BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Ward W. Smith	Protein Crystallographer
eRA COMMONS USER NAME	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
University of Illinois, Urbana	B.S.	1971	Chemistry
University of Michigan, Ann Arbor, MI	Ph.D	1976	Biological Chemistry

Positions and Honors:

1985-1987 Research Specialist, Protein Engineering Consortium, Monsanto Corporation
1987-1992 Senior Scientist, Agouron Pharmaceuticals
1992-1994 Principal Scientist, Agouron Pharmaceuticals
1994-1999 Assistant Director, SmithKline Beecham Pharmaceuticals
1999-2001 Associate Director, SmithKline Beecham Pharmaceuticals
2000-2001 Acting Director, Department of Structural Biology, SmithKline Beecham Pharmaceuticals
2001-2003 Associate Director, GlaxoSmithKline Pharmaceuticals
2003-present Scientist, Biosciences Division, Argonne National Laboratory
2003-present Protein Crystallographer, GM/CA CAT, Advanced Photon Source, Argonne National Laboratory

1996-1998 Teasurer, Industrial Macromolecular Crystallography Association
2004-2007 Member, American Crystallographic Association Standing Committee on Data, Standards & Computing.
2004-2007 Member, Advanced Photon Source User Organization Steering Committee.

Selected peer-reviewed publications

1. Abdel-Meguid, S.S., Smith, W.W., Shieh, H.S., Dayringer, H.E., Violand, B.N. and Bentle, L.A. (1987). The Structure of a Genetically Engineered Variant of Porcine Growth Hormone. *Proc. Nat. Acad. Sci*. USA 84, 6434-6437.
2. Chapman, M.S., Suh, S.W., Cascio, D., Smith, W.W., and Eisenberg, D. (1987). Sliding-Layer Conformational Change Limited by the Quaternary Structure of Plant RuBisCO. *Nature* Vol. 329, No. 6137, 354-356.
3. Eisenberg, D., Almassy, R.J., Janson, C.A., Chapman, M.S., Suh, S.W., Cascio, D. and Smith, W.W. (1987). Some Evolutionary Relationships of the Primary Biological Catalysts Glutamine Synthetase and RuBisCO. *Cold Spring Harbor Symposium on Quantitative Biology*, Volume LII. 483-490.
4. Matthews, D.A., Janson, C.A., and Smith, W.W. (1990). Inhibitor Binding to Thymidylate Synthase Is Mediated by Different Structural Determinants than those that Promote Tight Binding to Dihydrofolate Reductase. In Crystallographic and Modelling Methods in Molecular Design (Bugg, C.E. and Ealick, S.E., ed.), 1-8, Springer-Verlag, New York. (Curtius, H-Ch., Ghisla, S. and Blau, N., ed.) Walter de Gruyter, Berlin.
5. Matthews, D.A., Villafranca, J.E., Janson, C.A., Smith, W.W., Welsh, K., and Freer, S. (1990). Stereochemical Mechanism of Action for Thymidylate Synthase Based on the X-ray Structure of the Covalent Inhibitory Ternary Complex with 5-Fluoro-2'- deoxyuridylate and 5, 10-Methylenetetrahydrofolate. J. Mol. Biol. 214, 937-948.
6. Appelt K, Bacquet R..J., Bartlett C.A., Booth C.L., Freer S.T., Fuhry M.A., Gehring M.R., Herrmann S.M, Howland E.F., Janson C.A., et. al. (1991). Design of Enzyme Inhibitors Using Iterative Protein Crystallographic Analysis. J. Medicinal Chemistry, 37, 1925-1934.
7. Reich, SH; Fuhry, M.A.; Nguyen, D.; Pino, M.J.; Welsh, K.M.; Webber, S.; Janson, C.A.; Jordan, S.R.; Matthews, D.A., Smith, W.W. et. al. (1992). Design and Synthesis of Novel 6, 7-Imidazotetrahydroquinoline Inhibitors of Thymidylate Synthase Using Iterative Protein Crystal Structure Analysis. J. Medicinal Chemistry 35, 847-858

