

# CURRICULUM VITAE

**Francis C. Peterson PhD**

**Professor  
Department of Biochemistry**

## OFFICE ADDRESS:

Translational and Biomedical Research Center  
8701 Watertown Plank Rd  
Milwaukee, WI 53226  
Email: fpeterso@mcw.edu

## EDUCATION:

1991 B.S., University of Miami, Coral Gables, FL  
1998 PhD, Ohio State University, Columbus, OH

## POSTGRADUATE TRAINING AND FELLOWSHIP APPOINTMENTS:

1998 - 2001 Postdoctoral Fellow, University of Illinois-Chicago, IL  
2001 - 2006 Research Scientist, Medical College of Wisconsin, Milwaukee, WI

## FACULTY APPOINTMENTS:

2006 - 2012 Assistant Professor and Structural Biology Facility Manager, Biochemistry, Medical College of Wisconsin, Milwaukee, WI 53226  
2012 - Present Associate Professor and Structural Biology Facility Manager, Biochemistry, Medical College of Wisconsin, Milwaukee, WI 53226

## MEMBERSHIPS IN HONORARY AND PROFESSIONAL SOCIETIES:

Protein Society  
American Association for the Advancement of Science

## EDITORSHIPS/EDITORIAL BOARDS/JOURNAL REVIEWS:

Journal Review  
Biochemistry  
Proteins: Structure, Function and Bioinformatics  
Nature, Structural and Molecular Biology

## RESEARCH GRANTS/AWARDS/CONTRACTS/PROJECTS:

### Active

#### Peer Review

|               |  |
|---------------|--|
| Title:        | Structural Basis for Chemokine Signaling               |
| Source:       | NIH Research Project Grant R01 AI058072-06             |
| Role:         | Co-investigator  |
| PI:           | Brian Volkman  |
| Dates:        | 2004 - 2014  |
| Direct Funds: | \$1,207,894 ((2010-2014))                              |
| Title:        | Conformational duality in the human chemokine Ltn/XCL1 |

Source: NIH Research Project Grant R56  
AI063325

Role: Co-investigator

PI: Brian Volkman

Dates: 2011 - 2012

Direct Funds: \$351,746

Title: Sulfotyrosine-guided discovery of small  
molecule chemokine inhibitors

Source: NIH Research Project Grant R01  
GM097381

Role: Co-investigator

PI: Brian Volkman

Dates: 2011 - 2015

Direct Funds: \$1,141,770

Title: Structural Analysis of the Mannose  
6-Phosphate Receptors

Source: NIH Research Project Grant R01  
DK042667

Role: Key personnel (10% effort)

PI: Nancy M. Dahms, PI, MCW Dept.of  
Biochemistry

Dates: 2011 - 2015

**Prior**

**Peer Review**

Title: Characterization of a Serpin-Proteinase  
Complex by NMR

Source: Individual National Research Service  
Award

Role: Trainee. Dr. Peter G.W. Gettins, Sponsor

Dates: 1999 - 2001

Title: The role of chemokine signaling in  
cancer metastasis

Source: Northwestern Mutual Life Fellowship in  
Cancer Research

Role: Trainee. Dr. Brian Volkman, Sponsor

Dates: 2003 - 2005

Title: Specialized Center for Eukaryotic  
Structural Genomics

Source: NIH Cooperative Agreement

Role: Co-Investigator

PI: John L. Markley, PI, University of  
Wisconsin-Madison

Dates: 2005 - 2010

Direct Funds: \$525,653 (MCW subcontract, no-cost  
extension in 2010-2011)

**INVITED LECTURES/WORKSHOPS/PRESENTATIONS:**

**National**

Poster Presentation: Endocrine Society Meeting, Washington D.C., 1995

Keystone Symposium: Frontiers of NMR in Molecular Biology VII, Big Sky, MO, 2001

Keystone Symposium: Chemokine and Chemokine Receptors, Breckenridge, CO, 2003  
Keystone Symposium: Frontiers of NMR in Molecular Biology X, Snowbird, UT, 01/2007  
Keystone Symposium: Plant Abiotic Stress Tolerance Mechanisms, Water and Global Agriculture, Keystone, Colorado, 2011

