

| N-terminus Modification |                                          | C-terminus Modification | D-form normal amino acid | Unusual amino acid     |                       |                       |
|-------------------------|------------------------------------------|-------------------------|--------------------------|------------------------|-----------------------|-----------------------|
| H                       | Fatylation - 2-Br-Ac                     | -OH                     | {D-Ala}                  | {Beta-Asp}             | {D-Nle}               | {Cys(pMeOBzl)}        |
| Ac                      | Fatylation - 2-Cl-Ac                     | -NH2                    | {D-Arg}                  | {D-Beta-Asp}           | {Cit}                 | {Oic}                 |
| CBZ                     | Fatylation - 2-I-Ac                      | -CHO                    | {D-Asp}                  | {Gamma-Glu}            | {D-Cit}               | {Tic}                 |
| Boc                     | Fatylation - OH-Ac-                      | -ol                     | {D-Asn}                  | {D-Gamma-Glu}          | {Orn}                 | {D-Tic}               |
| Bz                      | Fatylation - 3-Bromopropionyl            | -CMK                    | {D-Cys}                  | Cys(Cam)               | {D-Orn}               | {Cys(Bzl)}            |
| Bz(5-NH2,2-NO2)         | Fatylation - But-                        | -FMK                    | {D-Glu}                  | D-Cys(Cam)             | {Pen}                 | {Epsilon-Lys}         |
| Bz(4-F)                 | Fatylation - Suc                         | -Cya                    | {D-Gln}                  | {Cys(Acm)}             | {D-Pen}               | {D-Epsilon-Lys}       |
| Bz(4-NO2)               | Fatylation - MeOSuc                      | -pNA                    | {D-His}                  | {Cys(tBu)}             | {Cpg}                 | {5-ASA}               |
| Allyl                   | Fatylation - Iba                         | -ONP                    | {D-Allo-Ile}             | Cys(StBu)              | {Cha}                 | {Bpa}                 |
| Acryl                   | Fatylation - Hex-                        | -AMC                    | {D-Leu}                  | {Met(O)}               | {D-Cha}               | {Pip}                 |
| Alloc                   | Fatylation - 5-heptenoic acid            | -AFC                    | {D-Lys}                  | {D-Met(O)}             | {Chg}                 | {Nip}                 |
| Pyr                     | Fatylation - trans-3-hexenoyl-           | -OMe                    | {D-Met}                  | Cys(SNO)               | {D-Chg}               | {2-Aze}               |
| D-Pyr                   | Fatylation - 5-Hexynoic acid             | -OEt                    | {D-Pro}                  | {Met(O)2}              | Ac6c                  | {3-Aze}               |
| LA-                     | Fatylation - heptanedioic acid           | -OBzl                   | {D-Phe}                  | {D-Met(O)2}            | {Dab}                 | {Psi(CH2NH)}          |
| Mpa-                    | Fatylation - Oct-                        | -OtBu                   | {D-Ser}                  | {Lys(Ac)}              | {Dap}                 | {CS-NH}               |
| Mal-b-Ala               | Fatylation - F-Oct-                      | -OSu                    | {D-Tyr}                  | {Ac-Lys}               | Pra                   | {isoGln}              |
| Mal-Acp                 | Fatylation - Dec-                        | -NHMe                   | {D-Thr}                  | {Lys(Dde)}             | D-Pra                 | {D-isoGln}            |
| 3-IAA                   | Fatylation - Sebacic Acid                | -NHET                   | {D-Trp}                  | {Tle}                  | Allo-Thr              | {Ser(O-β-D-Glc)}      |
| {SATA}                  | Fatylation - F-Dec-                      | -NHisopen               | {D-Val}                  | {Ser(octanoic acid)}   | D-Allo-Thr            | {Thr(O-β-D-Glc)}      |
| {SATP}                  | Fatylation - Lau-                        | -NH(CH2)6               |                          | {Ser(Lipoic acid)}     | {Gly(allyl)}          | {Tyr(O-β-D-Glc)}      |
| Cholesteryl-            | Fatylation - F-Lau-                      | -NHPH                   |                          | {D-Ser(octanoic acid)} | {D-Gly(allyl)}        | 4,5-dehydro-Leu       |
| PhAc                    | Fatylation - Myr-                        | -NHET(O)EtNH-Fmoc       |                          | 2-Thi                  | Cys(Pyrene-maleimide) | Ala(SO3H2)            |
| Py-Ac                   | Fatylation - F-Myr-                      | -NH(EtNH-Myr)2          |                          | 3-Thi                  | {D-1-Nal}             | X                     |
| N-Amidinoglycine        | Fatylation - Pal-                        | -N(OMe)Me               |                          | {Aib}                  | {L-1-Nal}             | {X-deCys}             |
