



Professor Donald F. Hunt: Curriculum Vitae

Birth Date

April 25, 1941, Hyannis, MA

Address

Department of Chemistry
McCormick Road University of Virginia Charlottesville
Virginia 22904, USA
Tel. no.: (434) 924-3610; Fax: (804) 982-2781
e-mail: dfh@virginia.edu

Professor Donald F. Hunt joined the faculty at the University of Virginia as an assistant professor in September' 1968 and was promoted to associate professor and full professor in 1973 and 1978, respectively. In 1993 he was promoted to the rank of University Professor with appointments in both Chemistry and Pathology. Prior to assuming these positions, he spent a year at the Massachusetts Institute of Technology as a National Institute of Health Postdoctoral Trainee in Mass Spectrometry under the guidance of Professor Klaus Biemann. Professor Hunt obtained both his B.S. (1962) and Ph.D. (1967) degrees from the University of Massachusetts. Research for the doctoral dissertation was carried out under the direction of Professors Marvin Rausch and Peter Lillya in the area of organotransition metal chemistry. Professor Hunt was chosen as a recipient of both an NIH Fogarty Senior International Fellowship and a John Simon Guggenheim Fellowship in 1981–1982. In 1990, he received the Charles H. Stone Award sponsored by the American Chemical Society. In 1992, he was named Virginia's Outstanding Scientist and also received the Pehr Edman Award for outstanding achievements in the application of mass spectrometry to the contemporary microsequence analysis of proteins. The Distinguished Contribution Award from the American Society for Mass Spectrometry was presented to Dr. Hunt in 1994 for his development of electron-capture, negative-ion mass spectrometry. In 1996, he was the first recipient of the Christian B. Anfinsen Award from the Protein Society for development of new technology in the field of protein chemistry. He received the Chemical Instrumentation Award sponsored by the American Chemical Society in 1997. This award recognizes Professor Hunt for development of instrumentation capable of sequencing peptides and proteins at the attomole level. In 2000, Professor Hunt was the recipient of both the Frank F. Field and Joe L. Franklin award presented by

the American Chemical Society for outstanding achievement in the field of mass spectrometry and the Thomson Medal from the International Mass Spectrometry Society.

The 2006 HUPO (Human Proteome Organisation) Distinguished Achievement Award in Proteomics was recently presented to Professor Donald F. Hunt. Professor Hunt is a consultant to Thermo Electron.

Publications in the field of organotransition metal chemistry:

1. D.F. Hunt, C. Peter Lillya, M.D. Rausch, The 7-Norbornadienyltricarbonyliron Cation, *J. Amer. Chem. Soc.*, **1968**, *90*, 2561–2568.
2. D.F. Hunt, C.P. Lillya, M.D. Rausch, Solvolysis and Dissociation of 7-Substituted Norbornadiene Group Vib Metal Tetracarbonyls, *Inorg. Chem.*, **1969**, *8*, 446–450.
3. G.T. Rodeheaver, D.F. Hunt, Conversion of Olefins into Ketones with Mercuric Acetate and Palladium Chloride, *Chem. Commun.*, **1971**, 818–819.
4. G.T. Rodeheaver, G.C. Farrant, D.F. Hunt, Heptafulvenetri-carbonyliron, *J. Organometal. Chem.*, **1971**, *30*, C22–C24.
5. D.F. Hunt, G.C. Farrant, G.T. Rodeheaver, Chemistry of (Cycloheptatrienone)tricarbonyliron and (Cycloheptadienone)tricarbonyliron in Highly Acidic Media, *J. Organometal. Chem.*, **1972**, 349–364.
6. D.F. Hunt, J.W. Russell, Phenylpentalenediiron pentacarbonyl, *J. Organometal. Chem.*, **1972**, *46*, C22–C24.
7. D.F. Hunt, J.W. Russell, A Stable Transition Metal Pi-Complex of Dimethylaminopentalene, *J. Amer. Chem. Soc.*, **1972**, 7198–7199.
8. D.F. Hunt, J.W. Russell, Iron Carbonyl Complexes of Pentalene and Dihydropentalene, *J. Organometal. Chem.*, **1976**, *104*, 373–376.

Publications in the field of mass spectrometry:

1. D.F. Hunt, C.E. Hignite, K. Biemann, Structure Elucidation of Dinucleotides by Mass Spectrometry, *Biochem. Biophys. Res. Commun.*, **1968**, *33*, 378–383.
2. B.T. Lingappa, M. Prasad, D.F. Hunt, K. Biemann, Phenethyl Alcohol and Tryptophol: Autoantibiotics Produced by the Fungus, *Candida albicans*, *Science*, **1969**, *169*, 192–194.

3. D.F. Hunt, J.F. Ryan, III, Chemical Ionization Mass Spectrometry Studies I. Identification of Alcohols, *Tetrahedron Lett.*, **1971**, 4535–4538.
4. D.F. Hunt, C.N. McEwen, R.A. Upham, Chemical Ionization Mass Spectrometry Studies II. Differentiation of Primary, Secondary and Tertiary Amines, *Tetrahedron Lett.*, **1971**, 4539–4542.
5. D.F. Hunt, C.N. McEwen, R.A. Upham, Determination of Active Hydrogen in Organic Compounds by Chemical Ionization Mass Spectrometry, *Anal. Chem.*, **1972**, 44, 1292–1294.
6. D.F. Hunt, J.F. Ryan, III, Argon-Water Mixtures as Reagents for Chemical Ionization Mass Spectrometry, *Anal. Chem.*, **1972**, 44, 1306–1309.
7. D.F. Hunt, J.F. Ryan, III, Chemical Ionization Mass Spectrometry Studies VI. Nitric Oxide as a Reagent Gas, *J.C.S. Chem. Comm.*, **1972**, 620–621.
8. A. Volk, N.L. Salomonsky, D.F. Hunt, Xanthomonas Sinensis Cell Wall Lipopolysaccharide, *J. Biol. Chem.*, **1972**, 247, 3381–3887.
9. D.F. Hunt, J.W. Russell, R.L. Torian, Chemical Ionization Mass Spectrometry Studies v. Organometallic Compounds, *J. Organometal. Chem.*, **1972**, 175–183.
10. D.F. Hunt, C.N. McEwen, Chemical Ionization Mass Spectrometry Studies VII. Deuterium Labeled Decanes, *Org. Mass Spectrom.*, **1973**, 7, 441–448.
11. D.F. Hunt, T.M. Harvey, J.W. Russell, Oxygen as a Reagent for the Analysis of 2,3,7,8-Tetrachloro Dibenzo-p-dioxin (TCDD) by Negative Ion Chemical Ionization Mass Spectrometry, *J.C.S. Chem. Comm.*, **1975**, 151–152.
12. D.F. Hunt, C.N. McEwen, T.M. Harvey, Positive and Negative Chemical Ionization Mass Spectrometry Using a Townsend Discharge Ion Source, *Anal. Chem.*, **1975**, 47, 1730–1734.
13. D.F. Hunt, T.M. Harvey, Nitric Oxide Chemical Ionization Mass Spectra of Alkanes, *Anal. Chem.*, **1975**, 47, 1965–1969.
14. D.F. Hunt, T.M. Harvey, Nitric Oxide Chemical Ionization Mass Spectra of Olefins, *Anal. Chem.*, **1975**, 47, 2136–2141.
15. D.F. Hunt, G.C. Stafford Jr., F.W. Crow, J.W. Russell, Pulsed Positive Negative Ion Chemical Ionization Mass Spectrometry, *Anal. Chem.*, **1976**, 48, 2098–2105.
16. D.F. Hunt, J. Shabanowitz, F. Botz, D.A. Brent, Chemical Ionization Mass Spectrometry of Salts and Thermally Labile Organics with Field Desorption Emitters as Solids Probes, *Anal. Chem.*, **1977**, 49, 1160–1163.
17. D.F. Hunt, G.C. Stafford Jr., J. Shabanowitz, F.W. Crow, Determination of Molecular Compositions on a Quadrupole Mass Spectrometer by Pulsed Positive Ion Negative Ion Chemical Ionization Mass Spectrometry, *Anal. Chem.*, **1977**, 49, 1884.
18. D.F. Hunt, F.W. Crow, Electron Capture Negative Ion Chemical Ionization Mass Spectrometry, *Anal. Chem.*, **1978**, 50, 1781–1784.
19. J.R. Shipe Jr., D.F. Hunt, J. Savory, Plasma Polyamines Determined by Negative Ion Chemical Ionization Mass Spectrometry, *Clin. Chem.*, **1979**, 25, 1564–1571.
20. J.A.G. Roach, J. Sphon, D.F. Hunt, F.W. Crow, Pulsed Positive Negative Ion Chemical Ionization Mass Spectrometry of Sulfonamide Drugs, *J. Assoc. Off. Anal. Chem.*, **1980**, 63, 452–459.
21. D.F. Hunt, S.K. Sethi, J. Shabanowitz, Studies of Negative Ions by Collision Induced Decomposition and Hydrogen Deuterium Exchange Techniques, *Environ. Health Pers.*, **1980**, 36, 33–38.
22. D.F. Hunt, S.K. Sethi, Gas Phase Ion-Molecule Isotope Exchange Reactions: Methodology for Counting Hydrogen Atoms in Specific Organic Structural Environments by Chemical Ionization Mass Spectrometry, *J. Amer. Chem. Soc.*, **1980**, 102, 6953–6963.
23. D.F. Hunt, J. Shabanowitz, A.B. Giordani, Collision Activated Decompositions of Negative Ions in Mixture Analysis with a Triple Quadrupole Mass Spectrometer, *Anal. Chem.*, **1980**, 52, 386–390.
24. D.F. Hunt, A.M. Buko, J.M. Ballard, J. Shabanowitz, A.B. Giordani, Sequence Analysis of Polypeptides by Collision Activated Dissociation on a Triple Quadrupole Mass Spectrometer, *Biomed. Mass Spectrom.*, **1981**, 8, 387–408.
25. D.F. Hunt, W.M. Bone, J. Shabanowitz, G. Rhodes, J.M. Ballard, Sequence Analysis of Oligopeptides by Secondary Ion Collision Activated Dissociation Mass Spectrometry, *Anal. Chem.*, **1981**, 53, 1704–1706.
26. D.F. Hunt, J. Shabanowitz, Determination of Organosulfur Compounds in Hydrocarbon Matrices by Collision Activated Dissociation Mass Spectrometry, *Anal. Chem.*, **1982**, 54, 574–578.
27. D.F. Hunt, T.M. Harvey, W.C. Brumley, J.F. Ryan, III, J.W. Russell, Nitric Oxide Chemical Ionization Mass Spectrometry of Alcohols, *Anal. Chem.*, **1982**, 54, 492–496.
28. D.F. Hunt, A.B. Giordani, J. Shabanowitz, G. Rhodes, Retro-Diels-Alder, Gamma-Hydrogen Rearrangement and Decarboxylation Reactions. Pathways for Fragmentation in the Collision Activated Dissociation Mass Spectra of Ketones and Carboxylic Acid (M-1)[−] Ions, *J. Org. Chem.*, **1982**, 48, 737–741.
29. D. Schuetzle, T.L. Riley, T.J. Prater, T.M. Harvey, D.F. Hunt, Analysis of Nitrated Polycyclic Aromatic Hydrocarbons in Diesel Particulates, *Anal. Chem.*, **1982**, 54, 265–271.
30. D.F. Hunt, A.B. Giordani, G. Rhodes, D.A. Herold, Mixture Analysis by Triple Quadrupole Mass Spectrometry: Metabolic Profiling of Urinary Carboxylic Acids, *Clin. Chem.*, **1982**, 28, 2387–2392.
31. T.R. Henderson, R.E. Royer, C.R. Clark, T.M. Harvey, D.F. Hunt, MS/MS Analysis of Diesel Emissions and Fuels Treated with NO₂, *J. Appl. Toxicol.*, **1982**, 2, 231–237.
32. D.F. Hunt, New Ionization Techniques in Mass Spectrometry, *Int. J. Mass Spectrom. Ion Phys.*, **1982**, 45, 111–123.
33. D.F. Hunt, J. Shabanowitz, T.M. Harvey, M. Coates, Analysis of Organics in the Environment by Functional Group Using a Triple Quadrupole Mass Spectrometer, *J. Chromatogr.*, **1983**, 271, 93–105.