#### **International**

XXth International Conference on Magnetic Resonance in Biological Systems, Toronto, Canada, 2002

Keystone Symposium: Frontiers of NMR in Molecular Biology IX, Banff, Alberta, Canada, 2005

#### **MEDICAL COLLEGE TEACHING ACTIVITIES:**

##### **Graduate Student Education**

2002 - Present Protein Chemistry (Biochem 02222; annual, fall semester): Lecturer and Course Director

2010 Biomolecular NMR: Structure and Molecular Recognition: Course director and lecturer

#### **MCW STUDENTS, FACULTY, RESIDENTS AND CLINICAL/RESEARCH FELLOWS MENTORED:**

##### **Graduate Students**

###### **PhD**

Jamie Wieting, MCW, 2008 - Present

### **BIBLIOGRAPHY**

#### **Refereed Journal Publications/Original Papers**

1. Maciejewski PM, **Peterson FC**, Anderson PJ, Brooks CL. Mutation of serine 90 to glutamic acid mimics phosphorylation of bovine prolactin. *J Biol Chem*. 1995 Nov 17;270(46):27661-5.
2. **Peterson FC**, Brooks CL. Identification of a motif associated with the lactogenic actions of human growth hormone. *J Biol Chem*. 1997 Aug 22;272(34):21444-8.
3. **Peterson FC**, Anderson PJ, Berliner LJ, Brooks CL. Expression, folding, and characterization of small proteins with increasing disulfide complexity by a pT7-7-derived phagemid. *Protein Expr Purif*. 1999 Feb;15(1):16-23.
4. **Peterson FC**, Brooks CL. The species specificity of growth hormone requires the cooperative interaction of two motifs. *FEBS Lett*. 2000 Apr 28;472(2-3):276-82.
5. **Peterson FC**, Gordon NC, Gettins PG. Formation of a noncovalent serpin-proteinase complex involves no conformational change in the serpin. Use of 1H-15N HSQC NMR as a sensitive nonperturbing monitor of conformation. *Biochemistry*. 2000 Oct 03;39(39):11884-92.
6. **Peterson FC**, Gordon NC, Gettins PG. High-level bacterial expression and 15N-alanine-labeling of bovine trypsin. Application to the study of trypsin-inhibitor complexes and trypsinogen activation by NMR spectroscopy. *Biochemistry*. 2001 May 29;40(21):6275-83.
7. **Peterson FC**, Gettins PG. Insight into the mechanism of serpin-proteinase inhibition from 2D [1H-15N] NMR studies of the 69 kDa alpha 1-proteinase inhibitor Pittsburgh-trypsin covalent complex. *Biochemistry*. 2001 May 29;40(21):6284-92.
8. Volkman BF, Prehoda KE, Scott JA, **Peterson FC**, Lim WA. Structure of the N-WASP EVH1 domain-WIP complex: insight into the molecular basis of Wiskott-Aldrich Syndrome. *Cell*. 2002 Nov 15;111(4):565-76.
9. Cook CR, Kung G, **Peterson FC**, Volkman BF, Lei M. A novel zinc finger is required for Mcm10 homocomplex assembly. *J Biol Chem*. 2003 Sep 19;278(38):36051-8.
10. Gettins PG, Backovic M, **Peterson FC**. Use of NMR to study serpin function. *Methods*. 2004 Feb;32(2):120-9.
11. Lytle BL, **Peterson FC**, Kjer KL, Frederick RO, Zhao Q, Thao S, Bingman C, Johnson KA, Phillips GN Jr, Volkman BF. Structure of the hypothetical protein At3g17210 from *Arabidopsis thaliana*. *J Biomol NMR*. 2004 Apr;28(4):397-400.
12. **Peterson FC**, Elgin ES, Nelson TJ, Zhang F, Hoeger TJ, Linhardt RJ, Volkman BF. Identification and characterization of a glycosaminoglycan recognition element of the C chemokine lymphotactin. *J Biol Chem*. 2004 Mar 26;279(13):12598-604.
13. **Peterson FC**, Penkert RR, Volkman BF, Prehoda KE. Cdc42 regulates the Par-6 PDZ domain through an

