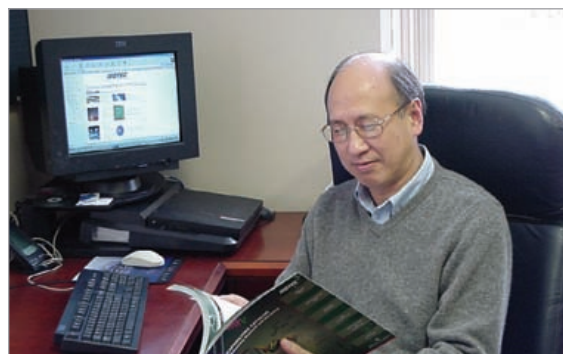
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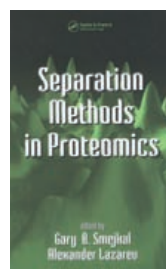


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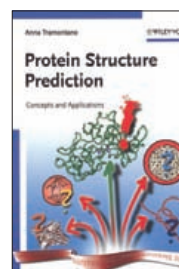
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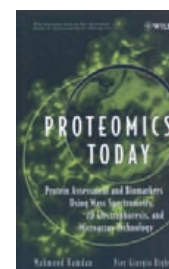
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