34. T.R. Henderson, J.D. Sun, R.E. Royer, C.R. Clark, A.P. Li, T.M. Harvey, D.F. Hunt, J.E. Fulford, A.M. Lovette, W.R. Davidson, Triple Quadrupole Mass Spectrometry Studies of Nitroaromatic Emissions from Different Diesel Engines, *Environ. Sci. Technol.*, **1983**, *17*, 443–449.
35. J.E. Fitton, D.F. Hunt, J. Marasco, J. Shabanowitz, S. Winston, A. Dell, The Amino Acid Sequence of Delta Hemolysin Purified from a Canine Isolate of *S. Aureus*, *FEBS Lett.*, **1984**, *169*, 25–29.
36. A. Weisz, A. Mandelbaum, J. Shabanowitz, D.F. Hunt, The Effect of Configuration of Gas Phase Protonated Ethene Dicarboxylates on Their Low Energy Collision Induced dissociation Behavior, *Org. Mass Spectrom.*, **1984**, *19*, 238–240.
37. D.F. Hunt, P.J. Gale, Simulation of Electron Impact Mass Spectra by Charge Exchange in Chemical Ionization Mass Spectrometry, *Anal. Chem.*, **1984**, *56*, 1111–1114.
38. T.R. Henderson, J.D. Sun, A.P. Li, R.L. Hanson, W.E. Bechtold, T.M. Harvey, J. Shabanowitz, D.F. Hunt, GC/MS and MS/MS Studies of Diesel Exhaust Mutagenicity and Emissions from Chemically defined Fuels, *Environ. Sci. Technol.*, **1984**, *18*, 428–434.
39. D.F. Hunt, J. Shabanowitz, R.T. McIver Jr., R.L. Hunter, J.E.P. Syka, Ionization and Mass Analysis of Non-volatile Compounds by Particle Bombardment/Tandem Quadrupole Fourier Transform Mass Spectrometry, *Anal. Chem.*, **1985**, *57*, 768–771.
40. D.F. Hunt, J. Shabanowitz, T.M. Harvey, M.L. Coates, Scheme for the Direct Analysis of Organics in the Environment by Tandem Mass Spectrometry, *Anal. Chem.*, **1985**, *57*, 525–537.
41. D.F. Hunt, J. Shabanowitz, J.R. Yates, III, R.T. McIver Jr., R.L. Hunter, J.E.P. Syka, J. Amy, Tandem Quadrupole-Fourier Transform Mass Spectrometry of Oligopeptides, *Anal. Chem.*, **1985**, *57*, 525–537.
42. D.F. Hunt, J.R. Yates, III, J. Shabanowitz, S. Winston, C.R. Hauer, Protein Sequencing by Tandem Mass Spectrometry, *Proc. Natl. Acad. Sci., USA*, **1986**, *83*, 6233–6237.
43. R. Ferone, M.H. Hanlon, S.C. Singer, D.F. Hunt, Alpha-Carboxyl Linked Glutamates in the Folylpolyglutamates of *Escherichia Coli*, *J. Biol. Chem.*, **1986**, *261*, 16356–16362.
44. R. Ferone, S.C. Singer, D.F. Hunt, In Vitro Synthesis of Alpha-Carboxyl Linked Folylpolyglutamates by an Enzyme Preparation from *Escherichia Coli*, *J. Biol. Chem.*, **1986**, *261*, 16363–16371.
45. J.C. Steffens, D.F. Hunt, B.G. Williams, Accumulation of Non-Protein Metal-Binding Polypeptides (*Gama-Glutamyl-Cysteinyl*)_n- Glycine in Selected Cadmium-Resistant Tomato Cells, *J. Biol. Chem.*, **1986**, *261*, 13879–13882.
46. D.F. Hunt, J. Shabanowitz, J.R. Yates, III, N.Z. Zhu, D.H. Russell, M.E. Castro, Tandem Quadrupole Fourier-Transform Mass Spectrometry of Oligopeptides and Small Proteins, *Proc. Natl. Acad. Sci., USA*, **1987**, *84*, 620–623.
47. D.F. Hunt, J. Shabanowitz, J.R. Yates, III, Peptide Sequence Analysis by Laser Photodissociation-Fourier Transform Mass Spectrometry, *J. Chem. Soc., Chem. Commun.*, **1987**, 548–550.
48. D.F. Hunt, J.R. Yates, III, J. Shabanowitz, N.Z. Zhu, T. Zirino, B.A. Averill, S.T. Daurat-Larroque, J.G. Shewale, R.M. Roberts, K. Brew, Sequence Homology in the Metalloproteins: Purple Acid Phosphatase from Beef Spleen and Utoferin from Porcine Uterus, *Biochem. Biophys. Res. Commun.*, **1987**, *144*, 1154–1160.
49. A. Weiz, A. Mandelbaum, W. Blum, B. Domon, D. Muller, W.J. Richter, J. Shabanowitz, D.F. Hunt, Application of Low Energy CID in the Determination of Structures of [M-Halogen]⁺ Ions Obtained from Diethyl Halosuccinates Under Electron Impact, *Org. Mass Spectrom.*, **1987**, *22*, 61–63.
50. H.M. Cooper, R. Jemmerson, D.F. Hunt, P.R. Griffin, J.R. Yates, III, J. Shabanowitz, N.Z. Zhu, Y. Paterson, Site-Directed Chemical Modification of Horse Cytochrome-C Results in Changes in Antigenicity Due to Local and Long-Range Conformational Perturbations, *J. Biol. Chem.*, **1987**, *262*, 11591–11597.
51. H. Levine, III, D.F. Hunt, N.Z. Zhu, J. Shabanowitz, Amino Acid Sequence Analysis of the Neuronal Type II Calmodulin-Dependent Protein Kinase by Tandem Mass Spectrometry, *Biochem. Biophys. Res. Commun.*, **1987**, *148*, 1104–1109.
52. D.F. Hunt, J.R. Yates, III, J. Shabanowitz, Protein Sequencing by Tandem Mass Spectrometry, in “Methods in Protein Sequence Analysis”, Kenneth A. Walsh, Ed., The Humana Press, **1987**, 149–153.
53. S.D. Hanson, M.E. Castro, D.H. Russell, D.F. Hunt, J. Shabanowitz, Fourier Transform Mass Spectrometry of Large (m/z > 5,000) Biomolecules, in “Fourier Transform Mass Spectrometry; Evolution, Innovation, and Applications”, M.V. Buchanan, Ed., **1988**, ACS Symposium Series, No. 359, ACS Washington, DC.
54. H. Michel, D.F. Hunt, J. Shabanowitz, J. Bennett, Tandem Mass Spectrometry Reveals That Three Photosystem II Proteins of Spinach Chloroplasts Contain N-Acetyl-O-phospho-threonine at Their N-Termini, *J. Biol. Chem.*, **1988**, *263*, 1123–1130.
55. A.C. Brinegar, G. Cooper, A. Stevens, C.R. Hauer, J. Shabanowitz, D.F. Hunt, J.E. Fox, Characterization of a Benzyladenine Binding Site Peptide Isolated from a Wheat Cytokinin-Binding Protein: Sequence Analysis and Identification of a Single Affinity Labeled Histidine Residue by Mass Spectrometry, *Proc. Natl. Acad. Sci., USA*, **1988**, *85*, 5927–5931.
56. P.H. Petra, B.G. Que, P.C. Namkung, J.B.A. Ross, H. Chardonneau, K.A. Walsh, P.R. Griffin, J. Shabanowitz, D.F. Hunt, Affinity Labeling, Molecular Cloning, and Comparative Amino Acid Sequence Analyses of Sex Steroid-Binding Proteins of Plasma. A Multidisciplinary Approach for Understanding Steroid-Protein Interaction and Its Physiological Role, *Annals N.Y. Acad. Sci.*, **1988**, *538*, 10–24.
57. D.F. Hunt, J. Shabanowitz, J.R. Yates, III, P.R. Griffin, N.Z. Zhu, Protein Sequence Analysis by Tandem Mass Spec-

- trometry: New Methods and Instrumentation, in “Analysis of Peptides and Proteins”, C. McNeal, Ed., John Wiley and Sons, New York, N.Y., **1988**, pp 151–165.
58. T. Krishnamurthy, L. Szafraniec, D.F. Hunt, J. Shabanowitz, J.R. Yates, III, C.R. Hauer, W.W. Carmichael, O. Skulberg, G.A. Codd, S. Missler, Structural Characterization of Toxic Cyclic Peptides from Blue-Green Algae by Tandem Mass Spectrometry, *Proc. Natl. Acad. Sci., USA*, **1989**, *86*, 770–774.
 59. D.F. Hunt, J.R. Yates, III, J. Shabanowitz, M.E. Bruns, D.E. Bruns, Amino Acid Sequence Analysis of Mouse Calbindin-D_{9k} Isoforms by Tandem Mass Spectrometry, *J. Biol. Chem.*, **1989**, *264*, 6580–6586.
 60. D.F. Hunt, J. Shabanowitz, J.R. Yates, III, P.R. Griffin, N.Z. Zhu, Protein Sequence Analysis by Tandem Quadrupole Fourier Transform Mass Spectrometry, in “Methods in Protein Sequence Analysis”, B. Wittmann-Liebold, Ed., Springer Verlag, N.Y., **1989**, 183–190.
 61. P.R. Griffin, J. Shabanowitz, J.R. Yates, III, N.Z. Zhu, D.F. Hunt, Laser Photodissociation Fourier Transform Mass Spectrometry: New Methodology for Sequence Analysis of Oligopeptides and Location of Disulfide Bonds, in “Techniques in Protein Chemistry”, T. Hugli, Ed., Academic Press, N.Y., **1989**, 160–167.
 62. J.R. Yates, III, J. Shabanowitz, P.R. Griffin, N.Z. Zhu, D.F. Hunt, Sequence analysis of Protein C-Terminal Proteolytic Fragments, Protein Isolated From 2D-Gels, and Murine Calbindin: New Methodology, in “Techniques in Protein Chemistry”, T. Hugli, Ed., Academic Press, N.Y., **1989**, 168–175.
 63. D.F. Hunt, P.R. Griffin, J.R. Yates, III, J. Shabanowitz, J.W. Fox, L.K. Beggerly, Characterization of Symposium Test Peptide-3, in “Techniques in Protein Chemistry”, T. Hugli, Ed., Academic Press, N.Y., **1989**, 580–588.
 64. E.A. Robinson, T. Yoshimura, E.J. Leonard, S. Tanaka, P.R. Griffin, J. Shabanowitz, D.F. Hunt, E. Appella, Complete Amino Acid Sequence of a Human Monocyte Chemoattractant, a Putative Mediator of Cellular Immune Reactions, *Proc. Natl. Acad. Sci., USA*, **1989**, *86*, 1850–1854.
 65. C.R. Moore, J.R. Yates, III, P.R. Griffin, P.A. Martino, D.F. Hunt, D. Cafiso, Proteolytic Fragments of the Nicotinic Acetylcholine Receptor Identified by Tandem Mass Spectrometry: Implications for Receptor Topography, *Biochemistry*, **1989**, *28*, 9184–9191.
 66. D.F. Hunt, N.Z. Zhu, J. Shabanowitz, Oligopeptide Sequence Analysis by Collision Activated Dissociation of Multiply Charged Ions, *Rapid Commun. Mass Spectrom.*, **1989**, *3*, 122–124.
 67. D.F. Hunt, J. Shabanowitz, J.R. Yates, III, P.R. Griffin, N.Z. Zhu, Tandem Quadrupole Fourier Transform Mass Spectrometry, *Anal. Chimica Acta*, **1989**, *225*, 1–10.
 68. P.R. Griffin, S. Kumar, J. Shabanowitz, H. Charbonneau, P.C. Namkung, K.A. Walsh, D.F. Hunt, P.H. Petra, The Amino Acid Sequence of the Sex Steroid-Binding Protein of Rabbit Serum. *J. Biol. Chem.*, **1989**, *264*, 19066–19075.
 69. K.D. Henry, E.R. Williams, B.H. Wang, F.W. McLafferty, J. Shabanowitz, D.F. Hunt, Fourier Transform Mass Spectrometry of Large Molecules by Electrospray Ionization, *Proc. Natl. Acad. Sci., USA*, **1989**, *86*, 9075–9078.
 70. B.D. Gaylinn, T.J. Eddinger, P.A. Martino, P.L. Monical, D.F. Hunt, R.A. Murphy, Expression of Nonmuscle Myosin Heavy and Light Chains in Smooth Muscle, *Am. J. Physiol.*, **1989**, *257*, C997–C1004.
 71. D.F. Hunt, J. Shabanowitz, J.R. Yates, III, P.R. Griffin, N.Z. Zhu, Protein Sequence Analysis by Tandem Mass Spectrometry, in “Mass Spectrometry of Biological Materials”, B. Larsen and C.N. McEwen, Eds., Marcel Dekker, Inc., New York, N.Y., **1990**, 169–195.
 72. J. Shabanowitz, D.F. Hunt, Laser Photodissociation on a Tandem Quadrupole Fourier-Transform Mass Spectrometer, in “Lasers and Mass Spectrometry”, D.M. Lubman, Ed., Oxford University Press, New York, N.Y., **1990**, 340–352.
 73. A.L. Bieber, R.R. Becker, R. McParland, D.F. Hunt, J. Shabanowitz, J.R. Yates, III, P.A. Martino, G.R. Johnson, The Complete Sequence of the Acidic Subunit from Mojave Toxin Determined by Edman Degradation and Mass Spectrometry, *Biochim. Biophys. Acta*, **1990**, *1037*, 413–421.
 74. L.J. Takemoto, T. Emmons, D. Granstrom, P.R. Griffin, J. Shabanowitz, D.F. Hunt, Analysis of Tryptic Peptides from the C-terminal Region of Alpha-Crystallin from Cataractous and Normal Human Lenses, *Exp. Eye Res.*, **1990**, *50*, 695–702.
 75. J.R. Groome, E.K. Tillinghast, M.A. Townley, A. Vetrovs, W.H. Watson, III, D.F. Hunt, P.R. Griffin, J.E. Alexander, J. Shabanowitz, Identification of Proctolin in the Central Nervous System of the Horseshoe Crab, *Limulus Polyphemus*, *Peptides*, **1990**, *11*, 205–211.
 76. D. Borovsky, D.A. Carlson, P.R. Griffin, J. Shabanowitz, D.F. Hunt, Mosquito Oostatic Hormone: A Novel Decapeptide Modulating Trypsin-Like Enzyme Biosynthesis in the Midgut, *FASEB*, **1990**, *4*, 3015–3020.
 77. Y. Osawa, B.M. Martin, P.R. Griffin, J.R. Yates, III, J. Shabanowitz, D.F. Hunt, A.C. Murphy, L. Chen, R.J. Cotter, L.R. Pohl, Metabolism-Based Covalent Bonding of the Heme Prosthetic Group to Its Apoprotein During the Reductive Debromination of BrCCl₃ by Myoglobin, *J. Biol. Chem.*, **1990**, *265*, 10340–10346.
 78. P.R. Griffin, P.A. Martino, A.L. McCormack, J. Shabanowitz, D.F. Hunt, Protein and Oligopeptide Sequence Analysis on the TSQ-70 Triple Quadrupole Mass Spectrometer, in “Current Research in Protein Chemistry Techniques, Structure and Function”, J.J. Villafranca, Ed., Academic Press, N.Y., **1990**, 117–126.
 79. Manduca-sexta, T.G. Kingan, D.B. Teplow, J.M. Phillips, J.R. Riehm, K.R. Rao, J.G. Hildebrand, U. Homberg, A.E. Kammer, I. Jardine, P.R. Griffin, D.F. Hunt, A New Peptide in the FMRFamide Family Isolated from the CNS of the Hawkmoth, *Peptides*, **1990**, *11*, 849–856.
 80. E.R. Williams, K.D. Henry, F.W. McLafferty, J. Shabanowitz, D.F. Hunt, Surface Induced Dissociation of Pep-

