Curriculum Vitae

Name:	David A. Ostrov
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Education

1982-1986	Bachelor of Arts and Sciences Department of Environmental, Population and Organism Biology University of Colorado, Boulder Boulder, CO
1985-1988	Research technician in the laboratory of Andrei Augustin, MD, National Jewish Center for Immunology and Respiratory Research, Denver, CO
1988-1995	PhD, Graduation date: August 5, 1995 Department of Biological Structure University of Washington School of Medicine Seattle, WA
1995-2001	Postdoctoral fellow in the laboratory of Stanley G. Nathenson, MD, Department of Microbiology and Immunology Albert Einstein College of Medicine Bronx, NY
2002-2009	Assistant Professor Department of Pathology, Immunology and Laboratory Medicine University of Florida College of Medicine Gainesville, FL 32610
2009-present	Associate Professor Department of Pathology, Immunology and Laboratory Medicine University of Florida College of Medicine Gainesville, FL 32610

Awards, Societies and Committees

1994	Chairman's Travel Grant
2001	Travel award, 11th International Congress of Immunology, American Association of Immunologists.
2001-present	American Crystallographic Association
2001-present	American Association of Immunologists
2006-present	Chair of Preclinical Drug Development Working Group, University of Florida College of Medicine
2006-present	Scientific Advisory Committee Executive Committee, GCRC, University of Florida College of Medicine
2008-present	Member, Network for Translational Research Committee, National Cancer Institute, Stanford University
2009-present	Drug Discovery Program Leader, UF Health Cancer Center, University of Florida College of Medicine

Teaching

2002-present	General Pathology & Immunology 6601 (for second year medical students)
2002-present	Advanced Immunology GMS6030 (for Ph.D., veterinary, medical and dental students)
2002-2006	Ph.D mentor for Jose Antonio Hernandez Prada, Ph.D, in the Biochemistry concentration of the Interdisciplinary Program, University of Florida College of Medicine
2005-2009	Molecular Pharmacology GMS5653 (for Ph.D, veterinary, medical and dental students)
2007-2011	Mentor to Lidia Kulemina, Ph.D, Department of Chemistry, University of Florida
2007-present	Mentor to undergraduate students: Andrew Magis, Kate Bailey, Gabrielle Maura, Pablo Plasencia, David Wilding, Daniel McElroy, Jamal Green, Natasha Woodruff, Kathryn Johnston

Publications

1. **Ostrov, D. A.**, J. Krieger, J. Sidney, A. Sette, and P. Concannon. 1993. T cell receptor antagonism mediated by interaction between T cell receptor junctional residues and peptide antigen analogues. *J Immunol 150:4277.PMID: 8482836*

2. Hansen, T., G. Balendiran, J. Solheim, **D. A. Ostrov**, and S. Nathenson. 2000. Structural features of MHC class I molecules that might facilitate alternative pathways of presentation. *Immunol Today 21:83. PMID: 10652466*

3. Melian, A., G. F. Watts, A. Shamshiev, G. De Libero, A. Clatworthy, M. Vincent, M. B. Brenner, S. Behar, K. Niazi, R. L. Modlin, S. Almo, **D. Ostrov**, S. G. Nathenson, and S. A.

Porcelli. 2000. Molecular recognition of human CD1b antigen complexes: evidence for a common pattern of interaction with αβ TCRs. *J Immunol 165:4494. PMID: 11035089*

4. **Ostrov, D. A.**, W. Shi, J. C. Schwartz, S. C. Almo, and S. G. Nathenson. 2000. Structure of murine CTLA-4 and its role in modulating T cell responsiveness. *Science 290:816. PMID: 11052947*

5. Zhang, W., S. Honda, F. Wang, T. P. DiLorenzo, A. M. Kalergis, **D. A. Ostrov**, and S. G. Nathenson. 2001. Immunobiological analysis of TCR single-chain transgenic mice reveals new possibilities for interaction between CDR3 α and an antigenic peptide bound to MHC class I. *J Immunol 167:4396. PMID:* 11591764

6. **Ostrov, D. A.**, M. M. Roden, W. Shi, E. Palmieri, G. J. Christianson, L. Mendoza, G. Villaflor, D. Tilley, N. Shastri, H. Grey, S. C. Almo, D. Roopenian, and S. G. Nathenson. 2002. How H13 histocompatibility peptides differing by a single methyl group and lacking conventional MHC binding anchor motifs determine self-nonself discrimination. *J Immunol 168:283. PMID: 11751972*

7. Becker, M. N., W. B. Greenleaf, **D. A. Ostrov**, and R. W. Moyer. 2004. Amsacta moorei entomopoxvirus expresses an active superoxide dismutase. *J Virol 78:10265. PMCID: PM516379*

8. Eason, D. D., J. P. Cannon, R. N. Haire, J. P. Rast, **D. A. Ostrov**, and G. W. Litman. 2004. Mechanisms of antigen receptor evolution. *Semin Immunol 16:215. PMID: 15522620*

9. Hernandez Prada, J. A., R. N. Haire, J. P. Cannon, G. W. Litman, and **D. A. Ostrov**. 2004. Crystallization and preliminary X-ray analysis of VCBP3 from Branchiostoma floridae. *Acta Crystallogr D Biol Crystallogr 60:2022. PMID: 15502315*

10. Huentelman, M. J., J. Zubcevic, J. A. Hernandez Prada, X. Xiao, D. S. Dimitrov, M. K. Raizada, and **D. A. Ostrov**. 2004. Structure-based discovery of a novel angiotensin-converting enzyme 2 inhibitor. *Hypertension 44:903. PMID: 15492138*

11. Sandberg, E. M., D. VonDerLinden, **D. A. Ostrov**, P. P. Sayeski. 2004. Jak2 tyrosine kinase residues glutamic acid 1024 and arginine 1113 form a hydrogen bond interaction that is essential for Jak-STAT signal transduction. *Mol. Cell. Biochem. 265:161-169. PMID: 15543946*

12. Santori, F. R., K. Holmberg, **D. Ostrov**, N. R. Gascoigne, and S. Vukmanovic. 2004. Distinct footprints of TCR engagement with highly homologous ligands. *J Immunol 172:7466. PMID: 15187125*

13. Yoder, J. A., R. T. Litman, M. G. Mueller, S. Desai, K. P. Dobrinski, J. S. Montgomery, M. P. Buzzeo, T. Ota, C. T. Amemiya, N. S. Trede, S. Wei, J. Y. Djeu, S. Humphray, K. Jekosch, J. A. Hernandez Prada, **D. A. Ostrov**, and G. W. Litman. 2004. Resolution of the novel immune-type receptor gene cluster in zebrafish. *Proc Natl Acad Sci U S A 101:15706. PMCID: PMC524843*