8. Matthews, D.A., Smith, W.W., Ferre, R.A. Condon, B., Budahazi, G., Sisson, W., Villafranca, J.E., Janson, C.A., McElroy, H.E., Gribskov, C.L., and Worland, S. (1994). Structure of Human Rhinovirus 3C Protease Reveals a Trypsin-Like Polypeptide Fold, an RNA Binding Site, and a Motif for Processing 3C-D Junctions. Cell 77, 761-771.
9. Browner, M.F., Smith, W.W., Castelhano, A.L. (1995). Matrilysin-Inhibitor Complexes: Common Themes Among Metalloproteases. Biochemistry 34, 6602-6610
10. Varney, M.D., Palmer, C.L., Deal, J.G., Webber, S., Welsh, K.M., Bartlett, C.A., Morse, C.A., Smith, W.W., Janson, C.A. (1995). Synthesis and Biological Evaluation of Novel 2, 6-Diaminobenz[cd]indole Inhibitors of Thymidylate Synthase Using the Protein Structure as a Guide. J. Medicinal Chemistry. 38, 1892-1903
11. Jones, T.R., Varney, M.D., Webber, S.E., Lewis, K.K., Welsh, K.M., Matthews, D.A., Smith, W.W., Janson, C.A., Bacquet, R.J., Howland, E.F., Booth, C.L.J., Hermann, S.M., Ward, R.W., White, J., Bartlett, C.A. and Morse, C.A. (1996). Structure-Based Design of Lipophilic Quinazoline Inhibiors of Thymidylate Synthase Containing a Novel Imidazole Bridge. J.Medicinal Chemistry. 39, 904-917
12. Qiu, X., Culp, J.S., DiLella, A.G., Hellmig, B., Hoog, S.S., Janson, C.A., Smith, W.W. and Abdel-Meguid, S.S. (1996). Unique Fold and Active Site in Cytomegalovirus Protease. Nature, 383, 275-279
13. Hoog, S.S., Smith, W.W., Qiu, X., Janson, C.A, Hellmig, B., McQueney, M.S., O'Donnell, K., O'Shannessy, D., DiLella, A.G., Debouck, C., Abdel-Meguid, S.S. (1997). Active Site Cavity of Herpesvirus Proteases Revealed by the Crystal Structure of Herpes Simplex Virus Protease/Inhibitor Complex. Biochemistry 36, 14023-14029.
14. Yamashita, D.S., Smith, W.W., Zhao, B., Janson, C.A., Tomaszek, T. A., Bossard, M.J., Levy, M.A., Oh, H., Carr, T.J., Thompson, S.K., Ijames, C.F., Carr, S.A., Mcqueney, M., D'Alessio, K.J., Amegadzie, B.Y., Hanning, C.R., Abdel-Meguid, S.S., DesJarlais, R.L., Gleason, J.G., Veber, D.F. (1997). Structure and Design of Potent and Selective Cathepsin-K Inhibitors. J. Am. Chem. Soc. 119, 11351-11352.
15. Thompson, S.K., Halbert, S.M., Bossard, M.J., Tomaszek, T.A., Levy, M.A., Zhao, B., Smith, W.W., Abdel-Meguid, S.S., Janson, C.A., D'Alessio, K.J., McQueney, M.S., Amegadzie, BY., Hanning, C.R., DesJarlais, R.L., Briand, J., Sarkar, S.K., Huddleston, M.J., Ijames, C.F., Carr, S.A., Garnes, K.T., Shu, A., Heys, J.R., Bradbeer, J., Zembryki D., Lee-Rykaczewski, L., James, I.E., Lark, M.W., Drake, F.H., Gowen, M., Gleason, J.G. and Veber, D.F. (1997). Design of Potent and Selective Human Cathepsin K Inhibitors That Span the Active Site. Proc. Natl. Acad. Sci. U.S.A. 94, 14249-14254.
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17. Qiu, X., Janson, C.A., Culp, J.S., Richardson, S.B., Debouck, C., Smith, W.W., Abdel-Meguid, S.S. (1997). Crystal Structure of varicella zoster Virus Protease. Proc. Natl. Acad. Sci. U.S.A. 94, 2874-2879.
18. Lalonde, J.M., Zhao, B., Smith, W.W., Janson, C.A., Desjarlais, R.L., Tomaszek, T.A. Carr, T.J., Thompson, S.K., Oh, H., Yamashita, D.S., Veber, D.F. and Abdel-Meguid S.S. (1998). Use of Papain as a Model for the Structure-Based Design of Cathepsin K Inhibitors - Crystal Structures of Two Papain-Inhibitor Complexes Demonstrate Binding to S'-Subsites. J. Med. Chem. 41, 4567-4576.
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21. Smith, W.W. and Abdel-Meguid, S.S. (1999). Cathepsin K as a target for the treatment of osteoporosis. Exp. Opin. Ther. Smith, W.W. and Abdel-Meguid, S.S. (1999). Cathepsin K as a target for the treatment of osteoporosis. Exp. Opin. Ther. Patents 9(6), 683-694.
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26. Elkins PA, Ho YS, Smith, WW, Janson, CA, D'Alessio KJ, McQueney, MS, Cummings, MD, Romanic, AM. (2002). Structure of the C-terminally truncated human ProMMP9, a gelatin-binding matrix metalloproteinase. Acta