| N-Propargylglycine-     | Fatylation - Cys(Pal)                    | -TBzl                   |                          | {Abu}                  | {D-2-Nal}             | {G/A/S/V/L/D/K/M/F/Y} |
| Ad-                     | Fatylation - Pam3C-                      | -NHNH2                  |                          | {D-Abu}                | {L-2-Nal}             | {A/P/T/N/Q/E/H/R/W}   |
| BPS-                    | Fatylation - Ste-                        | -ED                     |                          | Tau                    | {D-2-Pal}             | {E(25)D(25)X(50)}     |
| Morpholine-4-carbonyl-  | Fatylation - Octanedioic acid            | -BD                     |                          | {Hyp}                  | {L-2-Pal}             | {E(25)T(25)X(50)}     |
| Trans-Cinnamoyl         | Fatylation - Oleic Acid-                 |                         |                          | {Phg}                  | {D-3-Pal}             | {K(25)Q(25)X(50)}     |
| 2-Furoyl                | Fatylation - Linoleic-                   |                         |                          | {D-Phg}                | {L-3-Pal}             | {K(75)X(25)}          |
| Fatylation - For        | Fatylation - 10,12-Pentacosadiynoic Acid |                         |                          | {Nva}                  | {D-4-Pal}             | {R(25)K(25)X(50)}     |
|                         |                                          |                         |                          | {D-Nva}                | {L-4-Pal}             |                       |
|                         |                                          |                         |                          | {Nle}                  | {Cys(pMeBzl)}         |                       |

| Fluorescence/Dye Labeling |                       | Phe/Tyr Analogs amino acid |                   | Homo amino acid    | Isotope label | Quenched fluorescent peptide | Atom Linker  |
|---------------------------|-----------------------|----------------------------|-------------------|--------------------|---------------|------------------------------|--------------|
| Biotin-                   | -Lys(Dansyl)          | {D-2-Cl-Phe}               | {L-2-Me-Phe}      | {Har}              | {N15 Gly}     | {Abz}                        | {Gly}        |
| -EDBiotin                 | Lys(Dansyl)-          | {L-2-Cl-Phe}               | {D-4-Me-Phe}      | {D-Har}            | {N15 Ala}     | {Tyr(3-NO2)}                 | {Beta-Ala}   |
| -Lys(Biotin)-             | Dansyl-Ahx-           | {D-3-Cl-Phe}               | {L-4-Me-Phe}      | {Hcy}              | {N15 Val}     | {Glu(EDANS)}                 | {GABA}       |
| -Lys(Biotin)              | 5-TAMRA-              | {L-3-Cl-Phe}               | {D-4-NH2-Phe}     | {HPh}              | {N15 Leu}     | {DABCYL}                     | {Ava}        |
| -Lys(LC-Biotin)-          | 5(6)-TAMTA-           | {D-4-Cl-Phe}               | {L-4-NH2-Phe}     | {D-HPh}            | {N15 Ile}     | {Lys(DABCYL)}                | {Ahx}        |
| -Lys(LC-Biotin)           | -EDTAMRA              | {L-4-Cl-Phe}               | {D-3-Cl-Tyr}      | {Hse}              | {N15 Phe}     | {Lys(Abz)}                   | {8-Aoc}      |
| Lys(Biotin)-              | -Lys(TAMRA)-          | {D-3,4-DiCl-Phe}           | {L-3-Cl-Tyr}      | {D-Hse}            | {N15 Asp}     | DABSYL                       | {AEA}        |
| Biotin-Ahx-               | -Lys(5-TAMRA)         | {L-3,4-DiCl-Phe}           | {D-3,5-DiCl-Tyr}  | {HomoCit}          | {N15 Pro}     |                              | {Ado}        |
| Orn(Bio)                  | Lys(5-TAMRA)-         | {D-4-Br-Phe}               | {L-3,5-DiCl-Tyr}  | {D-HomoCit}        | {N15 Thr}     |                              | {ANP Linker} |
| -NH-PEG3-Bio              | {5-TAMRA-Acp}         | {L-4-Br-Phe}               | {D-3,5-DiBr-Tyr}  | {HomoLeu}          | {N15 Lys}     |                              |              |
| FITC-                     | {Lys(Dnp)}            | {D-3-F-Phe}                | {L-3,5-DiBr-Tyr}  | {HomoPro}          | {N15 Tyr}     |                              |              |
| -ED-FITC                  | {D-Lys(Dnp)}          | {L-3-F-Phe}                | {D-3-I-Tyr}       | {D-HomoPro}        | {N15 Glu}     |                              |              |
| -Lys(FITC)-               | {Dab(Dnp)}            | {D-4-F-Phe}                | {L-3-I-Tyr}       | {beta-Homolle}     | {N15 Arg}     |                              |              |
| -Lys(FITC)                | Dap(Dnp)              | {L-4-F-Phe}                | {D-3,5-DiI-Tyr}   | {beta-HomoLeu}     | {N15 Gln}     |                              |              |
| Lys(Ahx-FITC)             | -EDDnp                | {D-4-NO2-Phe}              | {L-3,5-DiI-Tyr}   | {beta-HomoMet}     | aN15 Asn      |                              |              |
| Lys(FITC)-                | MCA-                  | {L-4-NO2-Phe}              | {D-3-NO2-Tyr}     | {beta-HomoPro}     |               |                              |              |
| FITC-Ahx-                 | -Lys(MCA)-            | {D-4-I-Phe}                | {L-3-NO2-Tyr}     | {beta-HomoVal}     |               |                              |              |