14. Sandberg, E. M., D. VonDerLinden, **D. A. Ostrov**, P. P. Sayeski. 2005. Identification of cyclohexane-1,2,3,4,5,6-hexabromo- as a small molecule inhibitor of Jak2 tyrosine kinase autophophorylation. *J. Med. Chem., 265:161-9.*

15. Hernández Prada, J. A., R. N. Haire, M. Allaire, J. Jakoncic, V. Stojanoff, J. P. Cannon, G. W. Litman, **D. A. Ostrov.** 2006. Ancient Evolutionary Origin of Diversified Variable Regions Revealed by Crystal Structures of an Amphioxus VCBP. *Nature Immunol., 7(8) 875-882. PMID: 16799561*

16. Litman, G. W., J. P. Cannon, , L. J. Dishaw, R. N. Haire, D. D. Eason, J. A Yoder, J. A. Hernandez Prada, **D. A. Ostrov.** 2006. Immunoglobulin variable regions in molecules exhibiting characteristics of innate and adaptive immune receptors. *Immunologic Research: Perspectives in Immunology. PMID: 17917037*

17. Godeny, M. D., J. Sayyah, D. Vonderflinded, M. Johns, **D. A. Ostrov,** J. Caldwell-Busby, Sayeski, P. P. 2007. The N-terminal SH2 domain of the tyrosine phosphatase, SHP-2, is essential for Jak2-dependent signaling via the angiotensin II type AT(1) receptor. *Cell Signal. 19:600-9. PMID: 17027227*

18. **Ostrov, D. A**., C. L. Barnes, L. E. Smith, S. Binns, T. M. Brusko, A. C. Brown, P. S. Quint, S. A. Litherland, D. C. Roopenian, K. A. Iczkowski. 2007. Characterization of HKE2: an ancient antigen encoded in the major histocompatibility complex. *Tissue Antigens, 69:181-8. PMID: 17257322*

19. Ferreira A.J., J.A. Hernández Prada, **D.A. Ostrov**, M.K. Raizada. 2008. Cardiovascular protection by angiotensin-converting enzyme 2: a new paradigm. *Future Cardiol. 4(2):175-182. PMID: 19804294*

20. McDoom, I., X. Ma, **D. A. Ostrov,** and Sayeski, P.P. 2008. Identification of Tyrosine 972 as a Novel Site of Jak2 Tyrosine Kinase Autophosphorylation and its Role in Jak2 Activation. *Biochemistry. 12;47(32):8326-34. PMID: 18636744*

21. **Ostrov, D. A.,** J. A. Hernández Prada, P. E. Corsino, K. A. Finton, N. Le, and T. C. Rowe. 2007. Discovery of Novel DNA Gyrase Inhibitors by High Throughput Virtual Screening. *Antimicrob. Agents Chemother. 51(10):3688-98. PMCID: PMC2043263*

22. **Ostrov, D. A.**, J. A. Hernández Prada, R. N. Haire, J. P. Cannon, A. T. Magis, K. Bailey, and G. W. Litman. 2007. Crystallization and X-ray diffraction analysis of a novel immune-type receptor from Ictalurus punctatus and phasing by selenium anomalous dispersion methods. *Acta Crystallogr. Sect F Struct. Biol. Cryst. Commun. Dec 1;63(Pt 12):1035-7. PMCID: PMC2043263*

23. Hernandez Prada, J. A., S. L. Madden, **D. A. Ostrov**, and M. A. Hernandez. 2008. Molecular modeling optimization of anticoagulant pyridine derivatives. *J. Mol. Graph Model. Jun;26 (8):1365-9. PMID: 18372200*

24. Noorwez, S. M., **D. A. Ostrov,** J. H. McDowell, M. P. Krebs, and S. Kaushal. 2008. A Combinatorial High-Throughput Screening Method for Small Molecule Pharmacological Chaperones of Misfolded Rhodopsin. *Invest Ophthalmol Vis Sci. 49(7)3224-3230. PMID: 18378578*

25. Hernández Prada J. A., A. J. Ferreira, M. J. Katovich, V. Shenoy, Y. Qi, R. A. Santos, R. K. Castellano, A. J. Lampkins, V. Gubala, **D. A. Ostrov,** and M. K. Raizada. 2008. Structure-based identification of small-molecule angiotensin-converting enzyme 2 activators as novel antihypertensive agents. *Hypertension. 2008 May;51(5):1312-7. PMID: 18391097*

26. Magis, A. T., K. M. Bailey, E. V. Kurenova, J. A. Hernández Prada, W. G. Cance, and **D. A. Ostrov,** 2008. Crystallization of the focal adhesion kinase targeting (FAT) domain in a primitive orthorhombic space group. *Acta Crystallogr Sect F Struct Biol Cryst Commun. Jun 1;64(Pt 6):564-6. PMCID: PMC2496861*

27. Cannon J. P., R. N. Haire, A. T. Magis, D. D. Eason, K. N. Winfrey, J. A. Hernandez Prada, K. M. Bailey, J. Jakoncic, G. W. Litman and **D. A. Ostrov**. 2008. A bony fish immunological receptor of the NITR multigene family mediates allogeneic recognition. *Immunity. 29(2):228-37. PMCID: PMC2603606*

28. McDoom I., X. Ma, A. Kirabo, K.Y. Lee, **D.A. Ostrov,** and P.P. Sayeski. 2008. Identification of tyrosine 972 as a novel site of Jak2 tyrosine kinase phosphorylation and its role in Jak2 activation. *Biochemistry. 47(32):8326-34. PMID: 18363744*

29. Sayyah J., A. Magis, **D.A. Ostrov**, R.W. Allan, R.C. Braylan, and P.P. Sayeski. 2008. Z3, a novel Jak2 tyrosine kinase small-molecule inhibitor that suppresses Jak2-mediated pathologic cell growth. *Mol Cancer Ther. 7(8):2308-18. PMCID: PMC2479271*

30. Golubovskaya V.M., C. Nyberg, M. Zheng, F. Kweh, A. Magis, **D. Ostrov**, and W.G. Cance. 2008. A Small Molecule Inhibitor, 1,2,4,5-Benzenetetraamine Tetrahydrochloride, Targeting the Y397 Site of Focal Adhesion Kinase Decreases Tumor Growth. *J Med. Chem. 51(23):7405-7416. PMCID: PMC2662449*

31. Ferreira A.J., V. Shenoy, Y. Yamazato, S. Sriramula, J. Francis, L. Yuan, R.K. Castellano, **D.A. Ostrov,** S.P. Oh, M.J. Katovich, M.K. Raizada. 2009. Evidence for Angiotensin Converting Enzyme 2 as a Therapeutic Target for the Prevention of Pulmonary Hypertension. *Am J Respir Crit Care Med. Jun 1;179(11):1048-5. PMID: 19246717*