- allosteric CRIB-PDZ transition. *Mol Cell*. 2004 Mar 12;13(5):665-76.
14. Cornilescu G, Cornilescu CC, Zhao Q, Frederick RO, **Peterson FC**, Thao S, Markley JL. Solution structure of a homodimeric hypothetical protein, At5g22580, a structural genomics target from *Arabidopsis thaliana*. *J Biomol NMR*. 2004 Jul;29(3):387-90.
  15. **Peterson FC**, Brooks CL. Different elements of mini-helix 1 are required for human growth hormone or prolactin action via the prolactin receptor. *Protein Eng Des Sel*. 2004 May;17(5):417-24.
  16. Zhao Q, Frederick R, Seder K, Thao S, Sreenath H, Peterson F, Volkman BF, Markley JL, Fox BG. Production in two-liter beverage bottles of proteins for NMR structure determination labeled with either <sup>15</sup>N- or <sup>13</sup>C-<sup>15</sup>N. *J Struct Funct Genomics*. 2004;5(1-2):87-93.
  17. Bingman CA, Johnson KA, **Peterson FC**, Frederick RO, Zhao Q, Thao S, Fox BG, Volkman BF, Jeon WB, Smith DW, Newman CS, Ulrich EL, Hegeman A, Sussman MR, Markley JL, Phillips GN Jr. Crystal structure of the protein from gene At3g17210 of *Arabidopsis thaliana*. *Proteins*. 2004 Oct 01;57(1):218-20.
  18. Lytle BL, **Peterson FC**, Qiu SH, Luo M, Zhao Q, Markley JL, Volkman BF. Solution structure of a ubiquitin-like domain from tubulin-binding cofactor B. *J Biol Chem*. 2004 Nov 05;279(45):46787-93.
  19. Skjeldal L, **Peterson FC**, Doreleijers JF, Moe LA, Pikus JD, Westler WM, Markley JL, Volkman BF, Fox BG. Solution structure of T4moC, the Rieske ferredoxin component of the toluene 4-monooxygenase complex. *J Biol Inorg Chem*. 2004 Dec;9(8):945-53.
  20. Veldkamp CT, **Peterson FC**, Pelzek AJ, Volkman BF. The monomer-dimer equilibrium of stromal cell-derived factor-1 (CXCL 12) is altered by pH, phosphate, sulfate, and heparin. *Protein Sci*. 2005 Apr;14(4):1071-81. PMID: PMC2253449
  21. Vinarov DA, Lytle BL, **Peterson FC**, Tyler EM, Volkman BF, Markley JL. Cell-free protein production and labeling protocol for NMR-based structural proteomics. *Nat Methods*. 2004 Nov;1(2):149-53.
  22. Tyler RC, Aceti DJ, Bingman CA, Cornilescu CC, Fox BG, Frederick RO, Jeon WB, Lee MS, Newman CS, **Peterson FC**, Phillips GN Jr, Shahan MN, Singh S, Song J, Sreenath HK, Tyler EM, Ulrich EL, Vinarov DA, Vojtik FC, Volkman BF, Wrobel RL, Zhao Q, Markley JL. Comparison of cell-based and cell-free protocols for producing target proteins from the *Arabidopsis thaliana* genome for structural studies. *Proteins*. 2005 May 15;59(3):633-43.
