

## Peptide Modifications

Last updated: Oct 10, 2020

### **N terminus Modification**

H (free amine)  
Ac (Acetylation)  
Fmoc  
CBZ  
Bz  
Bz(4-F)  
Bz(4-NO<sub>2</sub>)  
Pyr  
D-Pyr  
LA-  
Mpa-  
Mal-b-Ala  
Mal-Acp  
Aoa

### **N terminus Fatylation**

For (Formylation)  
2-Br-Ac  
2-Cl-Ac  
2-I-Ac  
OH-Ac-  
But-  
Suc  
MeOSuc  
Iba  
Hex-  
5-heptenoic acid  
5-Hexynoic acid  
heptanedioic acid  
Oct-  
Dec-  
Sebacic acid  
Lau-  
Myr-  
Pal-  
Ste-  
Octanedioic acid  
Oleic Acid-

### **C terminus Modification**

-OH (free acid)  
-NH<sub>2</sub> (Amidation)  
Cysteamide, -Cya  
-AMC

-OMe  
-OEt  
-OBzl  
-OtBu  
-NHMe  
-NHEt  
-TBzl  
p-Nitroanilide

**D form normal amino acid**

{D-Ala}  
{D-Arg}  
{D-Asp}  
{D-Asn}  
{D-Cys}  
{D-Glu}  
{D-Gln}  
{D-His}  
{D-Allo-Ile}  
{D-Ile}  
{D-Leu}  
{D-Lys}  
{D-Met}  
{D-Pro}  
{D-Phe}  
{D-Ser}  
{D-Tyr}  
{D-Thr}  
{D-Trp}  
{D-Val}

**Unusual amino acid**

{Beta-Asp}  
{D-Beta-Asp}  
{Gamma-Glu}  
{D-Gamma-Glu}  
Cys(Cam)  
D-Cys(Cam)  
{Cys(Acm)}  
{Cys(tBu)}  
{Met(O)}  
{D-Met(O)}  
{Met(O)2}  
{D-Met(O)2}  
{Lys(Ac)}  
{Ac-Lys}  
{Lys(Dde)}  
{Tle}  
{D-Ser(octanoic acid)}  
2-Thi  
3-Thi

{Aib}  
{Abu}  
{D-Abu}  
{Hyp}  
{Phg}  
{D-Phg}  
{Nva}  
{D-Nva}  
{Norleucine}  
{D-Nle}  
{Cit}  
{D-Cit}  
{Orn}  
{D-Orn}  
{Pen}  
{D-Pen}  
{Cpg}  
{Cha}  
{D-Cha}  
{Chg}  
{D-Chg}  
{Dab}  
{Dap}  
Pra  
D-Pra  
Allo-Thr  
D-Allo-Thr  
{D-1-Nal}  
{L-1-Nal}  
{D-2-Nal}  
{L-2-Nal}  
{D-2-Pal}  
{L-2-Pal}  
{D-3-Pal}  
{L-3-Pal}  
{D-4-Pal}  
{L-4-Pal}  
{Oic}  
{Tic}  
{D-Tic}  
X (20 kinds amino acids mixture with equal mol)

### **Dye labeling**

Biotin-  
-Lys(Biotin)-  
-Lys(Biotin)  
Biotin-Ahx-  
FITC-  
-Lys(FITC)-  
-Lys(FITC)  
FITC-Ahx-

5-FAM-  
5,6-FAM  
6'FAM  
-Lys(5-FAM)-  
Lys(5,6-FAM)  
-Lys(5-FAM)  
5-FAM-Ahx-  
Dansyl-  
-Lys(Dansyl)-  
-Lys(Dansyl)  
Dansyl-Ahx-  
5-TAMRA-  
5(6)-TAMTA-  
-Lys(TAMRA)-  
-Lys(5-TAMRA)  
{5-TAMRA-Acp}  
{Lys(Dnp)}  
{D-Lys(Dnp)}  
{Dab(Dnp)}  
Dap(Dnp)  
MCA-  
-Lys(MCA)-  
-Lys(MCA)  
Rhodamine B-  
Lys(Rhodamine B)

**Phe/Tyr Analogs amino acid**

{D-2-Cl-Phe}  
{L-2-Cl-Phe}  
{D-3-Cl-Phe}  
{L-3-Cl-Phe}  
{D-4-Cl-Phe}  
{L-4-Cl-Phe}  
{D-3,4-DiCl-Phe}  
{L-3,4-DiCl-Phe}  
{D-4-Br-Phe}  
{L-4-Br-Phe}  
{D-3-F-Phe}  
{L-3-F-Phe}  
{D-4-F-Phe}  
{L-4-F-Phe}  
{D-4-NO<sub>2</sub>-Phe}  
{L-4-NO<sub>2</sub>-Phe}  
{D-4-I-Phe}  
{L-4-I-Phe}  
{D-3-CN-Phe}  
{L-3-CN-Phe}  
{D-4-CN-Phe}  
{L-4-CN-Phe}  
{D-2-Me-Phe}  
{L-2-Me-Phe}