| 5-FAM-                    | -Lys(MCA)             | {L-4-I-Phe}                | {D-3,5-DiNO2-Tyr} | {beta-HomoAsp}     |               |                              |              |
| 5,6-FAM                   | Lys(MCA)-             | {D-3-CN-Phe}               | {L-3,5-DiNO2-Tyr} | {beta-HomoAsn}     |               |                              |              |
| 6-FAM                     | 3-Indolylacetic acid- | {L-3-CN-Phe}               | {L-3-F-Tyr}       | {beta-HomoGlu}     |               |                              |              |
| -ED-5-FAM                 | Cys(Npys)-            | {D-4-CN-Phe}               | {L-4-NO2-Phg}     | {beta-HomoGln}     |               |                              |              |
| -Lys(5-FAM)-              | PyBA-                 | {L-4-CN-Phe}               | {D-4-NO2-Phg}     | {beta-homoSer}     |               |                              |              |
| Lys(5,6-FAM)              | Lys(PyBA)             | {D-2-Me-Phe}               | L-3,5-DiF-Phe     | {beta-HomoThr}     |               |                              |              |
| -Lys(5-FAM)               | Fa-                   |                            |                   | {beta-HomoTrp}     |               |                              |              |
| Lys(5-FAM)-               | Rhodamine B-          |                            |                   | {beta-HomoTyr}     |               |                              |              |
| 5-FAM-Ahx-                | Lys(Rhodamine B)      |                            |                   | {Azidohomoalanine} |               |                              |              |
| Dansyl-                   | D-Luciferin-          |                            |                   | {beta-HomoAla}     |               |                              |              |
| -EDDdansyl                | NBD-                  |                            |                   | {beta-HomoPhe}     |               |                              |              |
| -Lys(Dansyl)-             |                       |                            |                   | {beta-HomoLys}     |               |                              |              |

| MAPS and Carrier Complex    |                                    | Methyl amino acids        | N-Methyl amino acid | Cyclic peptide                      | Phosphorylation         | PEG                        |
|-----------------------------|------------------------------------|---------------------------|---------------------|-------------------------------------|-------------------------|----------------------------|
| {Symmetric 2 Branches}      | Lys(2-Br-Ac)                       | {Arg(Me)}                 | {N-Me-Ala}          | {Mono Disulfide bridge}             | {pSer}                  | {Mini-PEG}                 |
| {Orn symmetric 2 Branches}  | Lys(Butanoyl)                      | {{Arg(Me)2} asymmetrical} | {N-Me-Phe}          | {Double Disulfide bridge}           | {pTyr}                  | {Mini-PEG2}                |
| {Symmetric 4 Branches}      | Lys(Crotonyl)                      | {{Arg(Me)2} symmetrical}  | {N-Me-Leu}          | {Triple Disulfide bridge}           | {pThr}                  | {Mini-PEG3}                |
| {Orn symmetric 4 Branches}  | Lys(4-Hydroxybutanoyl)             | {Tyr(Me)}                 | {N-Me-Ile}          | {Random Disulfide bridge}           | {D-pSer}                | {PEG4}                     |
| {Symmetric 8 Branches}      | {Lys(octenyl)}                     | {Lys(Me)}                 | {N-Me-Val}          | {Same Seq. Inter-Disulfide bridge } | {D-pTyr}                | {PEG-6}                    |
| {Orn symmetric 8 Branches}  | Lys(Ma)                            | {Ser(Me)}                 | {N-Me-Met}          | {Different Inter-Disulfide bridge}  | {D-pThr}                | {PEG8}                     |
| {Glu 2 Branches (Pure)}     | Lys(Pal)                           | {Cys(Me)}                 | {N-Me-Nle}          | {Amide cyclic (end)}                | {Di-sites in sequence}  | {PEG-11}                   |
| {glycerol 3 branches ester} | Lys(Glu-Pal)                       | {Lys(Me)}                 | {N-Me-Nva}          | {Amide cyclic (Side chain)}         | {Tri-sites in sequence} | {PEG-12}                   |
| {Lys(peptide2)}             | Lys(gama-Glu-Pal)                  | {Lys(Me2)}                | {Sar}               | {Orn side chain Amide cyclic}       | {4-sites in sequence}   | Mal-PEG12                  |
| {Thr(Peptide2)}             | Lys(Oleic Acid)                    | {Lys(Me3)}                | {N-Me-Ser}          | {Thioester cyclic}                  | {5-sites in sequence}   | Azido-PEG12                |
| {Ser(Peptide2)}             | Lys(Acryl)                         | {L-2-Me-Trp}              | {N-Me-Tyr}          | {lactone cyclic}                    |                         | MAL-dPEG24                 |
| Lys(Ac-Cys)                 | Lys(alkine)                        | {D-2-Me-Trp}              | {N-Me-Thr}          | {Sec cyclic}                        |                         | PEG1900-                   |