32. Holliday L.S., **D.A. Ostrov,** T.J. Wronski, C. Dolce. 2009. Osteoclast polarization and orthodontic tooth movement. *Orthod Craniofac Res. 12(2):105-12. Review. PMID: 19419453*

33. **Ostrov D.A.**, A.T. Magis, T.J. Wronski, E.K. Chan, E.J. Toro, R.E. Donatelli, K. Sajek, I.N. Haroun, M.I. Nagib, A. Piedrahita, A. Harris, L.S. Holliday. 2009. Identification of Enoxacin as an Inhibitor of Osteoclast Formation and Bone Resorption by Structure-Based Virtual Screening. *J Med. Chem. 52(16):5144–5151. PMID: 19630402*

34. Kurenova E.V., D.L. Hunt, D. He, A.T. Magis, **D.A. Ostrov**, W.G. Cance. 2009. Small molecule chloropyramine hydrochloride (C4) targets the binding site of focal adhesion kinase and vascular endothelial growth factor receptor 3 and suppresses breast cancer growth in vivo. *J Med Chem. 52(15):4716-24. PMID: 19610651*

35. Hochwald S.N., C. Nyberg, M. Zheng, D. Zheng, C. Wood, N.A. Massoll, A. Magis, **D. Ostrov**, W.G. Cance, V.M. Golubovskaya. 2009. A novel small molecule inhibitor of FAK decreases growth of human pancreatic cancer. *Cell Cycle. 8(15):2435-43. Epub 2009 Aug 1. PMID: 19571674*

36. Zheng D., E. Kurenova, D. Ucar, V. Golubovskaya, A. Magis, **D. Ostrov**, W.G. Cance, S.N. Hochwald. 2009. Targeting of the protein interaction site between FAK and IGF-1R. *Biochem Biophys Res Commun. 388(2):301-5. Epub 2009 Aug 5. PMID: 19664602*

37. Corsino P., N. Horenstein, **D. Ostrov**, T. Rowe, M. Law, A. Barrett, G. Aslanidi, W.D. Cress, B. Law. 2009. A novel class of cyclin-dependent kinase inhibitors identified by molecular docking act through a unique mechanism. *J Biol. Chem. 284(43):29945-29955. PMID: 19710018*

38. McCormack W., **D. Ostrov**. 2009. Immunology Team-Based Learning: Receptor Diversity & Antigen Presentation. MedEdPORTAL.

39. Jaiswal A.S., S. Banerjee, H. Panda, C.D. Bulkin, T. Izumi, F.H. Sarkar, **D.A. Ostrov**, S. Narayan. 2009. A Novel Inhibitor of DNA Polymerase {beta} Enhances the Ability of Temozolomide to Impair the Growth of Colon Cancer Cells. *Mol Cancer Res. 7(12):1973-1983. Epub 2009 Dec. 8. PMID: 19996303*

40. Cannon J.P., L.J. Dishaw, R.N. Haire, R.T. Litman, **D.A. Ostrov,** G.W. Litman. 2010. Recognition of additional roles for immunoglobulin domains in immune function. *Semin. Immunol. 22(1):17-24. Epub 2009 Dec. 8. PMID: 20004115*

41. Graham WV, Magis AT, Bailey KM, Turner JR, **Ostrov D.A.** 2011. Crystallization and preliminary X-ray analysis of the human long myosin light-chain kinase 1-specific domain IgCAM3. *Acta Crystallogr Sect F Struct Biol Cryst Commun. 2011 Feb 1;67(Pt 2):221-3. Epub 2011 Jan 22. PMID: 21301090*

42. Jaiswal AS, Banerjee S, Aneja R, Sarkar FH, **Ostrov D.A.**, Narayan S. DNA polymerase β as a novel target for chemotherapeutic intervention of colorectal cancer. *PLoS One. 2011 Feb 2;6(2):e16691. PMID: 21311763*

43. Xu Z, Vallurupalli A, Fuhrman C, **Ostrov D**, Morel L. A New Zealand Black-derived locus suppresses chronic graft-versus-host disease and autoantibody production through nonlymphoid bone marrow-derived cells. *J Immunol. 2011 Apr 1;186(7):4130-9. Epub 2011 Feb 18. PMID: 21335485*

44. Hamazaki T, Leung WY, Cain BD, **Ostrov D.A.**, Thorsness PE, Terada N. Functional expression of human adenine nucleotide translocase 4 in Saccharomyces cerevisiae. *PLoS One. 2011 Apr 21;6(4):e19250. PMID: 21532989.*

45. Pillai P, Desai S, Patel R, Sajan M, Farese R, **Ostrov D**, Acevedo-Duncan M. A novel PKC-ι inhibitor abrogates cell proliferation and induces apoptosis in neuroblastoma. *Int J Biochem Cell Biol. 2011 May;43(5):784-94. PMID: 21315177*

46. Shroads AL, Langaee T, Coats BS, Kurtz TL, Bullock JR, Weithorn D, Gong Y, Wagner DA, **Ostrov D.A.**, Johnson JA, Stacpoole PW. Human Polymorphisms in the Glutathione Transferase Zeta 1/Maleylacetoacetate Isomerase Gene Influence the Toxicokinetics of Dichloroacetate. *J Clin Pharmacol. 2011 Jun 3. PMID: 21642471*

47. Ucar DA, Cox A, He DH, **Ostrov D.A**., Kurenova E, Hochwald SN. A Noel small molecule inhibitor of FAK and IGF-1R protein interactions decreases growth of human esophageal carcinoma. *Anticancer Agents Med Chem. 2011 Jun 27. [Epub ahead of print] PMID: 21707510*

48. Ucar DA, Kurenova EV, Garrett TJ, Cance WG, Nyberg CD, Cox AL, Massoll NA, **Ostrov D.A.,** Lawrence NJ, Sebti SM, Hochwald SN. Disruption of the protein interaction between FAK and IGF-R1 inhibits melanoma tumor growth. *Carcinogenesis. 2011 Jul 19. [Epub ahead of print] PMID: 21666222*

49. Kulemina LV, **Ostrov D.A.** Prediction of off-target effects on angiotensin-converting enzyme. *J Biomol Screen. 2011 Sep;16(8):878-85. Epub 2011 Aug 22.PMID: 21859683 [PubMed - indexed for MEDLINE]*

50. **Ostrov D.A.**, Contag CH. Molecular imaging of inflammation and carcinogenesis. *Cancer Prev Res (Phila). 2011 Oct;4(10):1523-6. PMID: 21972077 [PubMed - indexed for MEDLINE]*

51. Toro EJ, **Ostrov D.A.**, Wronski TJ, Holliday LS. Rational identification of enoxacin as a novel V-ATPase-directed Osteoclast Inhibitor. *Curr Protein Pept Sci. 2011 Oct 25. [Epub ahead of print] PMID: 22044158*