{D-4-Me-Phe}  
{L-4-Me-Phe}  
{D-4-NH<sub>2</sub>-Phe}  
{L-4-NH<sub>2</sub>-Phe}  
{D-3-Cl-Tyr}  
{L-3-Cl-Tyr}  
{D-3,5-DiCl-Tyr}  
{L-3,5-DiCl-Tyr}  
{D-3,5-DiBr-Tyr}  
{L-3,5-DiBr-Tyr}  
{D-3-I-Tyr}  
{L-3-I-Tyr}  
{D-3,5-DiI-Tyr}  
{L-3,5-DiI-Tyr}  
{D-3-NO<sub>2</sub>-Tyr}  
{L-3-NO<sub>2</sub>-Tyr}  
{D-3,5-DiNO<sub>2</sub>-Tyr}  
{L-3,5-DiNO<sub>2</sub>-Tyr}  
{L-3-F-Tyr}

**Homo amino acid**

{Har}  
{D-Har}  
{HomoCit}  
{D-HomoCit}  
{HomoLeu}  
{HomoPro}  
{D-HomoPro}  
{beta-Homolle}  
{beta-HomoLeu}  
{beta-HomoMet}  
{beta-HomoPro}  
{beta-HomoVal}  
{Abz}  
o-Abz- (o-aminobenzoic acid)  
{Tyr(3-NO<sub>2</sub>)}  
{Glu(EDANS)}  
{DABCYL}  
{Lys(DABCYL)}  
{Lys(Abz)}  
MAPS and Carrier Complex  
{Symmetric 2 Branches}  
{Symmetric 4 Branches}  
{Symmetric 8 Branches}  
Lys(Maleimide)  
Lys(Mpa)  
Lys(Pra)  
Lys(Suc)  
Lys(glutaryl)  
Lys(pGlu)  
Lys(For)

Lys(2-Br-Ac)  
Lys(Butanoyl)  
Lys(Crotonyl)  
{Lys(octenyl)}  
lys(Ma)  
Lys(Pal)  
Lys(Oleic Acid)  
Lys(Acryl)  
Lys(alkine)  
Lys(Alloc)  
Lys(Aoa)  
Lys(cyclopropanecarboxyl)  
{Lys(3,5-diiodo-4-hydroxybenzoyl)}  
Lys(Methacryl)  
Lys(propargyl)  
Lys(propionyl)  
Lys(Pyruvoyl)  
{BSA-Peptide N terminus}  
{BSA-peptide C terminus}  
{BSA-Peptide via Cys}  
{KLH-Peptide N terminus}  
{KLH-Peptide C terminus}  
{KLH-peptide via Cys}  
{OVA-Peptide N terminus}  
{OVA-peptide C terminus}  
{OVA-peptide via Cys}

**Atom Linker**

{betaAla}  
{Ava}  
{Ahx}  
{8-Aoc}  
{AEA}  
{Ado}  
{ANP Linker}

**Methyl amino acids**

{Lys(Me)}  
{Lys(Me2)}  
{Lys(Me3)}  
N-Methyl amino acid  
{N-Me-Ala}  
{N-Me-Phe}  
{N-Me-Leu}  
{N-Me-Ile}  
{N-Me-Val}  
{N-Me-Met}  
{N-Me-Nle}  
{N-Me-Nva}  
{Sar}  
{N-Me-Ser}

{N-Me-Tyr}  
{N-Me-Thr}  
{N-Me-Asp}  
{N-Me-Glu}  
N-Me-beta-Ala

### **Cyclic peptide**

{Mono Disulfide bridge}  
{Double Disulfide bridge}  
{Triple Disulfide bridge}  
{Random Disulfide bridge}  
{Same Seq. Inter-Disulfide bridge }  
{Different Inter-Disulfide bridge}  
{Amide cyclic (end)}

### **Phosphorylation**

{pSer}  
{pTyr}  
{pThr}  
{D-pSer}  
{D-pTyr}  
{D-pThr}  
{Di-sites in sequence}  
{Tri-sites in sequence}

### **PEG**

{Mini-PEG}  
{Mini-PEG2}  
{Mini-PEG3}  
{PEG4}  
{PEG-6}  
{PEG8}  
{PEG-11}  
{PEG-12}

### **Isotope Labeling**

H2 (deuterium)  
N15  
C13  
13C15N-K (C-terminal)  
13C15N-R (C-terminal)  
13C15N-A (C-terminal)  
13C15N-I (C-terminal)  
13C15N-L (C-terminal)  
13C15N-F (C-terminal)  
13C15N-P (C-terminal)  
13C15N-V (C-terminal)

### **Stapled Peptides**

Single stapled S5 and S5  
Single stapled S5 and R8

Single stapled R8 and R8  
Double stapled S5 and S5  
Double stapled S5 and R8  
Double stapled R8 and R8

**Glycopeptides (glycosylated peptides)**

N-linked glycopeptide synthesis

O-linked glycopeptide synthesis

C-linked glycopeptide synthesis

S-linked glycopeptide synthesis

Glycopeptides containing monosaccharides, such as Ser/Thr (GlcNAc), Ser/Thr (GalNAc), Asn (GlcNAc), Ser (Xyl), Thr (Man), etc.

Glycopeptides containing oligosaccharides, such as Ser/Thr (Gal-GalNAc), Ser/Thr (Neu-Gal-GalNAc), Asn (Fuc-GlcNAc), etc.

**Misc**

FMK, CMK

N6-Octanoyl

Photocleavable peptides

propargyl-gly

Lys(Myristoyl)

pNA

Lys(N3)