- tide Ions in Fourier Transform Mass Spectrometry, *J. Amer. Soc. Mass Spectrom.*, **1990**, *1*, 413–416.
81. S.D. Aird, J.R. Yates, III, P.A. Martino, D.F. Hunt, J. Shabanowitz, I.I. Kaiser, The Amino Acid Sequence of the Acidic Subunit B Chain of Crotoxin, *Biochim. Biophys. Acta*, **1990**, *1040*, 217–224.
 82. D.F. Hunt, J. Shabanowitz, P.R. Griffin, J.R. Yates, III, P.A. Martino, A.L. McCormack, Protein and Oligopeptide Sequence Analysis by Triple Quadrupole and Quadrupole Fourier Transform Mass Spectrometry, in "Proceedings of the Second International Symposium on Mass Spectrometry in the Health and Life Sciences, A.L. Burlingame and J.A. McCloskey, Eds., Elsevier, Amsterdam, **1990**, 337–362.
 83. D.F. Hunt, T. Krishnamurthy, J. Shabanowitz, P.R. Griffin, J.R. Yates, III, P.A. Martino, A.L. McCormack, C.R. Hauer, Peptide Sequence Analysis by Triple Quadrupole and Quadrupole Fourier Transform Mass Spectrometry, in "Mass Spectrometry of Peptides", D. Desiderio, Ed., CRC Press, **1990**, 138–158.
 84. A.K. Erickson, D.M. Payne, P.A. Martino, A.J. Rossomando, J. Shabanowitz, M.J. Weber, D.F. Hunt, T.W. Sturgill, Identification by Mass Spectrometry of Thr-97 in Bovine Myelin Basic Protein as a Specific Phosphorylation Site for MAP (Mitogen-Activated Protein) Kinase, *J. Biol. Chem.*, **1990**, *265*, 19728–19735.
 85. H. Charbonneau, S. Kumar, J.P. Novack, D.K. Blumenthal, P.R. Griffin, J. Shabanowitz, D.F. Hunt, J.A. Beavo, K.A. Walsh, Evidence for Domain Organization within the 61-kDa Calmodulin-Dependent Cyclic Nucleotide Phosphodiesterase from Bovine Brain, *Biochemistry*, **1991**, *30*, 7931–7940.
 86. D.F. Hunt, J.E. Alexander, A.L. McCormack, P.A. Martino, H. Michel, J. Shabanowitz, N. Sherman, M.A. Moseley, J.W. Jorgenson, K.B. Tomer, Mass Spectrometric Methods for Protein and Peptide Sequence Analysis, in "Techniques in Protein Chemistry II," J.J. Villafranca, Ed., Academic Press, N.Y., **1991**, 441–454.
 87. D.F. Hunt, J.E. Alexander, A.L. McCormack, P.A. Martino, H. Michel, Jeffrey Shabanowitz, Characterization of Symposium Test Peptide-4, in "Protein Chemistry Techniques II," J.J. Villafranca, Ed., Academic Press, N.Y., **1991**, 455–465.
 88. D.F. Hunt, J. Shabanowitz, M.A. Moseley, A.L. McCormack, H. Michel, P.A. Martino, K.B. Tomer, J.W. Jorgenson, Protein and Peptide Sequence Analysis by Tandem Mass Spectrometry in Combination with Either Capillary Electrophoresis or Microcapillary HPLC, in "Methods in Protein Sequence Analysis", H. Jornvall, J.-O. Hoog, and A.-M. Gustavsson, Eds., Birkhauser Verlag, Boston, USA, **1991**, 257–266.
 89. D.M. Payne, A.J. Rossomando, P.A. Martino, A.K. Erickson, J.-H. Her, J. Shabanowitz, D.F. Hunt, M.J. Weber, T.W. Sturgill, Identification of the Regulatory Phosphorylation Sites in pp42/Mitogen-Activated Protein Kinase (MAP kinase), *EMBO J.*, **1991**, *10*, 885–892.
 90. D. Borovsky, D.A. Carlson, D.F. Hunt, Mosquito Oostatic Hormone: A Trypsin Modulating Oostatic Factor, in "Insect Neuropeptides; Chemistry, Biology and Action", J.J. Menn, T.J. Kelly, and E.P. Masler, Eds., American Chemical Society Symposium Series, No. 453, Washington, D.C., **1991**, 133–142.
 91. C. Gabrielides, A.L. McCormack, D.F. Hunt, S. Christakos, Brain Calbindin-D_{28k} and an M_r 29000 Calcium Binding Protein in Cerebellum Are Different but Related Proteins: Evidence Obtained from Sequence Analysis by Tandem Mass Spectrometry, *Biochemistry*, **1991**, *30*, 656–662.
 92. H. Michel, P.R. Griffin, J. Shabanowitz, D.F. Hunt, J. Bennett, Tandem Mass Spectrometry Identifies Sites of Three Post-Translational Modifications of Spinach Light-Harvesting Chlorophyll Protein II: Proteolytic Cleavage, Acetylation and Phosphorylation, *J. Biol. Chem.*, **1991**, *266*, 17584–17591.
 93. J.E. Alexander, D.F. Hunt, M.K. Lee, J. Shabanowitz, H. Michel, S.C. Berlin, T.L. Macdonald, R.J. Sundberg, L.I. Rebhun, A. Frankfurter, Characterization of Post-translational Modifications in Neuron-Specific, Class III, β-Tubulin by Mass Spectrometry, *Proc. Natl. Acad. Sci., USA*, **1991**, *88*, 4685–4689.
 94. G.E. Pratt, D.E. Farnsworth, K.F. Fok, N.R. Siegel, A.L. McCormack, J. Shabanowitz, D.F. Hunt, R. Feyereisen, Identity of a Second Type of Allatostatin from Cockroach Brains: An Octadecapeptide Amide with a Tyrosine-Rich Address Sequence, *Proc. Natl. Acad. Sci., USA*, **1991**, *88*, 2412–2416.
 95. A.J. Spano, Z.H. He, H. Michel, D.F. Hunt, M.P. Timko, Molecular-Cloning, Nuclear Gene Structure, and Developmental Expression of NADPH-Protochlorophyllide Oxidoreductase in Pea (*Pisum-Sativum L.*). *Plant Mol. Biol.*, **1992**, *18*, 967–972.
 96. M.A. Moseley, J.W. Jorgenson, J. Shabanowitz, D.F. Hunt, K.B. Tomer, Optimization of Capillary Zone Electrophoresis/Electrospray Ionization Parameters for the Mass Spectrometry and Tandem Mass Spectrometry Analysis of Peptides, *J. Amer. Soc. Mass Spectrom.*, **1992**, *3*, 289–300.
 97. G. Hegyi, H. Michel, J. Shabanowitz, D.F. Hunt, N. Chatterjie, G. Healy-Louie, M. Elzinga, Gln-41 is Intermolecularly Crosslinked to Lys-113 in F-Actin by N-(4-Azidobenzoyl)-Putrescine, *Protein Sci.*, **1992**, *1*, 132–144.
 98. Manduca Sexta, M.B. Blackburn, T.G. Kingan, W. Bodnar, J. Shabanowitz, D.F. Hunt, T. Kempe, R.M. Wagner, A.K. Raina, M.E. Schnee, M.C. Ma, Isolation and Identification of a New Diuretic Peptide from the Tobacco Hornworm, *Biochem. Biophys. Res. Commun.*, **1992**, *181*, 927–932.
 99. Y.-Y.P. Wo, A.L. McCormack, J. Shabanowitz, D.F. Hunt, J.P. Davis, G.L. Mitchell, R.L. Van Etten, Sequencing, Cloning and Expression of Human Red Cell-Type Acid Phosphatase, a Cytoplasmic Phosphotyrosyl Protein Phosphatase, *J. Biol. Chem.*, **1992**, *267*, 10856–10865.
 100. D.F. Hunt, R.A. Henderson, J. Shabanowitz, K. Sakaguchi, H. Michel, N. Sevilir, A.L. Cox, E. Appella, V.H. Engelhard, Characterization of Peptides Bound to the

- Class I MHC Molecule, HLA-A2.1, *Science*, **1992**, 255, 1261–1263.
101. R.A. Henderson, H. Michel, K. Sakaguchi, J. Shabanowitz, E. Appella, D.F. Hunt, V.H. Engelhard, HLA-A2.1 Associated Peptides from a Mutant Cell Line: A Second Pathway of Antigen Presentation, *Science*, **1992**, 255, 1264–1266.
 102. D.F. Hunt, H. Michel, J. Shabanowitz, A.L. Cox, K. Sakaguchi, E. Appella, H. Grey, A. Sette, Peptides Presented to the Immune System by the Murine Class II MHC Molecule, IA^d, *Science*, **1992**, 256, 1817–1820.
 103. A.J. Rossomando, J. Wu, H. Michel, J. Shabanowitz, D.F. Hunt, M.J. Weber, T.W. Sturgill, Identification of Tyr-185 as the Site of Tyrosine Autophosphorylation of Recombinant Mitogen-Activated Protein Kinase p42^{mapk}, *Proc. Natl. Acad. Sci., USA*, **1992**, 89, 5779–5783.
 104. A. Sette, S. Ceman, R.T. Kubo, K. Sakaguchi, E. Appella, D.F. Hunt, T.A. Davis, H. Michel, J. Shabanowitz, R. Rudersdorf, H.M. Grey, R. DeMars, Invariant Chain Peptides in Most HLA-DR Molecules of an Antigen Processing Mutant, *Science*, **1992**, 258, 1801–1804.
 105. J. Wu, H. Michel, A. Rossomando, T. Haystead, J. Shabanowitz, D.F. Hunt, T.W. Sturgill, Renaturation and Partial Peptide Sequencing of Mitogen Activated Protein Kinase (MAP Kinase) Activator from Rabbit Skeletal Muscle, *Biochem. J.*, **1992**, 285, 701–705.
 106. M.B. Aguilar, L.S. Quackenbush, D.F. Hunt, J. Shabanowitz, A. Huberman, Identification, Purification and Initial Characterization of the Vitellogenesis-Inhibiting Hormone from the Mexican Crayfish Procambarus Bouvieri (Ortmann), *Comp. Biochem. Physiol.*, **1992**, 102B, 491–498.
 107. J. Wu, J.K. Harrison, L.A. Vincent, C. Haystead, T.A.J. Haystead, H. Michel, D.F. Hunt, K.R. Lynch, T.W. Sturgill, Molecular Structure of the Protein-Tyrosine/Threonine Kinase Activating p42 Mitogen- Activated Protein (MAP) kinase: MAP Kinase Kinase, *Proc. Natl. Acad. Sci., USA*, **1993**, 90, 173–177.
 108. C.L. Slingluff Jr., A.L. Cox, R.A. Henderson, D.F. Hunt, V.H. Engelhard, Recognition of Human Melanoma Cells by HLA A2.1 Restricted Cytotoxic T Lymphocytes is Mediated by at Least Six Shared Peptide Epitopes, *J. Immunol.*, **1993**, 150, 2955–2963.
 109. E.L. Huczko, W.M. Bodnar, D. Benjamin, K. Sakaguchi, N.Z. Zhu, J. Shabanowitz, R.A. Henderson, E. Appella, D.F. Hunt, V.H. Engelhard, Characteristics of Endogenous Peptides Eluted From The Class I MHC Molecule HLA-B7 Determined By Mass Spectrometry and Computer Modeling, *J. Immunol.*, **1993**, 151, 2572–2587.
 110. R.A. Henderson, A.L. Cox, K. Sakaguchi, E. Appella, J. Shabanowitz, V.H. Engelhard, D.F. Hunt, Direct Identification of an Endogenous Peptide Recognized by Multiple HLA-A2.1 Specific Cytotoxic T Cells, *Proc. Natl. Acad. Sci., USA*, **1993**, 90, 10275–10279.
 111. A. Huberman, M.B. Aguilar, H. Brew, J. Shabanowitz, D.F. Hunt, Primary Structure of the Major Isomorph of the Crustacean Hyperglycemic Hormone (CHH-1) From the Sinus Gland of the Mexican Crayfish, Procambarus Bouvieri (Ortmann): Interspecies Comparison, *Peptides*, **1993**, 14, 7–16.
 112. S. Carlos, L. Jutglar, E. Borrell, D.F. Hunt, J. Ausio, Sequence and Characterization of a Sperm Specific Histone H1 Like Protein of *Mytilus Californianus*, *J. Biol. Chem.*, **1993**, 268, 185–194.
 113. S. Carlos, D.F. Hunt, C. Rocchini, D.P. Arnott, J. Ausio, Posttranslational Cleavage of a Histone H1-Like Protein in the Sperm of *Mytilus*, *J. Biol. Chem.*, **1993**, 268, 195–199.
 114. D. Borovsky, D.A. Carlson, P.R. Griffin, J. Shabanowitz, D.F. Hunt, Mass Spectrometry and Characterization of *Aedes aegypti* Trypsin Modulating Oostatic Factor (TMOF) and its Analogs, *Insect Biochem. Molec. Biol.*, **1993**, 23, 703–712.
 115. D. Arnott, J. Shabanowitz, D.F. Hunt, Mass Spectrometry and Proteins and Peptides: Sensitive and Accurate Mass Measurement and Sequence Analysis, *Clin. Chem.*, **1993**, 39, 2005–2010.
 116. D.F. Hunt, J. Shabanowitz, H. Michel, A.L. Cox, T. Dickinson, T. Davis, W. Bodnar, R.A. Henderson, N. Sevilir, V.H. Engelhard, K. Sakaguchi, E. Appella, H.M. Grey, A. Sette, Sequence Analysis of Peptides Presented to the Immune System by Class I and Class II MHC Molecules, in "Methods in Protein Analysis", K. Imahori and F. Sakiyama, Plenum Press, N.Y., **1993**, 127–133.
 117. K.G. Pote, C.R. Hauer, III, H. Michel, J. Shabanowitz, D.F. Hunt, R.H. Kretsinger, Otoconin-22, the Major Protein of Aragonitic Frog Otoconia, Is a Homolog of Phospholipase A2, *Biochemistry*, **1993**, 32, 5017–5024.
 118. A. Sette, R. DeMars, H.M. Grey, C. Oseroff, S. Southwood, E. Appella, R.T. Kubo, D.F. Hunt, Isolation and Characterization of Naturally Processed Peptides Bound by Class II Molecules and Peptides Presented by Normal and Mutant Antigen-Presenting Cells, Chemical Immunology, L. Adorini, K. Arai, S.W. Fitch, P.J. Lachmann, and B.H. Waksman, Eds., S. Karger, Basel, Switzerland, **1993**, 57, 152–165.
 119. M. Witty, A.D.M. Wallace Cook, H. Albrecht, A.J. Spano, H. Michel, J. Shabanowitz, D.F. Hunt, M.P. Timko, A.G. Smith, Structure and Expression of Chloroplast-Localized Porphobilinogen Deaminase From Pea (*Pisum Sativum L.*) Isolated by Redundant PCR, *Plant Physiology*, **1993**, 103, 139–147.
 120. A.M. Luo, K.M. Garza, K.S.K. Tung, Antigen Mimicry in Autoimmune Disease: Sharing of Amino Acid Residues Critical for Pathogenic T Cell Activation, *J. Clin. Invest.*, **1993**, 92, 2117–2123.
 121. I.I. Kaiser, P.R. Griffin, S.D. Aird, S.A. Hudiburg, J. Shabanowitz, B. Francis, T.R. John, D.F. Hunt, G.V. Odell, Primary Structures of Two Toxins from the Venom of the Red Knee Tarantula (*Brachypelma smithi*), *Toxicon*, **1994**, 32, 1083–1093.
 122. R.T. Kubo, A. Sette, H.M. Grey, E. Appella, K. Sakaguchi, D. Arnott, N. Sherman, J. Shabanowitz, H. Michel, W.M. Bodnar, T.A. Davis, D.F. Hunt, Definition of Specific Peptide Motifs for Four Major HLA-A Alleles, *J. Immunol.*, **1994**, 152, 3913–3924.