52. Michels AW, **Ostrov D.A**., Zhang L, Nakayama M, Fuse M, McDaniel K, Roep BO, Gottlieb PA, Atkinson MA, Eisenbarth GS. Structure-based selection of small molecules to alter allele-specific MHC class II antigen presentation. *J Immunol. 2011 Dec 1;187(11):5921-30. Epub 2011 Oct 31. PMID: 22043012 [PubMed - indexed for MEDLINE]*

53. Golubovskaya V, Palma NL, Zheng M, Ho B, Magis A, **Ostrov D.A.**, Cance WG. A Small-Molecule Inhibitor, 5'-O-Tritylthymidine, Targets FAK And Mdm-2 Interaction, And Blocks Breast And Colon Tumorigenesis In Vivo. *Anticancer Agents Med Chem. 2012 Jan 31. [Epub ahead of print] PMID: 22292771*

54. Ezgimen M, Lai H, Mueller NH, Lee K, Cuny G, **Ostrov D.A.,** Padmanabhan R. Characterization of the 8-hydroxyquinoline scaffold for inhibitors of West Nile virus serine protease. *Antiviral Res. 2012 Feb 11;94(1):18-24. [Epub ahead of print] PMID: 22343093*

55. Haire RN, Cannon JP, O'Driscoll ML, **Ostrov D.A.**, Mueller MG, Turner PM, Litman RT, Litman GW, Yoder JA. Genomic and functional characterization of the diverse immunoglobulin domain-containing protein (DICP) family. *Genomics. 2012 Feb 21. [Epub ahead of print] PMID: 22386706*

56. Demir A, Oguariri RM, Magis A, **Ostrov D.A**., Imamichi T, Dunn BM.Kinetic characterization of newly discovered inhibitors of various constructs of human T-cell leukemia virus-1 (HTLV-1) protease and their effect on HTLV-1-infected cells. *Antivir Ther. 2012 Mar 20. doi: 10.3851/IMP2090. [Epub ahead of print] PMID: 22436331*

57. Golubovskaya VM, Figel S, Ho BT, Johnson CP, Yemma M, Huang G, Zheng M, Nyberg C, Magis A, **Ostrov D.A**., Gelman IH, Cance WG. A small molecule focal adhesion kinase (FAK) inhibitor, targeting Y397 site: 1-(2-hydroxyethyl) -3, 5, 7-triaza-1-azoniatricyclo [3.3.1.13,7]decane; bromide effectively inhibits FAK autophosphorylation activity and decreases cancer cell viability, clonogenicity and tumor growth in vivo. *Carcinogenesis. 2012 Mar 29. [Epub ahead of print] PMC3334519*

58. Toro EJ, Zuo J, **Ostrov D.A.**, Catalfamo D, Bradaschia-Correa V, Arana-Chavez V, Caridad AR, Neubert JK, Wronski TJ, Wallet SM, Holliday LS. Enoxacin directly inhibits osteoclastogenesis without inducing apoptosis. *J Biol Chem. 2012 Apr 2. [Epub ahead of print PMCID 3366803.*

59. **Ostrov D.A.**, Grant BJ, Pompeu YA, Sidney J, Harndahl M, Southwood S, Oseroff C, Lu S, Jakoncic J, de Oliveira CA, Yang L, Mei H, Shi L, Shabanowitz J, English AM, Wriston A, Lucas A, Phillips E, Mallal S, Grey HM, Sette A, Hunt DF, Buus S, Peters B. Drug hypersensitivity caused by alteration of the MHC-presented self-peptide repertoire. *Proc Natl Acad Sci U S A. 2012 Jun 19;109(25):9959-64. Epub 2012 May 29. PubMed PMID: 22645359; PubMed Central PMCID: PMC3382472.*

60. Ucar DA, Kurenova E, Garrett TJ, Cance WG, Nyberg C, Cox A, Massoll N, **Ostrov D.A.**, Lawrence N, Sebti SM, Zajac-Kaye M, Hochwald SN. Disruption of the protein interaction between FAK and IGF-1R inhibits melanoma tumor growth. *Cell Cycle. 2012 Sep 1;11(17):3250-9. Epub 2012 Aug 16. PubMed PMCID346652.*

61. Arvan P, Pietropaolo M, **Ostrov D. A.**, Rhodes CJ. Islet autoantigens: structure, function, localization, and regulation. *Cold Spring Harb Perspect Med. 2012 Aug 1;2(8). pii: a007658. doi: 10.1101/cshperspect.a007658. PubMed PMCID 3405822.*

62. Pompeu YA, Stewart JD, Mallal S, Phillips E, Peters B, **Ostrov D.A.** The structural basis of HLA-associated drug hypersensitivity syndromes. *Immunol Rev. 2012 Nov;250(1):158-66. doi: 10.1111/j.1600-065X.2012.01163.x. PubMed PMID: 23046128.*

63. Herzog, RW, **Ostrov D.A**. Immunology. A decorated virus cannot hide. *Science. 2012 Nov 9; 338 (6108): 748-9. Doi: 10.1126/science.1230342. PubMed PMID: 23139318.*

64. Martino A.T., Basner-Tschakarjan E., Markusic D.M., Finn J.D. Hinderer C., Zhou S., **Ostrov D.A.**, Srivastava A., Ertl H.C., Terhorst C., High K.A., Mingozzi F., Herzog R.W. Engineered AAV vector minimizes in vivo targeting of transduced hepatocytes by capsid-specific CD8+ T cells. *Blood. 2013 Mar 21; 121 (12): 2224-33. doi: 10.1182/blood-2012-10-460733. Epub 2013 Jan 16. PubMed PMID: 23325831.*

65. Salvador L.A., Taori K., Biggs J.S., Jakoncic J., **Ostrov D.A.**, Paul V.J., Luesch H. Potent elastase inhibitors from cyanobacteria: structural bases and mechanisms mediating cytoprotective and anti-inflammatory effects in bronchial epithelial cells. *J Med Chem. 2013 Fe 14; 56 (3): 1276-90. doi: 10.1021/jm3017305. Epub 2013 Jan 28. PubMed PMID: 23350733.*

66. Golubovskaya, V.M., Ho B., Zheng M., Magis A., **Ostrov D.A.,** Morrison C., Cance W.G. Disruption of focal adhesion kinase and p53 interaction with small molecule compound R2 reactivated p53 and blocked tumor growth. *BMC Cancer. 2013 Jul 11; 13(1):342. PMC3712010.*

67. Leung, W.Y., Hamazaki T., **Ostrov D.A.**, Terada N. Identification of adenine nucleotide translocase 4 inhibitors by molecular docking. *J Mol Graph Model. 2013 Sep;45:173-9. Epub 2013 Sep 4. PubMed PMID 24056384.*

68. Lebedyeva IO, **Ostrov DA**, Neubert J, Steel PJ, Patel K, Sileno SM, Goncalves K, Ibrahim MA, Alamry KA, Katritzky AR., Gabapentin hybrid peptides and bioconjugates. *Bioorg Med Chem. 2014 Feb 15;22(4):1479-86. doi: 10.1016/j.bmc.2013.12.017. Epub 2013 Dec 12. PMID:24468631 [PubMed - in process].*

Invited Lectures

1. **Structures of CTLA-4 (CD152) and the Mouse Minor Histocompatibility Antigen H13: Implications on Graft Tolerance.** Division of Immunology, The Jackson Laboratory, Bar Harbor, ME, September 1, 1999.