  23. **Peterson FC**, Lytle BL, Sampath S, Vinarov D, Tyler E, Shahan M, Markley JL, Volkman BF. Solution structure of thioredoxin h1 from *Arabidopsis thaliana*. *Protein Sci*. 2005 Aug;14(8):2195-200. PMID: PMC2279331
  24. Fox BG, Malone TE, Johnson KA, Madson SE, Aceti D, Bingman CA, Blommel PG, Buchan B, Burns B, Cao J, Cornilescu C, Doreleijers J, Ellefson J, Frederick R, Geetha H, Hruby D, Jeon WB, Kimball T, Kunert J, Markley JL, Newman C, Olson A, **Peterson FC**, Phillips GN Jr, Primm J, Ramirez B, Rosenberg NS, Runnels M, Seder K, Shaw J, Smith DW, Sreenath H, Song J, Sussman MR, Thao S, Troestler D, Tyler E, Tyler R, Ulrich E, Vinarov D, Vojtik F, Volkman BF, Wesenberg G, Wrobel RL, Zhang J, Zhao Q, Zolnai Z. X-ray structure of *Arabidopsis* At1g77680, 12-oxophytodienoate reductase isoform 1. *Proteins*. 2005 Oct 01;61(1):206-8.
  25. Waltner JK, **Peterson FC**, Lytle BL, Volkman BF. Structure of the B3 domain from *Arabidopsis thaliana* protein At1g16640. *Protein Sci*. 2005 Sep;14(9):2478-83. PMID: PMC2253459
  26. Dias JS, Macedo AL, Ferreira GC, Jeanty N, Taketani S, Goodfellow BJ, **Peterson FC**, Volkman BF. <sup>1</sup>H, <sup>15</sup>N and <sup>13</sup>C resonance assignments of the heme-binding protein murine p22HBP. *J Biomol NMR*. 2005 Aug;32(4):338.
  27. Veldkamp CT, Seibert C, **Peterson FC**, Sakmar TP, Volkman BF. Recognition of a CXCR4 sulfotyrosine by the chemokine stromal cell-derived factor-1alpha (SDF-1alpha/CXCL12). *J Mol Biol*. 2006 Jun 23;359(5):1400-9. PMID: PMC2670582
  28. Lytle BL, **Peterson FC**, Tyler EM, Newman CL, Vinarov DA, Markley JL, Volkman BF. Solution structure of *Arabidopsis thaliana* protein At5g39720.1, a member of the AIG2-like protein family. *Acta Crystallogr Sect F Struct Biol Cryst Commun*. 2006 Jun 01;62(Pt 6):490-3. PMID: PMC2243094
  29. Dias JS, Macedo AL, Ferreira GC, **Peterson FC**, Volkman BF, Goodfellow BJ. The first structure from the SOUL/HBP family of heme-binding proteins, murine P22HBP. *J Biol Chem*. 2006 Oct 20;281(42):31553-61.
  30. Janowiak BE, Hayward MA, **Peterson FC**, Volkman BF, Griffith OW. Gamma-glutamylcysteine synthetase-glutathione synthetase: domain structure and identification of residues important in substrate and glutathione binding. *Biochemistry*. 2006 Sep 05;45(35):10461-73.
  31. **Peterson FC**, Hayes PL, Waltner JK, Heisner AK, Jensen DR, Sander TL, Volkman BF. Structure of the SCAN domain from the tumor suppressor protein MZF1. *J Mol Biol*. 2006 Oct 13;363(1):137-47.