123. Y. Chen, J. Sidney, S. Southwood, A.L. Cox, K. Sakaguchi, R.A. Henderson, E. Appella, D.F. Hunt, A. Sette, V.H. Engelhard, Naturally Processed Peptides Longer Than 9 Amino Acid Residues Bind to the Class I MHC Molecule, HLA-A2.1, with High Affinity and in Different Conformations, *J. Immunol.*, **1994**, *152*, 2874–2881.
124. D. Blyemans, D. Borovsky, D.F. Hunt, J. Shabanowitz, L. Grauwels, A. De Loof, Sequencing and Characterization of Trypsin Modified Oostatic Factor (TMOF) from the Ovaries of the Grey Fleshfly, *Neobellieria (Sarcophaga) Bullata*, *Regulatory Peptides*, **1994**, *50*, 61–72.
125. A.L. Cox, J. Skipper, Y. Chen, R.A. Henderson, T.L. Darrow, J. Shabanowitz, V.H. Engelhard, D.F. Hunt, C.L. Slingluff Jr., Identification of a Peptide Recognized by Five Melanoma Specific Human Cytotoxic T-Cell Lines, *Science*, **1994**, *264*, 716–719.
126. C.L. Slingluff, A.L. Cox, J.M. Stover, M.M. Moore, D.F. Hunt, V.H. Engelhard, Cytotoxic T-Lymphocyte Response to Autologous Human Squamous Cell Cancer of the Lung: Epitope Reconstitution with Peptides Extracted From HLA-Aw68, *Cancer Res.*, **1994**, *57*, 2731–2737.
127. D.A. Carlson, C.M. Krueger, G. Hehman, D. Borovsky, A.M. Rossi, A.F. Cockburn, J. Shabanowitz, D.F. Hunt, Cloning and Partial Sequencing of the Trypsin Modulating Oostatic Factor (TMOF) Gene from Mosquito Genomic Libraries, and Expression of the TMOF Gene in *Escherichia Coli*, *Pers. Comp. Endocrinol.*, **1994**, 626–630.
128. C.L. Slingluff Jr., D.F. Hunt, V.H. Engelhard, Direct Analysis of Tumor Associated Peptide Antigens, *Curr. Opin. Immunol.*, **1994**, *6*, 733–740.
129. S.W. Taylor, J.H. Waite, M.M. Ross, J. Shabanowitz, D.F. Hunt, Trans-2,3-cis-3,4-Dihydroxyproline, a New Naturally Occurring Amino Acid, is the Sixth Residue in the Tandemly Repeated Consensus Decapeptides of an Adhesive Protein from *Mytilus Edulis*, *J. Amer. Chem. Soc.*, **1994**, *116*, 10803–10804.
130. M. Hackett, L. Guo, J. Shabanowitz, D.F. Hunt, E.L. Hewlett, Internal Lysine Palmitoylation in Adenylate Cyclase Toxin from *Bordetella Pertussis*, *Science*, **1994**, *266*, 433–435.
131. J.M.M. den Haan, N.E. Sherman, E. Blokland, E. Huczko, F. Konig, J.W. Drijhout, J. Skipper, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, E. Goulmy, Identification of a Graft-Versus-Host Disease Associated Human Minor Histocompatibility Antigen, *Science*, **1995**, *268*, 1476–1480.
132. J.C.A. Skipper, R.C. Hendrickson, P.H. Gulden, V. Brichard, A. van Pel, Y. Chen, J. Shabanowitz, T. Wolfel, C.L. Slingluff Jr., T. Boon, D.F. Hunt, V.H. Engelhard, An HLA-A2-Restricted Tyrosinase Antigen on Melanoma Cells Results from Posttranslational Modification and Suggests a Novel Pathway for Processing of Membrane Proteins, *J. Exp. Med.*, **1996**, *183*, 527–534.
133. N. Aziz, M.R. Miglarese, R.C. Hendrickson, Jeffrey Shabanowitz, T.W. Sturgill, D.F. Hunt, T.P. Bender, Modulation of c-Myb-Induced Transcription Activation by a Phosphorylation Site Near the Negative Regulatory Domain, *Proc. Natl. Acad. Sci., USA*, **1995**, *92*, 6429–6433.
134. W. Wang, L.R. Meadows, J.M.M. den Haan, N.E. Sherman, Y. Chen, E. Blokland, J. Shabanowitz, A.I. Agulinik, C.E. Bishop, D.F. Hunt, E. Goulmy, V.H. Engelhard, Human H-Y: A Male Specific Histocompatibility Antigen Derived from the SMCY Protein, *Science*, **1995**, *269*, 1588–1590.
135. M.B. Blackburn, R.M. Wagner, J. Shabanowitz, J.P. Kochansky, D.F. Hunt, A.K. Raina, The isolation and Identification of Three Diuretic Kinins from the Abdominal Ventral Nerve Cord of Adult *Helicoverpa Zea*, *J. Insect Physiol.*, **1995**, *41*, 723–730.
136. L. Hjelmqvist, M. Hackett, J. Shafqat, O. Danielsson, J. Iida, R.C. Hendrickson, H. Michel, J. Shabanowitz, D.F. Hunt, H. Jornvall, Multiplicity of N-Terminal Structures of Medium-Chain Alcohol Dehydrogenases, *FEBS Lett.*, **1995**, *367*, 237–240.
137. T.G. Kingan, W.M. Bodnar, A.K. Raina, J. Shabanowitz, D.F. Hunt, The Loss of Female Sex Pheromone After Mating in the Corn Earworm Moth, *Helicoverpa Zea*: Identification of a Male Pheromonostatic Peptide, *Proc. Natl. Acad. Sci., USA*, **1995**, *92*, 5082–5086.
138. K. Spittaels, A. Vankeerberghen, S. Torrekens, B. Devreese, L. Grauwels, F. Van Leuven, D. Hunt, J. Shabanowitz, L. Schoofs, J. Van Beeumen, A. De Loof, Isolation of Ala¹-Proctolin, the First Natural Analogue of Proctolon, from the Brain of the Colorado Potato Beetle, *Mol. Cell. Endocrinol.*, **1995**, *110*, 119–124.
139. M. Hackett, C.B. Walker, L. Guo, M.C. Gray, S.V. Cuyk, A. Ullmann, J. Shabanowitz, D.F. Hunt, E.L. Hewlett, P. Sebo, Hemolytic, But Not Cell-Invasive Activity, of Adenylate Cyclase Toxin is Selectively Affected by Differential Fatty-Acylation in *Escherichia Coli*, *J. Biol. Chem.*, **1995**, *270*, 20250–20253.
140. A. Kaliyaperumal, R. Falchetto, A.L. Cox, R. Dick II, J. Shabanowitz, Y-H Chein, L. Matis, D.F. Hunt, J.A. Bluestone, Functional Expression and Recognition of Non-Classical MHC Class I T10^b Is Not Peptide Dependent, *J. Immunol.*, **1995**, *155*, 2379–2386.
141. R.L. Duda, J. Hempel, H. Michel, J. Shabanowitz, D.F. Hunt, R.W. Hendrix, Structural Transitions During Bacteriophage HK97 Head Assembly, *J. Mol. Biol.*, **1995**, *247*, 618–635.
142. J.C.A. Skipper, R.C. Hendrickson, P.H. Gulden, V. Brichard, A. van Pel, Y. Chen, J. Shabanowitz, T. Wolfel, C.L. Slingluff Jr., T. Boon, D.F. Hunt, V.H. Engelhard, An HLA-A2-Restricted Tyrosinase Antigen on Melanoma Cells Results from Posttranslational Modification and Suggests a Novel Pathway for Processing of Membrane Proteins, *J. Exp. Med.*, **1996**, *183*, 527–534.
143. H. Lin, R. Falchetto, P.J. Mosca, J. Shabanowitz, D.F. Hunt, J.L. Hamlin, Mimosine Targets Serine Hydroxymethyltransferase, *J. Biol. Chem.*, **1996**, *271*, 2548–2556.
144. F.M. Di Veronese, D. Arnott, V. Barnaba, D.J. Loftus, K. Sakaguchi, C.B. Thompson, S. Salemi, C. Mastrianni, A. Sette, J. Shabanowitz, D.F. Hunt, E. Appella, Autoreactive