2. **Crystal Structures of CTLA-4 (CD152) and the H13 Minor Histocompatibility Antigen: Implications on Graft Rejection.** Biogen, Cambridge, MA, September 24, 1999.

3. **Binding Rules Broken: How to Cope?** Antigen Processing and Presentation Meeting, The Jackson Laboratory, Bar Harbor, ME, October 16-18, 1999.

4. Invited to **co-chair** session **on Class I and Class II MHC Structure**. 11th International Congress of Immunology, Stockholm, Sweden, July 22-28, 2001.

5. Invited to speak at **Second International Symposium on Minor Histocampability Antigens**. May 17-18, 2002, Seattle, WA.

6. **HKE2: A Novel MHC Encoded Protein Expressed in T cells.** ICBR Antibody Applications Workshop, Gainesville, FL, June 25, 2003.

7. **NCIDOCK: A Novel Approach to Structure-Based Lead Discovery.** April 28, 2004, Department of Pathology, Immunology and Laboratory Medicine, UFCOM, Gainesville, FL.

8. **Structural Genomics of the Major Histocompatibility Complex.** June 2, 2004, Department of Microbiology and Immunology, Stanford University School of Medicine, Immunology Seminar Series.

9. **Structure-based Discovery of Novel CDK Inhibitors.** May 12, 2006, FAME 2006, Florida Annual Meeting and Exposition, American Chemical Society, Renaissance Orlando Hotel.

10. **High-throughput structure-based selection of novel MLCK inhibitors.** March 16, 2007, University of Chicago, Physiology Seminar Series.

11. **Visualizing a Missing Link in the Evolution of Adaptive Immunity.** May 14, 2007, University of Virginia, Immunology Seminar Series.

12. Invited to speak at **Plenary Session I**. February 26 – March 3, 2009, 49th Sanibel Symposium, St. Simons Island, GA.

13. **The role of UFSCC in the NCI Network for Translational Research: Optical Imaging in Multimodality Platforms.** January 8, 2010. University of Florida Shands Cancer Center Topics in Cancer Biology Seminar Series.

14. **Structure-Based Modulation of Tumor Metastasis**. March 9, 2010. University of South Florida, St. Petersburg, FL.

15. **Pinpointing Drugs to MHC to X-ray Crystallography and High-throughput Virtual Screening.** May 4, 2010. Barbara Davis Center for Childhood Diabetes, School of Medicine, University of Colorado, Denver.

16. **Safety filters to prevent HLA associated drug responses**. March 19, 2013. NIAID Drug Allergy Workshop. Bethesda, MD.

17. **Something ventured, something gained: the UFSCC Drug Discovery Program**. March 22, 2013. University of Florida Shands Cancer Center Topics in Cancer Biology Seminar Series.

18. **HPC Use in Developing Cancer-Fighting Drugs.** September 10, 2013. "Emerging Trends in HPC" 50th High Performance Computing Forum. Boston, Massachusetts.

19. **HLA and Drug Hypersensitivity**. March 3, 2014. American Academy of Allergy, Asthma, and Immunology Annual Meeting. San Diego, CA.

20. **The HLA molecule as peptide and/or drug binding structure**. April 10, 2014. European Academy of Allergy and Clinical Immunology, 6th Drug Hypersensitivity Meeting. Bern, Switzerland.

BRIEF DESCRIPTION OF JOB DUTIES–

A. Associate Professor-Division IV, Department of Pathology, Immunology and Laboratory Medicine

I am a tenured Associate Professor specializing in immunology and x-ray crystallography. I have two current major responsibilities: research and teaching. I operate a grant-funded laboratory with cutting edge laboratory and computational capabilities. I work directly with one graduate student, one fellow, one technician and 5 undergraduate students. I teach in medical student and graduate student immunology courses. In addition, I am affiliated with

two PhD program concentrations: 1) Biochemistry and Molecular Biology, and 2) Immunology and Microbiology.

B. Education

My teaching activities include teaching medical and dental students in the immunology course taught in the second year (4 sessions and office hours). In addition, I lecture for the PhD graduate students in the Advanced Cellular and Molecular Immunology course (5 lectures, 3 exams and office hours). I lecture on structural aspects of immune recognition, antigen processing and evolution of the immune response. I also lecture on the topic of drug discovery and development in Fundamentals of Cancer Biology and Molecular Pharmacology courses. I serve on 5 graduate thesis committees.

C. Research and Development

My research is focused on structural aspects of immune recognition by T cells. My program is driven by the rationale that understanding structural interactions between the molecules that participate in antigen recognition will provide the basis for translational approaches to prevent diseases associated with HLA genes, including autoimmune diseases and cancer.

Experience studying T cell immunobiology using a diverse set of methods, including X-ray crystallography, provides a unique perspective in addressing important questions regarding the immune system.

My research is focused on three areas: unwanted immune responses to drugs (drug hypersensitivity), prevention of autoimmunity, and modulating immune responses against cancer. Each project is focused on addressing important and timely questions.

Why are HLA genes strongly associated with human diseases? Despite the knowledge that specific HLA alleles are associated with autoimmune diseases such as Type I Diabetes (T1D), this information has never led to a successful clinical strategy to prevent autoimmunity or any other HLA associated pathology. An experimental advancement related to this question began to unfold 12 years ago.

In 2002, it was discovered that the hypersensitivity reaction to the HIV drug abacavir was associated with a specific HLA allele, HLA-B*57:01, demonstrating a strength of association far stronger than most autoimmune diseases. Characterization of this unwanted T cell response in the context of a specific HLA allele suggested a potentially simpler avenue for interrogation of the relationship between HLA alleles and human diseases.