PMCID: PMC1941711

32. **Peterson FC**, Thorpe JA, Harder AG, Volkman BF, Schwarze SR. Structural determinants involved in the regulation of CXCL14/BRAK expression by the 26 S proteasome. *J Mol Biol.* 2006 Nov 03;363(4):813-22. PMCID: PMC1664593
33. Veldkamp CT, **Peterson FC**, Hayes PL, Mattmiller JE, Haugner JC 3rd, de la Cruz N, Volkman BF. On-column refolding of recombinant chemokines for NMR studies and biological assays. *Protein Expr Purif.* 2007 Mar;52(1):202-9. PMCID: PMC1868460
34. **Peterson FC**, Deng Q, Zettl M, Prehoda KE, Lim WA, Way M, Volkman BF. Multiple WASP-interacting protein recognition motifs are required for a functional interaction with N-WASP. *J Biol Chem.* 2007 Mar 16;282(11):8446-53.
35. Tuinstra RL, **Peterson FC**, Elgin ES, Pelzek AJ, Volkman BF. An engineered second disulfide bond restricts lymphotactin/XCL1 to a chemokine-like conformation with XCR1 agonist activity. *Biochemistry.* 2007 Mar 13;46(10):2564-73. PMCID: PMC2734904
36. de la Cruz NB, **Peterson FC**, Lytle BL, Volkman BF. Solution structure of a membrane-anchored ubiquitin-fold (MUB) protein from *Homo sapiens*. *Protein Sci.* 2007 Jul;16(7):1479-84. PMCID: PMC2206703
37. de la Cruz NB, **Peterson FC**, Volkman BF. Solution structure of At3g28950 from *Arabidopsis thaliana*. *Proteins.* 2008 May 01;71(2):546-51. PMCID: PMC2758156
38. Hayes PL, Lytle BL, Volkman BF, **Peterson FC**. The solution structure of ZNF593 from *Homo sapiens* reveals a zinc finger in a predominantly unstructured protein. *Protein Sci.* 2008 Mar;17(3):571-6. PMCID: PMC2248319
39. Tuinstra RL, **Peterson FC**, Kutlesa S, Elgin ES, Kron MA, Volkman BF. Interconversion between two unrelated protein folds in the lymphotactin native state. *Proc Natl Acad Sci U S A.* 2008 Apr 01;105(13):5057-62. PMCID: PMC2278211
40. Baden EM, Owen BA, **Peterson FC**, Volkman BF, Ramirez-Alvarado M, Thompson JR. Altered dimer interface decreases stability in an amyloidogenic protein. *J Biol Chem.* 2008 Jun 06;283(23):15853-60. PMCID: PMC2414275
41. Noll L, **Peterson FC**, Hayes PL, Volkman BF, Sander T. Heterodimer formation of the myeloid zinc finger 1 SCAN domain and association with promyelocytic leukemia nuclear bodies. *Leuk Res.* 2008 Oct;32(10):1582-92.
42. Veldkamp CT, Seibert C, **Peterson FC**, De la Cruz NB, Haugner JC 3rd, Basnet H, Sakmar TP, Volkman BF. Structural basis of CXCR4 sulfotyrosine recognition by the chemokine SDF-1/CXCL12. *Sci Signal.* 2008 Sep 16;1(37):ra4. PMCID: PMC2692298
43. Seibert C, Veldkamp CT, **Peterson FC**, Chait BT, Volkman BF, Sakmar TP. Sequential tyrosine sulfation of CXCR4 by tyrosylprotein sulfotransferases. *Biochemistry.* 2008 Oct 28;47(43):11251-62. PMCID: PMC2662774
44. Lytle BL, Song J, de la Cruz NB, **Peterson FC**, Johnson KA, Bingman CA, Phillips GN Jr, Volkman BF. Structures of two *Arabidopsis thaliana* major latex proteins represent novel helix-grip folds. *Proteins.* 2009 Jul;76(1):237-43. PMCID: PMC2845785
45. Veldkamp CT, Ziarek JJ, Su J, Basnet H, Lennertz R, Weiner JJ, **Peterson FC**, Baker JE, Volkman BF. Monomeric structure of the cardioprotective chemokine SDF-1/CXCL12. *Protein Sci.* 2009 Jul;18(7):1359-69. PMCID: PMC2775206
46. Melcher K, Ng LM, Zhou XE, Soon FF, Xu Y, Suino-Powell KM, Park SY, Weiner JJ, Fujii H, Chinnusamy V, Kovach A, Li J, Wang Y, Li J, **Peterson FC**, Jensen DR, Yong EL, Volkman BF, Cutler SR, Zhu JK, Xu HE. A gate-latch-lock mechanism for hormone signalling by abscisic acid receptors. *Nature.* 2009 Dec 03;462(7273):602-8. PMCID: PMC2810868
47. Olson LJ, Sun G, Bohnsack RN, **Peterson FC**, Dahms NM, Kim JJ. Intermonomer interactions are essential for lysosomal enzyme binding by the cation-dependent mannose 6-phosphate receptor. *Biochemistry.* 2010 Jan 12;49(1):236-46. PMCID: PMC2802658
48. Tyler RC, **Peterson FC**, Volkman BF. Distal interactions within the par3-VE-cadherin complex. *Biochemistry.* 2010 Feb 09;49(5):951-7. PMCID: PMC2819025
49. Jensen DR, Woytovich C, Li M, Duvnjak P, Cassidy MS, Frederick RO, Bergeman LF, **Peterson FC**, Volkman BF. Rapid, robotic, small-scale protein production for NMR screening and structure determination. *Protein Sci.* 2010 Mar;19(3):570-8. PMCID: PMC2866281
50. Veldkamp CT, Ziarek JJ, **Peterson FC**, Chen Y, Volkman BF. Targeting SDF-1/CXCL12 with a ligand that prevents activation of CXCR4 through structure-based drug design. *J Am Chem Soc.* 2010 Jun 02;132(21):7242-3. PMCID: PMC2941798