- Cytotoxic T Lymphocytes in Human Immunodeficiency Virus Type 1-Infected Subjects, *J. Exp. Med.*, **1996**, *183*, 2509–2516.
145. M.A. Lindorfer, N.E. Sherman, K.A. Woodfork, J.E. Fletcher, D.F. Hunt, J.C. Garrison, G-Protein Gamma-Subunits with Altered Prenylation Sequences are Properly Modified When Expressed in Sf9 Cells, *J. Biol. Chem.*, **1996**, *271*, 18582–18587.
 146. G. Niedermann, G. King, S. Butz, U. Birsner, R. Grimm, J. Shabanowitz, D.F. Hunt, K. Eichmann, The Proteolytic Fragments Generated by Vertebrate Proteasomes: Structural Relationships to MHC Class I Binding Peptides, *Proc. Natl. Acad. Sci.*, **1996**, *93*, 8572–8577.
 147. P. Gulden, P. Fischer, III, W. Wang, J. Shabanowitz, V.H. Engelhard, D.F. Hunt, E.G. Pamer, Antigen Presentation by MHC Class 1b Molecules: Identification of a *Listeria Monocytogenes* Pentapeptide Presented to CTL by H-2M3, *Immunity*, **1996**, *5*, 73–79.
 148. A.Y.C. Wang, P.H. Gulden, A.S. Woods, M.C. Thomas, C.D. Tong, W. Wang, V.H. Engelhard, G. Pasternack, R. Cotter, D.F. Hunt, D.M. Pardoll, E.M. Jaffe, The Immunodominant Major Histocompatibility Complex class I-Restricted Antigen of a Murine Colon tumor Derives from an Endogenous Retroviral Gene Product, *Proc. Natl. Acad. Sci., USA*, **1996**, *93*, 9730–9735.
 149. I. Janssen, L. Schoofs, K. Spittaels, H. Neven, J.V. Broeck, B. Devreese, J. Van Beeumen, J. Shabanowitz, D.F. Hunt, A. De Loof, Isolation of NEB-LFamide, a Novel Myotropic Neuropeptide from the Grey Fleshfly, *Mol. Cell. Endocrinol.*, **1996**, *117*, 157–165.
 150. T.G. Kingan, J. Shabanowitz, D.F. Hunt, J.L. Witten, Characterization of Two Myotropic Neuropeptides in the FMRFamide Family from Segmental Ganglia of the Moth *Manduca Sexta*: Candidate Neurohormones and Neuromodulators, *J. Exp. Biol.*, **1996**, *199*, 1095–1104.
 151. M.B. Aguilar, R. Falchetto, J. Shabanowitz, D.F. Hunt, A. Huberman, Complete Primary Structure of the Molt-Inhibiting Hormone (MIH) of the Mexican Crayfish *Procambarus Bouvieri* (Ortmann), *Peptides*, **1996**, *17*, 367–374.
 152. J.C.A. Skipper, D.J. Kittlesen, R.C. Hendrickson, D.D. Deacon, N.L. Harthun, S.N. Wagner, D.F. Hunt, V.H. Engelhard, C.L. Slingluff Jr., Shared Epitopes for HLA-A3 Restricted Melanoma Reactive Human CTL Include a Naturally Processed Epitope from Pmel-17/gp100, *J. Immunol.*, **1996**, *157*, 5027–5033.
 153. Y.M.M. den Haan, R.E. Bontrop, J. Pool, N.E. Sherman, E. Blokland, V.H. Engelhard, D.F. Hunt, E. Goulmy, Conservation of Minor Histocompatibility Antigens Between Human and Non Human Primates, *Eur. J. Immunol.*, **1996**, *26*, 2680–2685.
 154. S.P. Revett, G. King, J. Shabanowitz, D.F. Hunt, D.J. Nelson, K.L. Hartman, T.M. Laue, Characterization of a Helix-Loop-Helix (EF Hand) Motif of Silver Hake Parvalbumin Isoform B, *Protein Sci.*, **1997**, *6*, 2397–2408.
 155. J.G. Hunt, H.E. Kasinsky, R.M. Elsey, C.L. Wright, P. Rice, J.E. Bell, D.J. Sharp, A.J. Kiss, D.F. Hunt, J. Shabanowitz, D.P. Arnott, M.M. Russ, J. Ausio, Protamines of Reptiles, *J. Biol. Chem.*, **1996**, *271*, 23547–23557.
 156. R.C. Hendrickson, R.E. Settlage, J. Shabanowitz, J. Briggs, L.A. Sherman, D.F. Hunt, Attomole Sequence Identification of a T Cell Epitope by Ion trap Mass Spectrometry, 10th Annual Meeting of the Protein Society, San Jose, CA, July, **1996**.
 157. Analysis of the Structure of Naturally Processed Peptides Bound by Class I and Class II Major Histocompatibility Complex Molecules, EXS, **1996**, *73*, 105–119.
 158. P.H. Gulden, M. Hackett, T.A. Addona, L. Guo, C.B. Walker, N.E. Sherman, J. Shabanowitz, E.L. Hewlett, D.F. Hunt, Mass Spectrometric Methods for Peptide Sequencing: Applications to Immunology and Protein Acylation, *Mass Spectrom. Biol. Sci.*, **1996**, 281–305.
 159. J.C.A. Skipper, D.J. Kittlesen, R.C. Hendrickson, D.D. Deacon, N.L. Harthun, S.N. Wagner, D.F. Hunt, V.H. Engelhard, C.L. Slingluff Jr., Shared Epitopes for HLA-A3 Restricted Melanoma Reactive Human CTL Include a Naturally Processed Epitope from Pmel-17/gp100, *J. Immunol.*, **1996**, *157*, 5027–5033.
 160. R.C. Hendrickson, J.C. Skipper, J. Shabanowitz, C.L. Slingluff Jr., V.H. Engelhard, D.F. Hunt, Use of Tandem Mass Spectrometry for MHC Ligand Analysis, “*Immunol. Methods Manual*”, Academic Press, **1997**, pp. 605–165.
 161. M.T. Fiorillo, L. Meadows, M. D’Amato, J. Shabanowitz, D.F. Hunt, E. Appella, R. Sorrentino, Susceptibility to Ankylosing Spondylitis Correlates with the C-Terminal Residue of Peptides Presented by Various HLA-B27 Subtypes, *Eur. J. Immunol.*, **1997**, *27*, 368–373.
 162. P. Dubey, R.C. Hendrickson, S.C. Meridith, C.T. Siegel, J. Shabanowitz, J.C. Skipper, V.H. Engelhard, D.F. Hunt, H. Schreiber, The Immunodominant Antigen of an Ultraviolet-Induced Regressor Tumor is Generated by a Somatic Point Mutation in the DEAD Box Helicase p68, *J. Exp. Med.*, **1997**, *185*, 695–705.
 163. L. Meadows, W. Wang, J.M. den Haan, E. Blokland, C. Reinhardus, J.W. Drijfhout, J. Shabanowitz, R. Pierce, A.I. Agulnik, C.E. Bishop, D.F. Hunt, E. Goulmy, V.H. Engelhard, The HLA-A*0201 H-Y Antigen Contains a Posttranslationally Modified Cysteine That Significantly Affects T Cell Recognition, *Immunity*, **1997**, *6*, 273–281.
 164. S.P. Revett, G. King, J. Shabanowitz, D.F. Hunt, D.J. Nelson, K.L. Hartman, T.M. Laue, Characterization of a Helix-Loop-Helix (EF Hand) Motif of Silver Hake Parvalbumin Isoform B, *Protein Sci.*, **1997**, *6*, 2397–2408.
 165. W. Wang, P.H. Gulden, R.A. Pierce, J. Shabanowitz, S.T. Man, D.F. Hunt, V.H. Engelhard, A Naturally Processed Peptide Presented by HLA-A*0201 is Expressed in Low Abundance and Recognized by an Alloreactive CD8+ Cytotoxic T Cell with High Apparent Affinity, *J. Immunol.*, **1997**, *158*, 5797–5804.
 166. J.E. Hungerford, J.P. Hoeffer, C.W. Bowers, L.M. Dahm, R. Falchetto, J. Shabanowitz, D.F. Hunt, C.D. Little, Identification of a Novel Marker for Primordial Smooth Muscle and Its Differential Expression Pattern in Contractile vs Noncontractile Cells, *J. Cell Biol.*, **1997**, *137*, 925–937.

167. Q. Hu, C.R.B. Walker, C. Girao, J.T. Opferman, J. Sun, J. Shabanowitz, D.F. Hunt, P.G. Ashton-Rickardt, Specific Recognition of Thymic Self-Peptides Induces the Positive Selection of Cytotoxic T Lymphocytes, *Immunity*, **1997**, 7, 221–231.
168. E.L. Laney, J. Shabanowitz, G. King, D.F. Hunt, D.J. Nelson, The Isolation of Parvalbumin Isoforms from the Tail Muscle of the American Alligator (Alligator mississippiensis), *J. Inorg. Biochem.*, **1997**, 66, 67–76.
169. R. Polanowska-Grabowska, C.G. Simon Jr., R. Falchetto, J. Shabanowitz, D.F. Hunt, A.R. Gear, Platelet Adhesion to Collagen Under Flow Causes Dissociation of a Phosphoprotein Complex of Heat-Shock Proteins and Protein Phosphatase 1, *Blood*, **1997**, 90, 1516–1526.
170. M.P. Davenport, K.J. Smith, D. Barouch, S.W. Reid, W.M. Bodmar, A.C. Willis, D.F. Hunt, A.V. Hill, HLA Class I Binding Motifs Derived From Random Peptide Libraries Differ at the COOH Terminus From Those of Eluted Peptides, *J. Exp. Med.*, **1997**, 185, 367–371.
171. S.R. Chinni, R. Falchetto, C. Gerceltaylor, J. Shabanowitz, D.F. Hunt, D.D. Taylor, Humoral Immune Responses to Cathepsin D and Glucose-Regulated Protein 78 in Ovarian Cancer Patients, *Clin. Can. Res.*, **1997**, 3, 1557–1564.
172. A.L. Cox, E.L. Huczko, V.H. Engelhard, J. Shabanowitz, D.F. Hunt, The Application of Mass Spectrometry to the Analysis of Peptides Bound to MHC Molecules, *MHC*, **1998**, 141–160.
173. C.A. Mosse, L. Meadows, C.J. Luckey, D.J. Kittlesen, E.L. Huczko, C.L. Slingluff, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, The Class I Antigen-Processing Pathway for the Membrane Protein Tyrosinase Involves Translation in the Endoplasmic Reticulum and Processing in the Cytosol, *J. Exp. Med.*, **1998**, 187, 37–48.
174. W. Wang, S. Man, P.H. Gulden, D.F. Hunt, V.H. Engelhard, Class I-Restricted Alloreactive Cytotoxic T Lymphocytes Recognize a Complex Array of Specific MHC-Associated Peptides, *J. Immunol.*, **1998**, 160, 1091–1097.
175. J.M.M. den Haan, L.M. Meadows, W. Wang, J. Pool, E. Blokland, T.L. Bishop, C. Reinhardus, J. Shabanowitz, R. Offringa, D.F. Hunt, V.H. Engelhard, E. Goulmy, The Minor Histocompatibility Antigen HA-I: a Diallelic Gene with a Single Amino Acid Polymorphism, *Science*, **1998**, 279, 1054–1057.
176. D.J. Kittlesen, L.W. Thompson, P.H. Gulden, J.C.A. Skipper, T.A. Colella, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, C.L. Slingluff, Human Melanoma Patients Recognize an HLA-A1-Restricted CTL Epitope from Tyrosinase Containing Two Cysteine Residues: Implications for Tumor Vaccine Development, *J. Immunol.*, **1998**, 160, 2099–2106.
177. R.E. Settlage, P.S. Russo, J. Shabanowitz, D.F. Hunt, A Novel micro-ESI Source for Coupling Capillary Electrophoresis and Mass Spectrometry- Sequence Determination of Tumor Peptides at the Attomole Level, *J. Microcolumn Sep.*, **1998**, 10, 281–285.
178. C.J. Luckey, G.M. King, J.A. Marto, S. Venketeswaran, B.F. Maier, V.L. Crotzer, T.A. Colella, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, Proteasomes Can Either Generate or Destroy MHC Class I Epitopes: Evidence for Nonproteasomal Epitope Generation in the Cytosol, *J. Immunol.*, **1998**, 161, 112–121.
179. K.T. Hogan, D.P. Eisinger, S.B. Cupp, III, K.J. Lekstrom, D.D. Deacon, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, C.L. Slingluff Jr., M.M. Ross, The Peptide Recognized by HLA-A68.2 Restricted, Squamous Cell Carcinoma of the Lung-Specific Cytotoxic T Lymphocytes is Derived from a Mutated Elongation Factor 2 Gene, *Cancer Res.*, **1998**, 58, 5144–5150.
180. Mass Spectrometry in Immunology: Identification of a Minor Histocompatibility Antigen, Mass Spectrometry of Biological Materials, 2nd Ed., **1998**, 115–135.
181. C.A. Mosse, L. Meadows, C.J. Luckey, D.J. Kittlesen, E.L. Huczko, C.L. Slingluff, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, The Class I Antigen-Processing Pathway for the Membrane Protein Tyrosinase Involves Translation in the Endoplasmic Reticulum and Processing in the Cytosol, *J. Exp. Med.*, **1998**, 187, 37–48.
182. K.T. Hogan, D.P. Eisinger, S.B. Cupp, III, K.J. Lekstrom, D.D. Deacon, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, C.L. Slingluff Jr., M.M. Ross, The Peptide Recognized by HLA-A68.2 Restricted, Squamous Cell Carcinoma of the Lung-Specific Cytotoxic T Lymphocytes is Derived from a Mutated Elongation Factor 2 Gene, *Cancer Res.*, **1998**, 58, 5144–5150.
183. R. Pieper, R. Christian, M.I. Gonzales, M.I. Nishimura, G. Gupta, S.A. Rosenberg, D.F. Hunt, S.L. Topalian, Biochemical Identification of a Mutated Human Melanoma Antigen Recognized by CD4+ T Cells, *J. Exp. Med.*, **1999**, 189, 757–765.
184. J. Shabanowitz, R.E. Settlage, J.A. Marto, R.E. Christian, F.M. White, P.S. Russo, S.E. Martin, D.F. Hunt, Sequencing the Primordial Soup, Proceedings of the 4th International Symposium on Mass Spectrometry in the Life and Health Sciences, San Francisco, CA, August 25–29, **1998**.
185. R.A. Pierce, E.D. Field, J.M.M. den Haan, J.A. Caldwell, F.M. White, J.A. Marto, J. Shabanowitz, D.F. Hunt, E. Goulmy, V.H. Engelhard, The A1-HY Minor Histocompatibility Antigen Originates From DFFRY and Contains a Cysteinylated Cysteine Residue as Identified by a Novel Mass Spectrometric Technique, *J. Immunol.*, **1999**, 163, 6360–6364.
186. J.C.A. Skipper, P.M. Gulden, R.C. Hendrickson, N. Harthun, J.A. Caldwell, J. Shabanowitz, V.H. Engelhard, D.F. Hunt, C.L. Slingluff Jr., Mass Spectrometric Evaluation of HLA-A*0201 Associated Peptides Identifies Dominant Naturally Processed Forms of CTL Epitopes from MART-1 and gp-100, *Int. J. Cancer*, **1999**, 82, 669–677.
187. T. Osterlund, D.J. Beussman, K. Julenius, P.H. Poon, S. Linse, J. Shabanowitz, D.F. Hunt, M.C. Schotz, Z.S. Derewenda, C. Holm, Domain Identification of Hormone-Sensitive Lipase by Circular Dichroism and Fluorescence Spectroscopy, Limited Proteolysis, and Mass Spectrometry, *J. Biol. Chem.*, **1999**, 274, 15382–15388.