We were able to solve a crystal structure that permitted insight into this phenomenon, which was published in *Proceedings of the National Academy of Science,* 2012, 109(25): 9959-64. In this study, we were able to solve the crystal structure of the drug abacavir bound to HLA-B*57:01. The structure was precisely consistent with previous

immunogenetic and cellular studies, yet also revealed an unexpected finding. We found that the drug interacted with peptide antigen, and speculated that this interaction could alter the repertoire of peptides bound to an HLA molecule. Our team subsequently verified this hypothesis (the altered peptide repertoire model). I was awarded an NIH RO1 grant beginning July 2013 to test if the altered peptide repertoire model is involved in additional drug hypersensitivities and to "correct" drugs such as abacavir by preventing their ability to bind HLA.

Since 1990, I have been attempting to address an important question in the field of autoimmunity. *Can specific HLA alleles be targeted with drugs to prevent autoimmunity in humans?*

This strategy could be developed with comprehension of structural features that distinguish the molecules associated with disease, combined with the means to screen candidates in animal and human systems, *in vitro* and *in vivo*. The late George Eisenbarth at University of Colorado, in Denver, was a strong proponent of targeting the HLA molecule most strongly associated with the development of T1D, HLA-DQ8. We worked closely on this project and successfully applied a structure-based strategy for the selection of drug candidates demonstrated to be biologically active *in vitro* and *in vivo*. We were able to demonstrate delaying the onset of autoimmune diabetes in the NOD mouse. This was accomplished using a compound selected by targeting the antigen binding cleft of the associated MHC molecule (I-A^{g7}). (Structure-based selection of small molecules to alter allele-specific MHC class II antigen presentation. *J Immunol.* 2011 Dec 1;187(11):5921-30.)

We were awarded an Innovative Grant from the JDRF to extend these studies into humans (Prevention of T1D by Targeting the Trimolecular Complex). We successfully identified several compounds capable of inhibiting antigen presentation by HLA-DQ8. One such compound is an FDA approved drug (approved for another purpose) known to be safe at the concentration inhibiting DQ8 presentation. We are currently using this drug in a clinical trial to treat new onset diabetic patients (trial led by Aaron Michels, MD, UC Denver, http://clinicaltrials.gov/show/NCT01883804).

My interest in targeting drugs to HLA molecules, and understanding the resulting functional consequences, led to a new question about personalized cancer treatment. *Can immunity in cancer patients be boosted using drugs that bind HLA molecules?*

Our experience in studying small molecule drug/HLA interactions demonstrates that there are several distinct functional effects on T cell recognition: 1) drugs may bind HLA and block antigen presentation (inhibitory), 2) drugs may bind HLA in a manner that alters the repertoire of bound peptides (stimulatory), and 3) drugs may stabilize the peptide/HLA interaction (stimulatory). Cancer patients, particularly elderly and/or immunosuppressed, would be expected to benefit from enhancement of the $CD8^+$ cytotoxic T cell population with drugs that interact with class I HLA in stimulatory binding modes. Drugs that enhance

class I HLA restricted antigen presentation would be expected to stimulate $CD8^+$ cytotoxic T cells, including those specific for tumor-associated (or tumor-specific) antigen peptides.

As an initial step towards addressing the question, we are targeting HLA-A2 using cellular assays (flow cytometry including tetramer analysis) to measure effects on T cell responsiveness to tumor-associated peptides presented by glioblastoma.

To extend this strategy beyond HLA-A2, I designed a strategy to select safe FDA approved drugs based on *any* patient HLA type. This strategy is currently being tested on HLA-B, the most polymorphic gene in the human genome. We used a library of 1,217 FDA approved drugs and screened them for their abilities to interact with 2,175 antigen binding cleft structures (using crystal structures and models) representing nearly all HLA-B alleles expressed in humans.

We are currently testing these drugs for their *in vitro* abilities to stimulate T cell responses in the context of the HLA-B alleles expressed by the cancer (IRB approved). We are testing this strategy using liver cancer, brain cancer, and acute myeloid leukemia cell lines. Since the toxicology profiles are known for these drugs, my future goal is to test this method in clinical trials where the safe drugs are combined with standard (or other experimental) treatments and the outcome is measured.

AREAS OF SPECIALIZATION–

Immunology and X-ray crystallography

My participation in the fields of immunology and structural biology since 1986 has enabled me to utilize a diverse set of techniques to study cellular, genetic, biochemical and atomic aspects of T cell immunobiology. A brief synopsis of the techniques I teach is as follows:

A. As an undergraduate and technician at National Jewish Center for Immunology and Respiratory Research:
   1. Mouse immunizations, surgery, T cell recognition assays
   2. Antibody generation and biochemical purification

B. As a graduate student in the University of Washington College of Medicine:
   1. Electron Microscopy
   2. Molecular cloning, DNA sequencing, generation of retrovirus transfection system for T cell antigen receptor.
   3. FACS

C. As a post-doctoral fellow at the Albert Einstein College of Medicine:
   1. Large scale protein production and purification
   2. Protein crystallization

3. X-ray data collection (at the National Synchrotron Light Source, Brookhaven National Lab)
4. Structural analysis and generation of publication quality molecular graphics

D. As a faculty member at UF College of Medicine:
1. Techniques in structure-based drug design
2. High throughput strategies in protein purification and crystallization
3. Atomic resolution structure determination and analysis

Experience carrying out these techniques enables me to realistically design a broad range of experiments and to teach students in a hands-on manner.

TEACHING, ADVISING AND/OR INSTRUCTIONAL ACCOMPLISHMENTS-

2008-2014 Fundamentals of Cancer Biology GMS6065 (1 lecture)

2007-2014 Advanced Immunology GMS6030, (5 lectures, proctored 3 exams)

2007-2014 Molecular Pharmacology GMS6563, (1 lecture)

2007-General Pathology & Immunology 6601, Immunology Discussion Group (4 sessions)

2006-General Pathology & Immunology 6601, Immunology Discussion Group (4 sessions)

2006- Advanced Immunology GMS6030, (5 lectures, proctored 3 exams)

2006-Molecular Pharmacology GMS6563, (1 lecture)

2005-General Pathology & Immunology 6601, Immunology Discussion Group (4 sessions)

2005- Advanced Immunology GMS6030, (5 lectures, proctored 3 exams)

2004-General Pathology & Immunology 6601, Immunology Discussion Group (4 sessions)

2004- Advanced Immunology GMS6030, (5 lectures, proctored 3 exams)

2003-General Pathology & Immunology 6601, Immunology Discussion Group (4 sessions)

2003- Advanced Immunology GMS6030, (4 lectures)

2002-General Pathology & Immunology 6601, Immunology Discussion Group (4 sessions)

From 2002-2006, I was the graduate student thesis supervisor for Jose A. Hernandez Prada, an extremely productive IDP student focusing on x-ray crystallography of novel immune receptors. Under my supervision, Jose graduated with several first author publications and a Ph.D within 4 years. In addition, I serve on 5 other graduate thesis committees (one as chair).