51. **Peterson FC**, Baden EM, Owen BA, Volkman BF, Ramirez-Alvarado M. A single mutation promotes amyloidogenicity through a highly promiscuous dimer interface. *Structure*. 2010 May 12;18(5):563-70. PMID: PMC2872106
52. Olson LJ, **Peterson FC**, Castonguay A, Bohnsack RN, Kudo M, Gotschall RR, Canfield WM, Volkman BF, Dahms NM. Structural basis for recognition of phosphodiester-containing lysosomal enzymes by the cation-independent mannose 6-phosphate receptor. *Proc Natl Acad Sci U S A*. 2010 Jul 13;107(28):12493-8. PMID: PMC2906551
53. **Peterson FC**, Burgie ES, Park SY, Jensen DR, Weiner JJ, Bingman CA, Chang CE, Cutler SR, Phillips GN Jr, Volkman BF. Structural basis for selective activation of ABA receptors. *Nat Struct Mol Biol*. 2010 Sep;17(9):1109-13. PMID: PMC2933299
54. Weiner JJ, **Peterson FC**, Volkman BF, Cutler SR. Structural and functional insights into core ABA signaling. *Curr Opin Plant Biol*. 2010 Oct;13(5):495-502. PMID: PMC2971662
55. Chandran K, McCracken J, **Peterson FC**, Antholine WE, Volkman BF, Kalyanaraman B. Oxidation of histidine residues in copper-zinc superoxide dismutase by bicarbonate-stimulated peroxidase and thiol oxidase activities: pulse EPR and NMR studies. *Biochemistry*. 2010 Dec 21;49(50):10616-22. PMID: PMC3501376
56. Crepin T, Peterson F, Haertlein M, Jensen D, Wang C, Cusack S, Kron M. A hybrid structural model of the complete *Brugia malayi* cytoplasmic asparaginyl-tRNA synthetase. *J Mol Biol*. 2011 Jan 28;405(4):1056-69.
57. Ziarek JJ, **Peterson FC**, Lytle BL, Volkman BF. Binding site identification and structure determination of protein-ligand complexes by NMR a semiautomated approach. *Methods Enzymol*. 2011;493:241-75. PMID: PMC3635485
58. Paddock C, Lytle BL, **Peterson FC**, Holyst T, Newman PJ, Volkman BF, Newman DK. Residues within a lipid-associated segment of the PECAM-1 cytoplasmic domain are susceptible to inducible, sequential phosphorylation. *Blood*. 2011 Jun 02;117(22):6012-23. PMID: PMC3112045
59. Ziarek JJ, Heroux MS, Veldkamp CT, **Peterson FC**, Volkman BF. Sulfotyrosine recognition as marker for druggable sites in the extracellular space. *Int J Mol Sci*. 2011;12(6):3740-56. PMID: PMC3131587
60. Tyler RC, Murray NJ, **Peterson FC**, Volkman BF. Native-state interconversion of a metamorphic protein requires global unfolding. *Biochemistry*. 2011 Aug 23;50(33):7077-9. PMID: PMC3160782