188. K. Furuya, M. Hackett, M.A. Cirelli, K.M. Schegg, H. Wang, J. Shabanowitz, D.F. Hunt, D.A. Schooley, A Cardioactive Peptide from the Southern Armyworm, *Spodoptera eridania*, *Peptides*, **1999**, 20, 53–61.
189. L. Pestic-Dragovich, L. Stojiljkovic, A.A. Philimonenko, G. Nowak, Y. Ke, R.E. Settlage, J. Shabanowitz, D.F. Hunt, P. Hozak, P. de Lanerolle, A Myosin I Isoform in the Nucleus, *Science*, **2000**, 290, 337–341.
190. K.B. Lim, C.R. Walker, L. Guo, S. Pellett, J. Shabanowitz, D.F. Hunt, E.L. Hewlett, A. Ludwig, W. Goebel, R.A. Welch, M. Hackett, *Escherichia coli* Alpha-Hemolysin (HlyA) is Heterogeneously Acylated In Vivo with 14-, 15-, and 17-Carbon Fatty Acids, *J. Biol. Chem.*, **2000**, 275, 36698–36702.
191. P. Gimenez-Bonafe, M. Laszczak, H.E. Kasinsky, M.J. Lemke, J.D. Lewis, M. Iskandar, T. He, M.G. Ikonomou, F.M. White, D.F. Hunt, M. Chiva, J. Ausio, Characterization and Evolutionary Relevance of the Sperm Nuclear Basic Proteins from Stickleback Fish, *Mol. Reprod. Dev.*, **2000**, 57, 185–193.
192. S.E. Martin, J. Shabanowitz, D.F. Hunt, J.A. Marto, Sub-Femtomole MS and MS/MS Peptide Sequence Analysis Using LC-Nano-ESI Fourier Transform Ion Cyclotron Resonance Mass Spectrometry, *Anal. Chem.*, **2000**, 72, 4266–4274.
193. Z.-W. Sun, X. Li, M. Reuben, K. Tatchell, D.K. Bishop, J.M. Grushcow, C.J. Brame, J.A. Caldwell, D.F. Hunt, R. Lin, M.M. Smith, C.D. Allis, Mitotic Phosphorylation of Histone H3 is Governed by lpl1/Aurora Kinase and Glc7/PP1 Phosphatase in Budding Yeast and Nematodes, *J-Yuan Hsu, Cell*, **2000**, 102, 279–291.
194. V.L. Crotzer, R.E. Christian, J.M. Brooks, J. Shabanowitz, R.E. Settlage, J.A. Marto, F.M. White, A.A.B. Rickinson, D.F. Hunt, V.H. Engelhard, Immunodominance Among EBV-Derived Epitopes Restricted by HLA-B27 Does Not Correlate with Epitope Abundance in EBV-Transformed B-Lymphoblastoid Cell Lines, *J. Immunol.*, **2000**, 164, 6120–6129.
195. A. Huberman, M.B. Aguilar, I. Navarro-Quiroga, L. Ramos, I. Fernandez, F.M. White, D.F. Hunt, J. Shabanowitz, A Hyperglycemic Peptide Hormone from the Caribbean Shrimp *Penaeus (litopenaeus) Schmitti*, *Peptides*, **2000**, 21, 331–8, 2000.
196. J.K. Sandberg, L. Franksson, J. Sundback, J. Michaelsson, M. Petersson, A. Achour, R.P. Wallin, N.E. Sherman, T. Bergman, H. Jornvall, D.F. Hunt, R. Kiessling, K. Karre, T Cell Tolerance Based on Avidity Thresholds Rather than Complete Deletion Allows Maintenance of Maximal Repertoire Diversity, *J. Immunol.*, **2000**, 165, 25–33.
197. S. Celli, J.A. Marto, R. Falchetto, J. Shabanowitz, L.A. Valdivia, J.J. Fung, D.F. Hunt, R.H. Kelly, Serum Protein Immunogenicity: Implications for Liver Xenografting, *Electrophoresis*, **2000**, 21, 965–75.
198. C.L. Slingluff Jr., T.A. Colella, L. Thompson, D.D. Graham, J.C. Skipper, J. Caldwell, L. Brinckerhoff, D.J. Kittlesen, D.H. Deacon, C. Oei, N.L. Harthun, E.L. Huczko, D.F. Hunt, T.L. Darrow, V.H. Engelhard, Melanomas with Concordant Loss of Multiple Melanocytic Differentiation Proteins: Immune Escape that May be Overcome by Targeting Unique or Undefined Antigens, *Cancer Immunol. Immunother.*, **2000**, 48, 661–72.
199. T.T. Turner, T.A. Riley, M. Vagnetti, C.J. Flickinger, F.A. Caldwell, D.F., Postvasectomy Alterations in Protein Synthesis and Secretion in the Rat Caput Epididymidis are not Repaired After Vasovasostomy. *J. Androl.*, **2000**, 21, 276–90.
200. A.L. Zarling, S.B. Ficarro, F.M. White, J. Shabanowitz, D.F. Hunt, V.E. Engelhard, Phosphorylated Peptides are Naturally Processed and Presented by MHC Class I Molecules In Vivo, *J. Exp. Med.*, **2000**, 192, 1755–1762.
201. G.T. Nepom, J.D. Lippolis, F.M. White, S. Masewicz, J.A. Marto, A. Herman, C.J. Luckey, B. Falk, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, B.S. Nepom, Identification and Modulation of a Naturally Processed T-Cell Epitope from the Diabetes-Associated Autoantigen 65 (hGAD65), *Proc. Natl. Acad. Sci., USA*, **2001**, 98, 1763–1768.
202. A. Guimezanes, G.A. Barrett-Wilt, P. Gulden-Thompson, V.H. Engelhard, D.F. Hunt, A.-M. Schmitt-Verhulst, Identification of Endogenous Peptides Recognized In Vivo or In Vitro Generated Alloreactive Cytotoxic T Lymphocytes: Distinct Characteristics Correlated with CD8 Dependence, *Eur. J. Immunol.*, **2001**, 31, 421–432.
203. A.G. Brickner, E.H. Warren, J.A. Caldwell, Y. Akatsu, T.N. Golovina, A.L. Zarling, J. Shabanowitz, L.C. Eisenlohr, D.F. Hunt, V.H. Engelhard, S.R. Riddell, The Immunogenicity of a New Human Minor Histocompatibility Antigen Results from Differential Antigen Processing, *J. Exp. Med.*, **2001**, 193, 195–206.
204. N. Mosammaparast, K.R. Jackson, Y. Guo, C.J. Brame, J. Shabanowitz, D.F. Hunt, L.F. Pemberton, Nuclear Import of Histone H2A And H2B is Mediated by a Network of Karyopherins, *J. Cell Biol.*, **2001**, 153, 251–262.
205. H. Kao, J.A. Marto, T.K. Hoffmann, J. Shabanowitz, S.D. Finkelstein, T.L. Whiteside, D.F. Hunt, O.J. Finn, Identification of Cyclin B1 as a Shared Human Epithelial Tumor-Associated Antigen Recognized by T Cells, *J. Exp. Med.*, **2001**, 194, 1313–1323.
206. P. Harnpicharnchai, J. Jakovljevic, E. Horsey, T. Miles, J. Roman, M. Rout, D. Meagher, B. Imai, Y. Guo, C.J. Brame, J. Shabanowitcz, D.F. Hunt, J.L. Woolford Jr., Composition and Functional Characterization of Yeast 66S Ribosome Assembly Intermediates, *Mol. Cell.*, **2001**, 8, 505–515.
207. S. Baginsky, A. Shtelman-Kotler, V. Liveanu, S. Yehudai-Resheff, M. Bellaoui, R.E. Settlage, J. Shabanowitz, D.F. Hunt, G. Schuster, W. Grussem, Chloroplast PNPase Exists as a Homo-Multimer Enzyme Complex That is Distinct from the *Escherichia coli* Degradosome, *RNA*, **2001**, 7, 1464–75.
208. N. Mosammaparast, Y. Guo, J. Shabanowitz, D.F. Hunt, L.F. Pemberton, Pathways Mediating the Nuclear Import of Histone H3 and H4 in Yeast, *J. Biol. Chem.*, **2002**, 277, 862–868.

209. J.P. Carson, M. Behnam, J.N. Sutton, C. Du, X. Wang, D.F. Hunt, M.J. Weber, G. Kulik, Smac is Required for Cytochrome-c Induced Apoptosis in Prostate LNCaP Cells. *Cancer Res.*, **2002**, *62*, 18–23.
210. S.B. Ficarro, M.L. McCleland, P.T. Stukenberg, D.J. Burke, M.M. Ross, J. Shabanowitz, D.F. Hunt, F.M. White, Phosphoproteome Analysis by Mass Spectrometry and Its Application to *Saccharomyces cerevisiae*, *Nature Biotech.*, **2002**, *20*, 301–305.
211. D.F. Hunt, Personal Commentary on Proteomics, *J. Proteome Res.* **2002**, *1*, 15–19.
212. F. Dragon, P.A.C. Post, J.E.G. Gallagher, B.M. Mitchell, K.A. Porwancher, K.A. Wehner, R.E. Settlage, J. Shabanowitz, Y. Osheim, A.L. Beyer, D.F. Hunt, S.J. Baserga, The U3 Processome is a Large Nucleolar Ribonucleoprotein Required for 18S rRNA Biogenesis, *Nature*, **2002**, *417*, 967–970.
213. D.C. Flyer, V. Ramakrishna, C. Miller, H. Myers, M. McDaniel, K. Root, C. Fluornoy, V.H. Engelhard, D.H. Canaday, J.A. Marto, M.M. Ross, D.F. Hunt, J. Shabanowitz and F.M. White, Identification by Mass Spectrometry of CD8+ T-Cell Mycobacterium tuberculosis Epitopes within the Rv0341 Gene Product, *Infect. Immun.*, **2002**, *70*, 2926–2932.
214. R.D. Strahl, P.A. Grant, S.D. Briggs, Z.W. Sun, J.R. Bone, J.A. Caldwell, S. Mollah, R.G. Cook, J. Shabanowitz, D.F. Hunt, C.D. Allis, Set2 Is a Nucleosomal Histone H3-Selective Methyltransferase That Mediates Transcriptional Repression, *Mol. Cell. Biol.*, **2002**, *22*, 1298–1306.
215. D. Gioeli, S.B. Ficarro, J.J. Kwiek, D. Aaronson, M. Hancock, A.D. Catling, F. White, R.E. Christian, R.E. Settlage, J. Shabanowitz, D.F. Hunt, M.J. Weber, Androgen Receptor Phosphorylation: Regulation and Identification of the Phosphorylation Sites, *J. Biol. Chem.*, **2002**, *277*, 29304–29314.
216. E. Soupene, T. Chu, R.W. Corbin, D.F. Hunt, S. Kustu, Gas Channels for NH₃: Proteins from Hyperthermophiles Complement an *Escherichia coli* Mutant, *J. Bacteriol.*, **2002**, *184*, 3396–3400.
217. B. Hanss, E. Leal-Pinto, A. Teixeira, R.E. Christian, J. Shabanowitz, D.F. Hunt, P.E. Klotman, Cytosolic Malate Dehydrogenase Confers Selectivity of the Nucleic Acid-Conducting Channel, *Proc. Natl. Acad. Sci., USA*, **2002**, *99*, 1707–1712.
218. B.D. Strahl, S.D. Briggs, C.J. Brame, J.A. Caldwell, S.S. Koh, H. Ma, R.G. Cook, J. Shabanowitz, D.F. Hunt, S.R. Stallcup, C.D. Allis, Methylation of Histone H4 at Arginine 3 Occurs In Vivo and is Mediated by the Nuclear Receptor Coactivator PRMT1, *Curr. Biol.*, **2002**, *11*, 996–1000.
219. F. Angenstein, A.M. Evans, R.E. Settlage, S.T. Moran, S.-C. Ling, A. Klintsova, J. Shabanowitz, D.F. Hunt, W.T. Greenough, A Receptor for Activated C Kinase (RACK 1) is Part of Messenger Ribonuclear Protein Complexes Associated with PolyA-mRNAs in Neurons, *J. Neurosci.*, **2002**, *22*, 8827–8837.
220. S.D. Briggs, T. Xiao, Z.-W. Sun, J.A. Caldwell, J. Shabanowitz, D.F. Hunt, C.D. Allis, B.D. Strahl, Gene Silencing: Trans-Histone Regulatory Pathway in Chromatin, *Nature*, **2002**, *418*, 498.
221. A. Thatte, S. Ficarro, K.R. Snapp, M.K. Wild, D. Vestweber, D.F. Hunt, K.F. Ley, Binding of Function-Blocking mAbs to Mouse and Human P-Selectin Glycoprotein Ligand-1 Peptides with and without Tyrosine Sulfation, *J. Leukocyte Biol.*, **2002**, *72*, 1–8.
222. J.D. Lippolis, F.M. White, F.M. Marto, C.J. Lucky, T.N. Bulluck, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, Analysis of MHC Class II Antigen Processing by Quantitation of Peptides That Constitute Nested Sets, *J. Immunol.*, **2002**, *169*, 5089–5097.
223. V. Basrur, F. Yang, T. Kushimoto, Y. Higashimoto, K.-I. Yasumoto, J. Valencia, J. Muller, W.D. Vieira, H. Watabe, J. Shabanowitz, V.J. Hearing, D.F. Hunt, E. Appella, Proteomic Analysis of Early Melanosomes: Identification of Novel Melanosomal Proteins, *J. Proteome Res.*, **2003**, *2*, 69–79.
224. L. Bandholtz, Y. Guo, C. Palmberg, K. Mattsson, B. Ohlsson, A. High, J. Shabanowitz, D.F. Hunt, H. Jörnvall, H. Wigzell, B. Agerberth, G.H. Gudmundsson, Hsp90 Binds CpG Oligonucleotides Directly, Implications for Hsp90 as a Missing Link in CpG Signaling and Recognition, *Cell. Mol. Life Sci.*, **2003**, *60*, 422–429.
225. S.D. Saibil, T. Ohteki, F.M. White, M. Luscher, A. Zakarian, A. Elford, J. Shabanowitz, H. Nishina, P. Hugo, J. Penninger, B. Barber, D.F. Hunt, P.S. Ohashi, Weak Agonist Self-Peptides Promote Selection and Tuning of Virus-Specific T Cells, *Eur. J. Immunol.*, **2003**, *33*, 685–696.
226. S. Ficarro, O. Chertihin, A. Westbrook, F. White, F. Jayes, P. Kalab, J.A. Marto, J. Shabanowitz, J. Herr, D.F. Hunt, P.E. Visconte, Phosphoproteome Analysis of Capacitated Human Sperm. Evidence of Tyrosine Phosphorylation of a Kinase-Anchoring Protein 3 and Valosin-Containing Protein/p97 During Capacitation, *J. Biol. Chem.*, **2003**, *278*, 11579–11589.
227. A. Seamons, J. Sutton, D. Bai, E. Baird, N. Bonn, B.F.C. Kafsack, J. Shabanowitz, D.F. Hunt, G. Beeson, J. Goverman, Competition Between Two MHC Binding Registers in a Single Peptide Processed from Myelin Basic Protein Influences Tolerance and Susceptibility to Autoimmunity, *J. Exp. Med.*, **2003**, *197*, 1391–1397.
228. S.M. Lieberman, A.M. Evans, B. Han, T. Takaki, Y. Vinnitskaya, J. Caldwell, D. Serreze, J. Shabanowitz, D.F. Hunt, S.G. Nathenson, P. Santamaria, T.P. DiLorenzo, Identification of the Beta Cell Antigen Targeted by a Prevalent Population of Pathogenic CD8⁺ T Cells in Autoimmune Diabetes, *Proc. Natl. Acad. Sci., USA*, **2003**, *100*, 8384–8388.
229. R.W. Corbin, O. Pailiy, F. Yang, J. McAuliffe, M.I. Jordan, C. Lyons, M. Platt, J. Shabanowitz, S. Kustu, E. Soupene, D.F. Hunt, Toward a Protein Profile of *Escherichia coli*: Comparison to Its Transcription Profile, *Proc. Natl. Acad. Sci., USA*, **2003**, *100*, 9232–9237.
230. J.C. Rice, S.D. Briggs, B. Überheide, C.M. Barber, J. Shabanowitz, D.F. Hunt, Y. Shinkai T, C.D. Allis, Histone