RESEARCH NARRATIVE–

1. Introduction –

My research is focused on achieving a specific goal: to develop novel therapeutic agents that improve the quality of life of individuals suffering from human disease. The overall strategy is to utilize structural information to provide the basis for identification of lead compounds capable of modifying biological responses. There is a well-established paradigm for optimization of lead compounds into therapeutic agents and I aim to translate our efforts into clinical trials as rapidly as possible.

2. Basic Questions –

Experience studying T cell immunobiology and x-ray crystallography amongst the most active scientific environments in the country (Denver, Seattle, New York) enables me to pursue my longstanding interest in the most fundamental question in immunology: how does the immune system discriminate between that which should be destroyed from normal cells and tissues? This basic question is central to understanding transplant rejection, autoimmunity and immunity to infectious agents and tumors. We utilize x-ray crystallography to answer specific questions regarding the structural basis for immune recognition.

3. Clinical Goals –

My goal is to utilize our structure-based strategy to modify adaptive immune responses for therapeutic purposes: 1) boosting immune responses to tumor antigens and viral pathogens, and 2) inhibiting responses to auto- and allo-antigens. To achieve this daunting task as rapidly as possible, I developed a novel structure-based technique to discover lead compounds and have applied it successfully to several medically relevant target proteins. My technique relies on academic and government resources and may be a more rapid and economical approach to drug discovery than industrial efforts that rely on commercially available resources. Moreover, the logistics are established for conducting productive in-house collaborations to facilitate clinical trials.

4. Techniques: X-ray Crystallography –

In my laboratory we utilize x-ray crystallography and computational techniques to answer both basic questions regarding immune recognition and therapeutically motivated questions concerning ligand/receptor interactions. We express, purify and crystallize target proteins and have an active relationship with the National Synchrotron Light Source, Brookhaven National Lab, where we collect x-ray data. In addition, we have an active and successful collaboration with the Southeast Collaboratory for Structural Genomics in which they utilize a high throughput robotic crystallization screen to optimize conditions for our target proteins. Our efforts resulted in solving the crystal structure of an immune response protein, VCBP3, to 1.15 Å, a level of resolution never before achieved for a domain of this type (the type utilized in adaptive immune responses), permitting new insight into the atomic basis for its domain organization and stability.

5. Techniques: Structure-based Drug Design -

The structure-based drug design method that I developed was generated using the molecular docking algorithm implemented in the DOCK program package (developed by UCSF, for whom we are alpha/beta testers and collaborators) and free access to 139,735 small molecules available from the National Cancer Institute Developmental Therapeutics Program. We are continually improving and refining our novel computational technique to discover lead compounds. Currently, an experiment in which approximately 139,735 small molecules are docked into a structural pocket and ranked to identify candidate lead compounds requires approximately 8 hours by running parallel processing jobs on a high-performance supercomputer at the University of Florida. We routinely obtain lead compounds for our functional *in vitro* activity assays and for collaborating investigators internally and externally.

In the past 10 years, more than 75 proteins have been used as the basis for screening compound libraries followed by functional testing. We initially accomplished relatively straightforward tasks (such as identifying enzyme inhibitors), then succeeded in more challenging problems (identifying enzyme activators and protein-protein interaction inhibitors). The majority of these projects were focused on development of new cancer therapeutic agents.

6. Summary -

In summary, my research is aimed at answering specific questions regarding basic aspects of immune recognition and the development of novel therapeutic agents in as rapid a manner as possible. Based on my high caliber scientific environment, that includes basic and clinical researchers in close proximity, I am enthusiastic about this realistic opportunity to impact human disease.

CREATIVE WORKS OR ACTIVITIES –

My creative interests are manifested in two work-related activities: 1) generation of high quality images depicting molecular interactions and 2) development of novel computational techniques and applications in the field of structure-based drug design.

Molecular graphics

My continually improving ability to generate publication quality molecular graphics seems to be appreciated by peer reviewed journals. My molecular graphic images were displayed on the covers of *Immunological Reviews,* 2012*, Immunity*, August 2008, *Hypertension*, May 2008, *Hypertension,* December 2004. I have also made images for the covers of the books Contemporary Enzyme Kinetics and Mechanism: Reliable Lab Solutions, 2009 and Multiple Myeloma and Related Serum Protein Disorders, 2012.

In addition, an increasing number of investigators in the College of Medicine have been requesting that I answer specific structural questions and generate publication quality graphic images for grants, peer reviewed publications and presentations.

Structure-based Drug Design

I developed a novel computational technique that can be applied to a wide variety of biomedically relevant target proteins. This method utilizes the atomic coordinates for the target protein as the basis for large-scale molecular docking experiments in which large chemical libraries of molecules are positioned into specific structural features. Each compound is scored for its estimated binding energy to the target, and then ranked to generate a list of candidate lead compounds. We routinely screen a set of 139,735 compounds available through the NCI Developmental Therapeutics Program and request the top ten ranked small molecules for functional testing in the College of Medicine. This strategy has been applied successfully to targets relevant to diabetes, cancer, infectious diseases and hypertension.

COLLABORATIONS, PATENTS AND COPYRIGHTS –

Patent application number	Description	Published
20090075932	METHOD OF SELECTIVELY INHIBITING PKCiota - PKCiota inhibitor 1H-imidazole-4-carboxamide, 5-amino-1-[2,3-dihydroxy-4-[(phosphonooxy)methyl]cyclopentyl]-,[1R-(1α,2β,3β,4α)], (ICA-1), targets a unique sequence (amino acid residues 469-475) in the catalytic domain of PKCiota and inhibits PKCiota activity. The data shows suprising and unexpected ability of ICA-1 to selectively inhibit the proliferation of cells	03-19-2009