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27. Gellibert, F, Woolven, J, Fouchet, M-H, Mathews, N, Goodland, H, Lovegrove, V, Laroze, A, Nguyen, V-L, Sautet, S, Wang, R, Janson, C, Smith, W, Krysa, G, Boullay, V, de Gouville, A-C, Huet, S, Hartley, D. (2004). Identification of 1, 5-Naphthyridine Derivatives as a Novel Series of Potent and Selective TGF-beta Type I Receptor Inhibitors. J. Med. Chem. 47, 4494-4506.
28. Maneesh, K.Y., Gerdts, C.J., Sanishvili, R., Smith, W.W., Roach, L.S., Ismagilov, R.F., Kuhn, P and Stevens, R.C. (2005). In situ Data Collection and Structure Refinement from Microcapillary Protein Crystallization. J Appl. Cryst. 38, 900-905.
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30. Yamashita, D.S., Marquis, R.W., Xie, R., Nidamarthy, S., Oh, H. J., Jeong, J.U., Erhard, K.F., Ward, K.W., Roethke, T.W., Smith, B.R., Cheng, H-Y., Geng, X., Lin, F., Offen, P.H., Wang, B., Nevins, N., Head, M.S., Haltiwanger, R.C., Narducci Sarjeant, A., A., Liable-Sands, L.M. , Zhao, B., Smith, W.W., Janson, C.A., Gao, E., Tomaszek, T., McQueney, M., James, I.E., Gress, C.J., Zembryki, D.L., Lark, M.W., Veber, D.F. (2006). Structure Activity Relationships of 5-, 6-, and 7-Methyl-Substituted Azepan-3-one Cathepsin K Inhibitors. J. Med. Chem. 49, 1597-1612.

Patents

Abdel-Meguid, S.S., Carr, T.J., DesJarlais, R.L., Gallagher, T.F., Halbert, S.M., Janson, C.A., Marquis, R.W., Oh, H.-J., Ru, Y., Smith, W.W., Thompson, S.K., Veber, D.F., Yamashita, D.S., Yen, J.H. and Zhao, B. Method of Inhibiting Cathepsin K. (1997), WO 97/16177.

Abdel-Meguid, S.S., Qiu, X., Smith, W.W., Janson, C.A., Hoog, S.S., Culp, J. and Debouck, C. Herpes Proteases, Compositions Capable of Binding them and Uses Thereof. (1997), EP 807687 A2.

Smith, W.W., Abdel-Meguid, S.S., Janson, C.A., Lalonde J. and Zhao, B. Method Of Inhibiting Cathepsin K - Use of the Proenzyme Structure, (1997), US 60/052831.

Thompson, S., Marino, J.P., Ryan, M.D., Janson, C.J. and Smith, W.W. Method of Inhibiting MetAP2, (2001) P51260P.

Meetings

Co-organizer, Session entitled "Integration of Structure Solution with Data Collection and Beamline Operation" 2005 Annual Meeting of the American Crystallographic Association, Orlando, Fl, May 28 - June 2, 2005.

Co-organizer, Session entitled "Structure Based Drug Design", 2002 Annual Meeting of the American Crystallographic Association, San Antonio, Texas Louis, Mo., May 25 - 30, 2002.

Invited Presentations

"Structure-Based Design of Inhibitors of Human Cathepsin K - The Role of Structural Biology in the Modern Pharmaceutical Industry" , Ward W. Smith. Illinois Institute of Technology Life Sciences Colloquium, Illinois Institute of Technology, Chicago, Illinois, November 29, 2004

"High Throughput Crystallography in the Pharmaceutical Industry", Ward W. Smith. Workshop on High-Throughput Macromolecular Crystallography, Twelfth Users Meeting for the APS, Argonne National Laboratory, Argonne, Illinois, April 29, 2003 .

"Design of Inhibitors of Human Osteoclast Cathepsin K", Ward W. Smith. Biosciences Division Seminar Series, Argonne National Laboratory, Argonne, Illinois,May 5, 2003.

Application of Synchrotron Research to Therapeutic Drug Targets in the Pharmaceutical Industry. ACS Meeting, Boston, 2002.

Structure-Based Design of Novel Inhibitors of Human Osteoclast Cathepsin K. Plexxikon Inc, November, 2001.

Drugs or Inhibitors? Structure-Based Design of Inhibitors Cathepsin K. Abbott Research Labs, June, 2000.

Structure-Based Drug Design of Inhibitors of Thymidylate Synthase. Park-Davis Research Laboratories, November, 1999.

Structure-Based Design of Novel Inhibitors of Human Osteoclast Cathepsin K. Biopharmaceuticals Research Division Seminar, Harlow, UK. December 1997.

New Insights into the Design of Inhibitors of Human Osteoclast Cathepsin K based on the Structures of Inhibitor Complexes. Symposium on Rational Drug Design - American Crystallographic Assn. Meeting, July, 1997.

The Structures of the Human Herpes Virus Proteases, New Targets for Antiviral Therapy. 6th International Cytomegalovirus Workshop, October, 1996.

Rational Approach to Inhibitor Design: Thymidylate Synthase. Wyeth-Ayerst Research Division. July, 1994