61. **Peterson FC**, Chen D, Lytle BL, Rossi MN, Ahel I, Denu JM, Volkman BF. Orphan macrodomain protein (human C6orf130) is an O-acyl-ADP-ribose deacylase: solution structure and catalytic properties. *J Biol Chem*. 2011 Oct 14;286(41):35955-35965. PMID: PMC3195580
62. Love M, Sandberg JL, Ziarek JJ, Gerarden KP, Rode RR, Jensen DR, McCaslin DR, **Peterson FC**, Veldkamp CT. Solution structure of CCL21 and identification of a putative CCR7 binding site. *Biochemistry*. 2012 Jan 24;51(3):733-5. PMID: PMC3272885
63. Mosquana A, **Peterson FC**, Park SY, Lozano-Juste J, Volkman BF, Cutler SR. Potent and selective activation of abscisic acid receptors in vivo by mutational stabilization of their agonist-bound conformation. *Proc Natl Acad Sci U S A*. 2011 Dec 20;108(51):20838-43. PMID: PMC3251050
64. Whitney DS, **Peterson FC**, Volkman BF. A conformational switch in the CRIB-PDZ module of Par-6. *Structure*. 2011 Nov 09;19(11):1711-22. PMID: PMC3217198
65. DiCostanzo AC, Thompson JR, **Peterson FC**, Volkman BF, Ramirez-Alvarado M. Tyrosine residues mediate fibril formation in a dynamic light chain dimer interface. *J Biol Chem*. 2012 Aug 10;287(33):27997-8006. PMID: PMC3431636
66. Elgin ES, Sökmen N, **Peterson FC**, Volkman BF, Da? C, Haas AL. E2-binding surface on Uba3 ?-grasp domain undergoes a conformational transition. *Proteins*. 2012 Oct;80(10):2482-7.
67. Ducett JK, **Peterson FC**, Hoover LA, Prunuske AJ, Volkman BF, Craig EA. Unfolding of the C-terminal domain of the J-protein Zuo1 releases autoinhibition and activates Pdr1-dependent transcription. *J Mol Biol*. 2013 Jan 09;425(1):19-31. PMID: PMC3534791
68. Tyler RC, Wieting JC, **Peterson FC**, Volkman BF. Electrostatic optimization of the conformational energy landscape in a metamorphic protein. *Biochemistry*. 2012 Nov 13;51(45):9067-75. PMID: PMC3567213
69. Gerarden KP, Fuchs AM, Koch JM, Mueller MM, Graupner DR, O'Rourke JT, Frost CD, Heinen HA, Lackner ER, Schoeller SJ, House PG, **Peterson FC**, Veldkamp CT. Solution structure of the cold-shock-like protein from *Rickettsia rickettsii*. *Acta Crystallogr Sect F Struct Biol Cryst Commun*. 2012 Nov 01;68(Pt 11):1284-8. PMID: PMC3515365
70. Ziarek JJ, Liu Y, Smith E, Zhang G, **Peterson FC**, Chen J, Yu Y, Chen Y, Volkman BF, Li R. Fragment-