- Methytransferases Direct Different Degrees of Methylation to Define Distinct Chromatin Domains, *Mol. Cell.*, **2003**, *12*, 1591–1598.
231. A.L. Zarling, C.J. Luckey, J.A. Marto, F.M. White, P. Lehner, P. Cresswell, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, Tapasin is a Facilitator, Not an Editor, of HLA-B8 Peptide Binding, *J. Immunol.*, **2003**, *171*, 5287–5295.
 232. E. Spierings, A.G. Brickner, J.A. Caldwell, S. Zegveld, N. Tatsis, E. Blokland, J. Pool, R.A. Pierce, S. Mollah, J. Shabanowitz, L.C. Eisenlohr, P. van Veelen, F. Ossendorp, D.F. Hunt, E. Goulmy, V.H. Engelhard, The Minor Histocompatibility Antigen HA-3 Arises from differential Proteasome-Mediated Cleavage of the Lymphoid Blast Crisis (Lbc) Oncoprotein, *Blood*, **2003**, *102*, 621–629.
 233. D.J. Hassett, P.A. Limbach, R.F. Hennington, K.E. Klose, R.E. Hancock, M.D. Platt, D.F. Hunt, Bacterial Biofilms of Importance to Medicine and Bioterrorism: Proteomic Techniques to Identify Novel Vaccine Components and Drug Targets, *Expert Opin. Biol. Ther.*, **2003**, *8*, 1201–1207.
 234. K.T. Hogan, M.A. Coppola, C.L. Gatlin, L.W. Thompson, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, C.L. Slingluff Jr., M.M. Ross, Identification of a Shared Epitope Recognized by Melanoma-Specific HLA-A3 Restricted Cytotoxic T Lymphocytes, *Immunol. Lett.*, **2003**, *90*, 131–135.
 235. C.A. Chrestensen, M.J. Schroeder, J. Shabanowitz, D.F. Hunt, J.W. Pelo, M.T. Worthington, T.W. Sturgill, MAP-KAP Kinase 2 Phosphorylates Tristetraprolin on In-Vivo Sites Including Ser 178, a Site Required for 14-3-3 Binding, *J. Biol. Chem.*, **2004**, *279*, 10176–10184.
 236. L.W. Thompson, K.T. Hogan, J.A. Caldwell, R.A. Pierce, R.C. Hendrickson, D.H. Deacon, R.E. Settlage, L.H. Brinckerhoff, V.H. Engelhard, J. Shabanowitz, D.F. Hunt, C.L. Slingluff Jr., Preventing the Spontaneous Modification of an HLA-A2 Restricted Peptide at an N-Terminal Glutamine or an Internal Cysteine Residue Enhances Peptide Antigenicity, *J. Immunother.*, **2004**, *27*, 177–183.
 237. M.L. McCleland, M.J. Kallio, G.A. Barrett-Wilt, C.A. Kestner, J. Shabanowitz, D.F. Hunt, G.J. Gorbsky, P.T. Stukenberg, The Vertebrate Ndc80 Complex Contains Spc24 and Spc25 Homologs, Which are Required to Establish and Maintain Kinetochore-Microtubule Attachment, *Curr. Biol.*, **2004**, *14*, 131–137.
 238. K.T. Hogan, M.A. Coppola, C.L. Gatlin, L.W. Thompson, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, M.M. Ross, C.L. Slingluff Jr., Identification of a Novel and Widely Expressed Cancer/Testis Gene Isoforms that Elicit Spontaneous Cytotoxic T-Lymphocyte Reactivity to Melanoma, *Cancer Res.*, **2004**, *64*, 1157–1163.
 239. W. Lan, X. Zhang, S.L. Kline-Smith, S.E. Rosasco, G.A. Barrett-Wilt, J. Shabanowitz, D.F. Hunt, C.E. Walczak, P.T. Stukenberg, Aurora B Phosphorylates Centromeric MCAK and Regulates Its Localization and Microtubule Depolymerization Activity, *Curr. Biol.*, **2004**, *14*, 273–286.
 240. A. Thomashevski, A.A. High, M. Drozd, J. Shabanowitz, D.F. Hunt, P.A. Grant, G.M. Kupfer, The Fanconi Anemia Core Complex Forms Four Complexes of Different Sizes in Different Subcellular Compartments, *J. Biol. Chem.*, **2004**, *279*, 26201–26209.
 241. C.M. Barber, F.B. Turner, Y. Wang, K. Hagstrom, S.D. Taverna, S. Mollah, B. Überheide, B.J. Meyer, D.F. Hunt, P. Cheung, C.D. Allis, The Enhancement of Histone H4 and H2A Serine-1 Phosphorylation During Mitosis and S-Phase is Evolutionarily Conserved, *Chromosoma*, **2004**, *112*, 360–371.
 242. J.E.P. Syka, J.J. Coon, M.J. Schroeder, J. Shabanowitz, D.F. Hunt, Peptide and Protein Sequence Analysis by Electron Transfer Dissociation Mass Spectrometry, *Proc. Natl. Acad. Sci., USA*, **2004**, *101*, 9528–9533.
 243. M.J. Schroeder, J. Shabanowitz, J.C. Schwartz, D.F. Hunt, J.J. Coon, A Neutral Loss Activation Method for Improved Phosphopeptide Sequence Analysis by Quadrupole Ion Trap Mass Spectrometry, *Anal. Chem.*, **2004**, *76*, 3590–3598.
 244. J.E.P. Syka, J.A. Marto, D.L. Bai, S. Hornung, M.W. Senko, J.C. Schwartz, B. Ueberheide, B. Garcia, S. Busby, T. Muratore, J. Shabanowitz, D.F. Hunt, Novel Linear Quadrupole Ion Trap/FT Mass Spectrometer: Performance Characterization and Use in the Comparative Analysis of Histone H3 Post-Translational Modifications, *J. Proteome Res.*, **2004**, *3*, 621–626.
 245. J. Mi, F. Qiao, J.B. Wilson, M.J. Schroeder, P.T. Stukenberg, A. Moss, J. Shabanowitz, D.F. Hunt, N.J. Jones, G.M. Kupfer, FANCG Is Phosphorylated at Serines 383 and 387 During Mitosis, *Mol. Cell Biol.*, **2004**, *24*, 8576–8585.
 246. J.J. Coon, J.E.P. Syka, J.C. Schwartz, J. Shabanowitz, D.F. Hunt, Anion Dependence in the Partitioning Between Proton and Electron Transfer in Ion/Ion Reactions, *Int. J. Mass Spectrom.*, **2004**, *236*, 33–42.
 247. B.A. Garcia, S.A. Busby, C.M. Barber, J. Shabanowitz, C.D. Allis, D.F. Hunt, Characterization of Phosphorylation Sites on Histone H1 Isoforms by Tandem Mass Spectrometry, *J. Proteome Res.*, **2004**, *3*, 1219–1227.
 248. W. Lan, X. Zhang, S.L. Kline-Smith, S.E. Rosasco, G.A. Barrett-Wilt, J. Shabanowitz, D.F. Hunt, C.E. Walczak, P.T. Stukenberg, Aurora B Phosphorylates Centromeric MCAK and Regulates Its Localization and Microtubule Depolymerization Activity, *Curr. Biol.*, **2004**, *14*, 273–286.
 249. L. Johnson, S. Mollah, T.L. Muratore, B.A. Garcia, J. Shabanowitz, D.F. Hunt, Steve Jacobsen, Mass Spectrometry Analysis of Arabidopsis Histone H3 Reveals Distinct Combinations of Post-Translational Modifications, *Nucleic Acid Res.*, **2004**, *32*, 6511–6518.
 250. S.B. Hake, B.A. Garcia, M. Kauer, S.P. Baker, J. Shabanowitz, D.F. Hunt, C.D. Allis, Serine 31 Phosphorylation of Histone Variant H3.3 is Specific to Regions Bordering Centromeres in Metaphase Chromosomes, *Proc. Natl. Acad. Sci., USA*, **2005**, *102*, 6344–6349.
 251. C.S. Yang, M.J. Vitto, S.A. Busby, B.A. Busby, C.T. Kesler, D. Gioeli, J. Shabanowitz, D.F. Hunt, K. Rundell, D.L. Brautigan, B.M. Paschal, Simian Virus 40 Small T-Antigen Mediates Conformation-Dependent Transfer of

- Protein Phosphatase 2A Onto the Androgen Receptor, *Mol. Cell Biol.*, **2005**, 25, 1298–1308.
252. K.T. Hogan, J.N. Sutton, K.U. Chu, J.A.C. Busby, J. Shabanowitz, D.F. Hunt, C.L. Slingluff, Use of Selected Reaction Monitoring Mass Spectrometry for the Detection of Specific MHC class I Peptide Antigens on A3 Supertype Family Members, *Cancer Immunology Immunotherapy*, **2005**, 54, 359–371.
253. F. Angenstein, A.M. Evans, S.C. Ling, R.E. Settlage, S. Ficarro, F.A. Carrero-Martinez, J. Shabanowitz, D.F. Hunt, W.T. Greenough, Proteomic Characterization of Messenger Ribonucleoprotein Complexes Bound to Nontranslated or Translated Poly(A) mRNAs in the Rat Cerebral Cortex, *J. Biol. Chem.*, **2005**, 280, 6496–6503.
254. J.J. Coon, B. Ueberheide, J.E.P. Syka, D.D. Dryhurst, J. Ausio, J. Shabanowitz, D.F. Hunt, Protein Identification Using Sequential Ion/Ion Reactions and Tandem Mass Spectrometry, *Proc. Natl. Acad. Sci., USA*, **2005**, 102, 9463–9468.
255. J.J. Coon, J. Shabanowitz, D.F. Hunt, J.E.P. Syka, Electron Transfer Dissociation of Peptide Anions, *J. Am. Soc. Mass Spectrom.*, **2005**, 16, 880–882.
256. B.A. Garcia, J. Shabanowitz, D.F. Hunt, Analysis of Protein Phosphorylation by Mass Spectrometry, *Methods*, **2005**, 35, 256–264.
257. J.L. Hodges, J.H. Leslie, N. Mosammaparast, Y. Guo, J. Shabanowitz, D.F. Hunt, L.F. Pemberton, Nuclear Import of TFIIB is Mediated by Kap114P, a Karyopherin with Multiple Cargo-Binding domains, *Mol. Biol. Cell*, **2005**, 16, 3200–3210.
258. Z. Fu, M.J. Schroeder, J. Shabanowitz, P. Kaldis, K. Togawa, A.K. Rustgi, D.F. Hunt, T.W. Sturgill, Activation of Nuclear Cdc2-Related Kinase within a Mitogen-Activated Protein Kinase-Like TDY Motif by Autophosphorylation and Cyclin-Dependent Protein Kinase-Activatin Kinase, *Mol. Cell Biol.*, **2005**, 25, 6047–6064.
259. C.H. Yang, J. Szeliga, Z. Sever-Chroneos, B. Dorsett, J. Jordan, S. Faske, R.E. Christian, R.E. Settlage, J. Shabanowitz, D.F. Hunt, J.A. Whitsett, Z.C. Chroneos, Identification of the Surfactant Protein A Receptor 210 as the Unconventional Myosin 18A, *J. Biol. Chem.*, **2005**, 280, 34447–34457.
260. R.M. Rowlett, Chrestensen, M.J. Schroeder, M.G. Harp, J.W. Pelo, J. Shabanowitz, D.F. Hunt, T.W. Sturgill, M.T. Worthington, Inhibition of Tristetraprolin (TTP) Deadenylation by a Complex of TTP and Poly(A) Binding Protein, *Mol. Cell Biol.*, **2005**, 25, 6047–6064.
261. F.D. Sweeney, F. Yang, A. Chi, J. Shabanowitz, D.F. Hunt, D. Durocher, *Saccharomyces cerevisiae Rad9* Acts as a Mec1 Adaptor to Allow Rad53 Activation, *Curr. Biol.*, **2005**, 15, 1364–75.
262. B.A. Garcia, C.M. Barber, S.B. Hake, C. Ptak, F.B. Turner, S.A. Busby, J. Shabanowitz, R.G. Moran, C.D. Allis, D.F. Hunt, Modifications of Human Histone H3 Isoforms During Mitosis, *Biochemistry*, **2005**, 44, 13202–13213.
263. L. Sibilio, A. Martayan, A. Setini, R. Fraioli, D. Fruci, J. Shabanowitz, D.F. Hunt, P. Giacomini, Impaired Assembly Results in the Accumulation of Multiple HLA-C Heavy Chain Folding Intermediates, *J. Immunol.*, **2005**, 175, 6651–6658.
264. M.J. Schroeder, D.J. Webb, J. Shabanowitz, A.F. Horwitz, D.F. Hunt, Methods for the Detection of Paxillin Post-Translational Modifications and Interacting Proteins by Mass Spectrometry, *J. Proteome Res.*, **2005**, 4, 1832–1841.
265. B.A. Garcia, D.M. Smalley, H.J. Cho, J. Shabanowitz, K. Ley, D.F. Hunt, The Platelet Microparticle Proteome, *J. Proteome Res.*, **2005**, 4, 1516–1521.
266. S.B. Hake, B.A. Garcia, E.M. Duncan, M. Kauer, G. Delaire, J. Shabanowitz, D.P. Bazett-Jones, C.D. Allis, D.F. Hunt, Expression Patterns and Post-Translational Modifications Associated with Mammalian Histone H3 Variants, *J. Biol. Chem.*, **2006**, 281, 559–568.
267. B.A. Garcia, S.A. Busby, J. Shabanowitz, D.F. Hunt, N. Mishra, Resetting the Epigenetic Histone Code in the MRL-lpr/lpr Mouse Model of Lupus by Histone Deacetylase Inhibition, *J. Proteome Res.*, **2005**, 4, 2032–2042.
268. W. Fischle, B.S. Tseng, H.L. Dormann, B.M. Ueberheide, B.A. Garcia, J. Shabanowitz, D.F. Hunt, H. Funabiki, C.D. Allis, Regulation of HP1-Chromatin Binding by Histone H3 Methylation and Phosphorylation, *Nature*, **2005**, 438, 1116–22.
269. P.R. Grigera, E.D. Jeffery, K.H. Martin, J. Shabanowitz, D.F. Hunt, J.T. Parsons, FAK Phosphorylation Sites Mapped by Mass Spectrometry, *J. Cell Sci.*, **2005**, 118, 4931–4935.
270. D.J. Webb, M.J. Schroeder, C.J. Brane, L. Whitmore, J. Shabanowitz, D.F. Hunt, A.R. Horwitz, Paxillin Phosphorylation Sites Mapped by Mass Spectrometry, *J. Cell Sci.*, **2005**, 118, 4925–4929.
271. B. Ratnikov, C. Ptak, J. Han, J. Shabanowitz, D.F. Hunt, M.H. Ginsberg, Talin Phosphorylation Sites Mapped by Mass Spectrometry, *J. Cell Sci.*, **2005**, 118, 4921–4923.
272. J.C. Valencia, H. Watabe, A. Chi, F. Rouzaud, K.G. Chen, W.D. Vieira, K. Takahashi, Y. Ramaguchi, W. Berens, J. Shabanowitz, D.F. Hunt, E. Appella, V.J. Hearing, Sorting of Pmel17 to Melanosomes through the Plasma Membrane by AP1 and AP2: Evidence for the Polarized Nature of Melanocytes, *J. Cell Sci.*, **2006**, 119, 1080–1091.
273. D.J. Webb, M.W. Mayhew, M. Kovalenko, M. Schroeder, E.D. Jeffery, L. Whitmore, J. Shabanowitz, D.F. Hunt, A.F. Horwitz, Identification of Phosphorylation Sites in GIT1, *J. Cell Sci.*, **2006**, 119, 2847–2850.
274. L.J. Frehlick, J.M. Eirin-Lopez, E.D. Jeffery, D.F. Hunt, J. Ausio, The Characterization of Amphibian Nucleoplasmins Yields New Insight into their Role in Sperm Chromatin Remodeling, *BMC Genomics*, **2006**, 7, 99.
275. J. Recht, T. Tsubota, J.C. Tanny, R.L. Diaz, J.M. Berger, X. Zhang, B.A. Garcia, A.L. Burlingame, D.F. Hunt, P.D. Kaufman, C.D. Allis, Histone Chaperone Asf1 is Required for Histone H3 Lysine 56 Acetylation, a Modification Associate4d with S Phase in Mitosis and Meiosis, *Proc. Natl. Acad. Sci., USA*, **2006**, 103, 6988–6993.