| Lys(Ala)                    | Lys(Alloc)                         | {Tyr(Et)}                 | {N-Me-Asp}          |                                     |                         | {Cys(Mal-PEG2000)}         |
| Lys(Arg)                    | Lys(Aoa)                           | {D-Tyr(Et)}               | {N-Me-Glu}          |                                     |                         | NH2-PEG2000-NH-Suc-        |
| Lys(Asp)                    | Lys(cyclopropanecarboxyl)          | {Orn(Me)3}                | N-Me-beta-Ala       |                                     |                         | NH-PEG2000                 |
| Lys(Cys)                    | {Lys(3,5-diiodo-4-hydroxybenzoyl)} | {L-1-Me-Trp}              |                     |                                     |                         | mPEG2000-                  |
| Lys(Glu)                    | Lys(HMP)                           | {His(1-Me)}               |                     |                                     |                         | Lys(mPEG2000)              |
| Lys(Leu)                    | {Lys(Ahx-Diazirine)}               | {His(3-Me)}               |                     |                                     |                         | mPEG3000-                  |
| Lys(Met)-                   | Lys(Methacryl)                     |                           |                     |                                     |                         | Lys(mPEG3000)              |
| Lys(Phe)-                   | Lys(propargyl)                     |                           |                     |                                     |                         | Cys(Mal-PEG5000)           |
| Lys(SATA)                   | Lys(propionyl)                     |                           |                     |                                     |                         | mPEG5000-                  |
| Lys(Thioacetyl)             | Lys(Pyruvoyl)                      |                           |                     |                                     |                         | Lys(mPEG5000)              |
| Lys(Tic)                    | Lys(2-hydroxyisobutyryl)           |                           |                     |                                     |                         | <b>Others</b>              |
| Lys(Val)                    | Lys(methylmalonyl)                 |                           |                     |                                     |                         | DOTA                       |
| Lys(Beta-Asp)               | Dap(Oct)                           |                           |                     |                                     |                         | DTPA-                      |
| Lys(Gama-Glu)               | Lys(HYNIC)                         |                           |                     |                                     |                         | HYNIC                      |
| Lys(Cholesteryl)            | {BSA-Peptide N terminus}           |                           |                     |                                     |                         | HPP                        |
| Lys(LA)                     | {BSA-peptide C terminus}           |                           |                     |                                     |                         | {6-mercaptopentanoic acid} |
| Lys(MTX)                    | {BSA-Peptide via Cys}              |                           |                     |                                     |                         | MTX-                       |
| Lys(Maleimide)              | {KLH-Peptide N terminus}           |                           |                     |                                     |                         | N15 Asn_b                  |
| Lys(Mpa)                    | {KLH-Peptide C terminus}           |                           |                     |                                     |                         | N15 Asn_a,b                |
| Lys(Pra)                    | {KLH-peptide via Cys}              |                           |                     |                                     |                         |                            |
| Lys(Suc)                    | {OVA-Peptide N terminus}           |                           |                     |                                     |                         |                            |
| Lys(glutaryl)               | {OVA-peptide C terminus}           |                           |                     |                                     |                         |                            |
| Lys(pGlu)                   | {OVA-peptide via Cys}              |                           |                     |                                     |                         |                            |
| Lys(For)                    |                                    |                           |                     |                                     |                         |                            |