	that overexpress PKCiota.	
20090239850	Kinase protein binding inhibitors - The invention relates to protein binding inhibitor compounds and methods of identifying and using them. The invention further relates to pharmaceutical compositions and methods for treating a variety of diseases and disorders, including cell proliferative disorders, especially cancer.	09-24-2009
20090286808	Opsin Stabilizing Compounds and Methods of Use - The present invention provides compositions and methods useful in the treatment and/or prevention of ophthalmic conditions and diseases, such as retinitis pigmentosa, that are dependent upon or related to misfolded opsin proteins in vivo. In addition, screening assays for agents useful in such treatment methods are described.	11-19-2009
20100035940	Cyclin Dependent Kinase Inhibitors - The invention relates to cyclin dependent kinase inhibitor compounds and methods of identifying and using them. The invention further relates to pharmaceutical compositions for treating cell proliferative disorders, especially cancer.	02-11-2010
20100076018	Compounds and Methods for Treatment of Alpha-1 Antitrypsin Deficiency - The invention features compositions and methods that are useful for treating or preventing AAT deficiency and associated conditions. In addition, the invention provides methods for identifying compounds useful for treatment of AAT deficiency and associated conditions.	03-25-2010
20100190702	Compositions and Methods of Treating Neoplasia - The invention features compositions and methods that are useful for the treatment of neoplasia by reducing base excision repair (BER). Such compositions are useful, for example, for enhancing the efficacy of known chemotherapeutics, such as DNA alkylating agents. In particular, the invention features agents that mimic the interaction of APC with pol-β. Such agents reduce the activity of long patch- and single nucleotide-base extension repair pathways.	07-29-2010
20100285012	METHODS AND COMPOSITIONS FOR THE TREATMENT OF CANCERS AND PATHOGENIC INFECTIONS - The subject application provides small compounds that are able to suppress autophagy in various cells. These compounds are useful in augmenting the existing treatments of various cancers and microbial/parasitic infections. Thus, the subject application also provides methods of treating various types of cancers and microbial/parasitic infections. Also provided by the subject application are methods of suppressing the expansion of autophagosomes within cells or individuals and inhibiting the lipidation of autophagy-related protein 8 (Atg8).	11-11-2010
20110065664	KINASE PROTEIN BINDING INHIBITORS - The invention relates to phosphorylation inhibitor compounds and methods of identifying and using them. The invention further relates to pharmaceutical compositions and methods for treating cell proliferative disorders, especially cancer.	03-17-2011
20110110958	COMPOSITIONS AND METHODS FOR THE TREATMENT OF NEOPLASIA - The invention provides compositions and methods for the treatment of neoplasias that are cytotoxic to neoplastic cells or that modulate JAZ expression, subcellular localization, or biological activity.	05-12-2011

20110152206	THERAPEUTIC COMBINATIONS FOR USE IN NEOPLASIA - The invention features compositions and methods that are useful for the treatment of neoplasia (e.g., breast cancer) by increasing DNA damage and reducing base excision repair (BER).	06-23-2011

RESEARCH SUPPORT–

ACTIVE

Bankhead-Coley Program (Hromas, PI) 10/01/2013-09/30/2015
FL Department of Health
"Targeting histone methylation for triple-negative breast cancer therapy"
This project will generate novel and specific Metnase inhibitors and test whether they can overcome resistance of triple negative breast cancers to chemotherapy

JDRF (Ostrov, PI) 08/31/2014-08/31/2016
"Prevention of T1D by Targeting the Trimolecular Complex"
The objective is to identify a set of drugs or drug-like molecules that inhibit the process that leads to destruction of insulin producing cells in the pancreas. The process to be inhibited is recognition by T cells.

R01 AI103348 (Ostrov, PI) 06/30/2014-06/30/2017
NIH/NIAID
"The Structural and Functional basis of HLA-Associated Drug Hypersensitivity"
The goals of this proposal are to see if systemic adverse drug reactions are due to the formation of an altered peptide repertoire that triggers T cell immunity in HLA associated drug hypersensitivity.

University of Florida Foundation (Ostrov, PI) 07/01/2008 – Present
UFSCC Drug Discovery

Bankhead-Coley Program (Hochwald, PI) 07/01/2010-06/30/2015
FL Department of Health
"Design, synthesis and evaluation of novel selective inhibitors of FAK and IGF-1R function in pancreatic cancer"
Our studies will identify novel compounds that will prevent the protein interaction of FAK and IGF-1R.

PAST

R01 DE013883 (Brady) 01/10/2004–12/31/2009
NIH/NIAID
"Immunomodulation by Exogenous Streptococcal Antibodies"

This study investigates the changes in mucosal and serum antibody levels, specificity, isotype, and biological activity which result from coating the oral pathogen Streptococcus mutans with anti-P1 monoclonal antibodies prior to immunization, as well as evaluating the underlying mechanisms of immunomodulation.

UF Division of Sponsored Research (Ostrov) 05/01/2008-04/01/2009
"Development of Novel Anabolic Approach for the Treatment of Osteoporosis"

FL Board of Governors (Ostrov, PI) 12/06/2008-12/15/2009
"A Combined Personalized Immunotherapeutic and Chemotherapeutic Strategy to Treat Cancer"
The goal of this proposal is to generate improved methods for treating cancers using a combination of targeted chemotherapy and generation of antigen specific adaptive immune responses based on Human Leukocyte Antigen expression.

AHA#0755529B (Ostrov) 07/01/2007-07/01/2010
American Heart Association
"Structure-based Discovery of Allosteric Activators of Human Angiotensin Converting Enzyme 2"
The goal of this study is to develop a novel strategy to treat hypertension and cardiovascular disease based on enhancing the activity of ACE2. A unique structure-based drug design approach is applied to ACE2 and selected drug-like small molecules are assayed for biochemical activity and by x-ray crystallographic studies.

Alpha One Foundation (Liu, PI; Ostrov, Co-I) 10/01/2007-09/30/2010
"Therapeutic Small Molecules for Alpha-1 Antitrypsin Deficiency

Otsuka America Pharmaceuticals (Terada, PI; Ostrov, Co-I) 04/01/2008-03/31/2010
"Small compounds"
Identification of small molecules to treat alpha-1 antitrypsin deficiency

FL Board of Governors (Hochwald, PI; Ostrov, Co-I) 01/07/2009-01/06/2010
Novel Agents that Target FAK and IGF-1R Binding in Pancreatic Cancer

FL Board of Governors (Rowe, PI**;** Ostrov, Co-I) 02/05/2009-02/04/2011
Development of Nuclear Export Inhibitors to Topsisomerase II alpha for the Treatment of Multiple Myeloma

U01-AI082068 (Padmanabhan, PI; Ostrov, Co-I, PI subcontract) 09/17/2009-08/31/2011
NIH/ARRA
Development of antiretroviral therapeutics for Dengue: Inhibitors of viral protease
The project aims to screen large chemical libraries to identify candidate molecules that will be tested for activity against viral proteases.

U. of Colorado, Denver (Michaels, PI; Ostrov, Co-I, PI subcontract) 06/01/2010-05/31/2013
JDRF – Career Development Award
Structure Guided Small Molecule Targeting of Anti-Insulin Primary Trimolecular Complexes

5U54 CA136465-03 (Contag, PI; Ostrov, PI subcontract) 09/01/2008-08/31/2013
NIH/Stanford University
Multimodality Imaging of GI Cancers for Diagnosis and Directed Therapy
The goal of the study is to develop improved imaging methods utilized in diagnosis and targeted therapies to treat malignant gastrointestinal conditions.

U01-HD060474 (Terada, PI; Ostrov, Co-I) 02/15/2009–01/31/2014
NIH, NICHD
Developing Male Contraceptives by Targeting ANT4
The study proposes to identify small molecules selectively targeting ANT4 by using molecular docking approach. The identified molecules may serve as lead compounds for developing novel male contraceptives.