276. W. Swiatek, H. Kang, B.A. Garcia, J. Shabanowitz, G.S. Coombs, D.F. Hunt, D.M. Virshup, Negative Regulation of LRP6 Function by Casein Kinase I ϵ Phosphorylation, *J. Biol. Chem.*, **2006**, 281, 12233–12241.
277. T.E. Harris, A. Chi, J. Shabanowitz, D.F. Hunt, R.E. Rhoads, J.C. Lawrence Jr., M-Tor-Dependent Stimulation of the Association of eIF4G and eIF3 by Insulin, *EMBO J.*, **2006**, 25, 1659–1668.
278. J. Li, M.M. Riehle, Y. Zhang, J. Xu, F. Oduol, S.M. Gomez, K. Eiglmeier, B.M. Ueberheide, J. Shabanowitz, D.F. Hunt, J.M.C. Ribeiro, K.D. Vernon, Anopheles Gamibiae Genome reannotation Through Synthesis of Ab Initio and Comparative gene Prediction Algorithms. *Genome Biol.*, **2006**, 7, R24.
279. W. Luo, B.A. Garcia, I.C. Tsai, H.J. Yost, D.F. Hunt, D.M. Virshup, Protein Phosphatase 1 Controls Wnt/Beta Catenin Signaling by Dephosphorylating Axin and Regulating the Axin-GSK3 Interaction, **2006**, submitted.
280. L.K. Kliminowski, B.A. Garcia, J. Shabanowitz, D.F. Hunt, D.M. Virshup, Site-Specific CKI ϵ -Dependent Phosphorylation of Disheveled Modulates (β -Catenin Signaling, **2006**, *FEBS J.*, submitted).
281. Y. Li, G. Kao, B.A. Garcia, J. Shabanowitz, D.F. Hunt, J. Qin, C. Phelan, M.A. Lazar, A Novel Histone Deacetylase Pathway Regulates Mitosis by Modulating Aurora B Kinase Activity, **2006**, *Genes Dev.*, submitted.
282. B.A. Garcia, M. Platt, T.L. Born, J. Shabanowitz, N.A. Marcus, D.F. Hunt, Protein Profile of Osteoarthritic Human Articular Cartilage Using Tandem Mass Spectrometry, *Rapid Commun. Mass Spectrom.*, **2006**, 20, 2999–3006.
283. C.H. Lin, M.A. Platt, S.B. Ficarro, M.H. Hoffnagle, J. Shabanowitz, L. Comal, D.F. Hunt, G.K. Owens, Mass Spectrometric Identification of Phosphorylation Sites of the rRNA Transcription Factor Upstream Binding Factor (UBF), *J. Physiol.*, **2006**, submitted.
284. R.M. Rowlett, C.A. Chrestensen, M.J. Schroeder, M.G. Har, J.W. Pelo, J. Shabanowitz, D.F. Hunt, T.W. Sturgill, M.T. Worthington, Inhibition of tristetraprolin (TTP) deadenylation by a complex of TTP and Poly(A) Binding Protein, *Mol. Cell Biol.*, **2005**, 25, 6047–6064.
285. S.A. Morris, B. Rao, B.A. Garcia, S.B. Hake, R.L. Diaz, J. Shabanowitz, D.F. Hunt, D. Allis, J.D. Lieb, B.D. Strahl, Identification of histone H3 lysine 36 acetylation as a highly conserved histone modification in eukaryotes, *J. Biol. Chem.*, **2006**, submitted.
286. A Mosquito-Specific Protein Family Includes Candidate Receptors for Malaria sporozoite Invasion of Salivary Glands, *Cell Biol.*, **2006**, submitted.
287. D. Borovsky, S. Rabindran, D.J. Lewandowski, W.O. Dawson, C.R. Powell, D. Iannotti, T. Morris, J. Shabanowitz, D.F. Hunt, H.L. DeBondt, A. DeLoof, Expression of Aedes TMOF on the Coat Protein of TMV: A New Potential Larvicide, *Proc. Natl. Acad. Sci., USA*, **2006**, in press.
288. L.M. Mikesh, B. Ueberheide, A. Chi, J.J. Coon, J.E.P. Syka, J. Shabanowitz, D.F. Hunt, The utility of ETD mass spectrometry in proteomic analysis, *Biochim. Biophys. Acta*, **2006**, submitted.
289. A. Chi, J. Valencia, Z.-Z. Hu, H. Watabe, H. Yamaguchi, H. Huang, V. Canfield, K. Cheng, R. Abe, S. Yamagishi, J. Shabanowitz, V. Hearing, C. Wu, E. Appella, D.F. Hunt, Proteomic and Bioinformatic Characterization of the Biogenesis and Function of Melanosomes, *J. Proteome Res.*, **2006**, in press.
290. A.G. Brickner, A.M. Evans, J.K. Mito, S.M. Xuereb, X. Feng, T. Nishida, L. Fairfull, R.E. Ferrell, K.A. Foon, D.F. Hunt, J. Shabanowitz, V.H. Engelhard, S.R. Riddell, E.H. Warren, The PANE1 gene encodes a novel human minor histocompatibility antigen that is selectively expressed in B-lymphoid cells and B-CLL, *Blood*, **2006**, 107, 3779–86.
291. L. Valenzuela, A. Chi, S. Beard, A. Orell, N. Giuliani, J. Shabanowitz, D.F. Hunt, C.A. Jerez, Genomics, metagenomics and proteomics in biomining microorganisms, *Biotech. Adv.*, **2006**, 24, 197–211.
292. N. Auphan-Anezin, C. Mazza, A. Guimezanes, G.A. Barrett-Wilt, F. Montero-Julian, A. Roussel, D.F. Hunt, B. Malissen, A.-M. Schmitt-Verhulst, Structural Basis for Full, Partial or Split-Agaonist Properties for Monoclonal Alloreactive T Cells Based on Peptide Selection by MHC Allelic Variants, *Eur. J. Immunol.*, **2006**, 36, 1856–66.
293. A.L. Zarling, J.M. Polefrone, A.M. Evans, L.M. Mikesh, J. Shabanowitz, S.T. Lewis, V.H. Engelhard, D.F. Hunt, Identification of class I MHC associated phosphopeptides as targets for cancer immunotherapy, *Proc. Natl. Acad. Sci., USA*, **2006**, 103, 14889–14894.
294. M.L. Altrich-VanLith, M. Ostankovitch, J.M. Polefrone, C.A. Mosse, J. Shabanowitz, D.F. Hunt, V.H. Engelhard, Processing of Class I-restricted epitope from tyrosinase requires peptide N-Glycanase and the cooperative action of endoplasmic reticulum aminopeptidase 1 and cytosolic proteases, *J. Immunol.*, **2006**, 177, 5440–5450.
295. G.E. Yue, M.G. Roper, C. Balchunas, A. Pulsipher, J.J. Coon, J. Shabanowitz, D.F. Hunt, J.P. Landers, J.P. Ferrance, Protein Digestion and Phosphopeptide Enrichment on a Glass Microchip, *Anal. Chim. Acta*, **2006**, 564, 116–122.
296. S. Korochkina, C. Barreau, G. Pradel, E. Jeffery, J. Li, R. Natarajan, J. Shabanowitz, D. Hunt, U. Frevert, K.D. Vernon, A Mosquito-specific Protein Family Includes Candidate Receptors for Malaria Sporozoite Invasion of Salivary Glands, *Cell. Microbiol.*, **2006**, 8, 163–175.
297. K.H. Martin, E.D. Jeffery, P.R. Grigera, J. Shabanowitz, D.F. Hunt, J.T. Parsons, Cortactin Phosphorylation Sites Mapped by Mass Spectrometry, *J. Cell Sci.*, **2006**, 119, 2851–2853.
298. A. Mosoian, A. Teixeira, A.A. High, R.E. Christian, D.F. Hunt, J. Shabanowitz, X. Liu, M. Klotman, Novel Function of Prothymosin Alpha as a Potent Inhibitor of Human Immunodeficiency Virus Type 1 Gene Expression in Primary Macrophages, *J. Virology*, **2006**, 80, 9200–9206.
299. B.A. Garcia, S. Joshi, C.E. Thomas, R.K. Chitta, R.L. Diaz, S.A. Busby, P.C. Andrews, R.R. Ogorzalek Loo, J. Shabanowitz, N.L. Kelleher, C.A. Mizzen, C.D. Allis, D.F.

- Hunt, Comprehensive Phosphoprotein Analysis of Linker Histone H1 from Tetrahymena Thermophila, *Molecular & Cellular Proteomics*, **2006**, 5, 1593–1609.
300. L.E. Goldfinger, C. Ptak, E.D. Jeffery, J. Shabanowitz, D.F. Hunt, M.H. Ginsberg, RLIP76(RalBP1) is an R-Ras Effector that Mediates Adhesion-Dependent Rac Activation and Cell Migration, *J. Cell Biol.*, **2006**, 174, 877–888.
301. A. Chi, D.L. Bai, L.Y. Geer, J. Shabanowitz, D.F. Hunt, Analysis of Intact Proteins on a Chromatographic Time Scale by Electron Transfer Dissociation Tandem Mass Spectrometry, *Int. J. Mass Spectrom.*, **2006**, in press.
302. A. Chi, C.H. Huttenhower, L.Y. Geer, J.J. Coon, J.E.P. Syka, D.L. Bai, J. Shabanowitz, D.J. Burke, O.G. Troyanskaya, D.F. Hunt, Analysis of Phosphorylation Sites on Proteins from *Saccharomyces Cerevisiae* by Electron Transfer Dissociation (ETD) Mass Spectrometry, *Proc. Natl. Acad. Sci., USA*, **2006**, submitted.
303. T. Harris, T. Huffman, A. Chi, J. Shabanowitz, D.F. Hunt, A. Kumar, J.C. Lawrence Jr., Insulin Controls Subcellular Localization and Multisite Phosphorylation of the Phosphatidic Acid Phosphatase, Lipin 1, *J. Biol. Chem.*, **2006**, submitted.