- based optimization of small molecule CXCL12 inhibitors for antagonizing the CXCL12/CXCR4 interaction. *Curr Top Med Chem*. 2012;12(24):2727-40. PMID: PMC3839847
71. Olson LJ, Orsi R, Alculumbre SG, **Peterson FC**, Stigliano ID, Parodi AJ, D'Alessio C, Dahms NM. Structure of the lectin mannose 6-phosphate receptor homology (MRH) domain of glucosidase II, an enzyme that regulates glycoprotein folding quality control in the endoplasmic reticulum. *J Biol Chem*. 2013 Jun 07;288(23):16460-16475. PMID: PMC3675582
  72. Anderson DM, Feix JB, Monroe AL, **Peterson FC**, Volkman BF, Haas AL, Frank DW. Identification of the major ubiquitin-binding domain of the *Pseudomonas aeruginosa* ExoU A2 phospholipase. *J Biol Chem*. 2013 Sep 13;288(37):26741-52. PMID: PMC3772220
  73. Starenki D, Singh NK, Jensen DR, **Peterson FC**, Park JI. Recombinant leukemia inhibitory factor suppresses human medullary thyroid carcinoma cell line xenografts in mice. *Cancer Lett*. 2013 Oct 01;339(1):144-51. PMID: PMC3771534
  74. Okamoto M, **Peterson FC**, Defries A, Park SY, Endo A, Nambara E, Volkman BF, Cutler SR. Activation of dimeric ABA receptors elicits guard cell closure, ABA-regulated gene expression, and drought tolerance. *Proc Natl Acad Sci U S A*. 2013 Jul 16;110(29):12132-7. PMID: PMC3718107
  75. Whitney DS, **Peterson FC**, Kovrigin EL, Volkman BF. Allosteric activation of the Par-6 PDZ via a partial unfolding transition. *J Am Chem Soc*. 2013 Jun 26;135(25):9377-83. PMID: PMC3736553
  76. Love M, Sandberg JL, Ziarek JJ, Gerarden KP, Rode RR, Jensen DR, McCaslin DR, **Peterson FC**, Veldkamp CT. Solution structure of CCL21 and identification of a putative CCR7 binding site. *Biochemistry*. 2012 Jan 24;51(3):733-5. PMID: PMC3272885
  77. Casper SK, Schoeller SJ, Zgoba DM, Phillips AJ, Morien TJ, Chaffee GR, Sackett PC, **Peterson FC**, Crossgrove K, Veldkamp CT. The solution structure of the forkhead box-O DNA binding domain of *Brugia malayi* DAF-16a. *Proteins*. 2014 Dec;82(12):3490-6. PMID: PMC4809524
  78. Smith EW, Liu Y, Getschman AE, **Peterson FC**, Ziarek JJ, Li R, Volkman BF, Chen Y. Structural analysis of a novel small molecule ligand bound to the CXCL12 chemokine. *J Med Chem*. 2014 Nov 26;57(22):9693-9. PMID: PMC4255719
  79. Olson LJ, Jensen DR, Volkman BF, Kim JJ, **Peterson FC**, Gundry RL, Dahms NM. Bacterial expression of the phosphodiester-binding site of the cation-independent mannose 6-phosphate receptor for crystallographic and NMR studies. *Protein Expr Purif*. 2015 Jul;111:91-7. PMID: PMC4417374
  80. Park SY, **Peterson FC**, Mosquna A, Yao J, Volkman BF, Cutler SR. Agrochemical control of plant water use using engineered abscisic acid receptors. *Nature*. 2015 Apr 23;520(7548):545-8.
  81. Olson LJ, Castonguay AC, Lasanajak Y, **Peterson FC**, Cummings RD, Smith DF, Dahms NM. Identification of a fourth mannose 6-phosphate binding site in the cation-independent mannose 6-phosphate receptor. *Glycobiology*. 2015 Jun;25(6):591-606. PMID: PMC4410830
  82. Thomas MA, Buelow BJ, Nevins AM, Jones SE, **Peterson FC**, Gundry RL, Grayson MH, Volkman BF. Structure-function analysis of CCL28 in the development of post-viral asthma. *J Biol Chem*. 2015 Feb 13;290(7):4528-36. PMID: PMC4326855
  83. Chadwick AC, Jensen DR, **Peterson FC**, Volkman BF, Sahoo D. Expression, purification and reconstitution of the C-terminal transmembrane domain of scavenger receptor BI into detergent micelles for NMR analysis. *Protein Expr Purif*. 2015 Mar;107:35-42. PMID: PMC4270826
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1. USPTO Non-provisional application 12/380,308 filed 2/26/2009, Engineered CXCL 12 Alpha Locked Dimer Polypeptide Brian F. Volkman, Christopher T. Veldkamp, Francis C. Peterson, Thomas Sakmar, and Christoph Seibert; MCW #1548; Q&B #650053.00133. Major provisions allowed; final issue pending.
2. Invention disclosure, filed July 26, 2006, Procedure for on-column refolding of recombinant chemokines from protein inclusion bodies Brian F. Volkman, Francis C. Peterson and Christopher T. Veldkamp.
3. Invention disclosure, filed June 20, 2006, Plasmid DNA for expression of mutant human chemokine XCL1/Ltn-V21C/V59C Brian F. Volkman and Francis C. Peterson.

### **Database, Video, or Other Research/Clinical Contributions**

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