Curriculum Vitae: Michael S. Chapman

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CURRENT POSITION

Professor of Biochemistry & Molecular Biology, Oregon Health & Science University
Richard T. Jones chair in Structural Biology, (2006 –).

EDUCATION

Ph.D.	Biochemistry	University of California, Los Angeles	1983-7
M.Sc.	Crystallography	University of London, Birkbeck College	1982-3
B.Sc.(Hons)	Cell/Molecular Biol.	Univ. of London, Kings College	1979-82
A.K.C.	Divinity	University of London, Kings College	1979-82

PAST EMPLOYMENT

Professor	Department of Chemistry & Biochemistry, Florida State University (FSU)	2003-06
Director	Center of Excellence in Biomolecular Computer Modeling & Simulation, FSU	2000-06
Courtesy faculty appointments:	Department of Biomedical Science (College of Medicine); Departments of Biological Science and of Physics (College of Arts & Sciences), FSU	1997 - 2006
Associate Professor	Department of Chemistry & Biochemistry, FSU	1998-03
Associate Director	Institute of Molecular Biophysics, FSU	1998-01
Assistant Professor	Department of Chemistry, FSU	1993-8
Post-doctoral Assoc.	Department of Biological Science, Purdue University	1988-93
Teaching Associate	Program in Computing, UCLA	1984-5
Teaching Assist/Fell.	Department of Chemistry & Biochemistry, UCLA	1983-5
Research Assistant	National Institute of Research into Dairying (UK)	1979

HONORS & AWARDS

Fellow, American Association for the Advancement of Science	2005-
President's Developing Scholar Award, Florida State University	2000
Council on Research & Creativity, First Year Assistant Professor Award	1994
Science & Engineering Research Council Studentship (UK)	1982-3
British Petroleum Education Trust Scholarship	1979-82

TEACHING

Course Title	**Level**	**Credit hours**	**Role**	**Enroll-ment**	**Comment**	
Enzyme Structure & Function:	Grad.	3	Lecturer	20 - 30	Redesigned	1994 – 2005 (annual)
Macromolecular Crystallography:	Grad.	3	Lecturer	10-22	New course	1993 – 2006 (biannual)
General Chemistry:	U-Grad.	3	Lecturer	150		1995
General Biochemistry II:	U-Grad.	3	Lecturer	75 - 140		1999, 2005
Medical Biochemistry:	Medical student	3	Lecturer & case-based learning facilitator	40	New course 1 of 6 instructors	2002, 2003
Bioinformatics:	Grad / U-grad.	2	Coordinator, 2003, Lecturer	12	New course 1 of 6 instructors	2002, Sp '03, Fa '03
Molecular Biophysics and Experimental Bioinformatics*:*	Grad	3	Lecturer	9	CON668 - Team of 9 instructors	Sp 2007, 2008

ADMINISTRATION

Florida State University:

Director, Center of Excellence: Biomolecular Computer Modeling & Simulation (2000 - 2006)

Co-director, Program in Computational Biology, School of Computational Science & Information Technology (1999 - 2002)

Associate Director, Institute of Molecular Biophysics (1998 – 2001)

UNIVERSITY SERVICE

Oregon Health & Science University Committees:

Program in Molecular & Cellular Biosciences: - Graduate Admissions Committee (2007-)

Oregon Health & Science Departmental Committees:

Promotions & Tenure Committee (2007-)

Florida State University Committees:

School of Computational Science and Information Technology:
Executive committee (1995 – 2001)
Curriculum committee (1995 – 2003)
Chair, Faculty search committees (4) (2000 – 2004)

Provost's Faculty Travel Grant Committee (1998 - 2001).

College Teaching Fellowship / Dissertation Fellowship Committee (1999 - 2000).

Florida State University Departmental Service

Advisor, Biochemistry Major (1998 – 9).

Committee Chair – Endowed Chair search in Biocomputational Chem. (1999 – '03).
– Faculty search (1998-9).

Committee Member – Faculty search (1995-6, 2004-5).
– Faculty addition (1997 – 2006).
– Faculty merit evaluation (1997).
– Computing (1994-7).
– Capital Recourses & Space (1994-9; 2003-2005).
– Seminar (1993-5; 1996-7; 2003)
– Undergraduate curriculum & advising (1998-9).

Florida State University – Inst. Molecular Biophysics & Structural Biology Program

Associate Director (1998 – 2001).

Committee Chair – Director search (2) (1997 & 2004-5).
– Curriculum (1996 – 2000)
– Symposium (1999 – 2001)
– Faculty search (2 recruitments, 2001 - 2004)

Committee Member – Executive (1994-6, 1997-2001, 2003-2006)
– Faculty search (8 recruitments, 1993 – 2005)
– Building (1993-7)
– Seminar (1993-5)
– Biosafety (1996 – 2001)

PROFESSIONAL ACTIVITIES

Conference organization:

Conference Chair (2002) Gordon Research Conference: Diffraction Methods in Structural Biology.

Symposium Chair (2001) 4th FSU Structural Biology Symposium: Computational Structural Biology – From Simulation to Experiment and Back

Conference Vice Chair (2000) Gordon Research Conference: Diffraction Methods in Molecular Biology.

Session Chair: American Society of Virology Conference (1998)

Committees:

MBC – Molecular Biology Consortium - Runs beamline 4.2.2 at the Berkeley synchrotron for a consortium of universities – *Executive committee* (2006 -)

SERCAT - Southeast Regional Collaborative Access Team ($16M development of synchrotron data collection facilities at the DOE Advanced Photon Source, Argonne Natl. Lab.)

Executive committee (1999 – 2006)

Operations Management (1999 – 2002);

Funding (2000 – 2006); *Science* (2004 - 2006);

Delegate, Science Coalition: Meetings w/ Congressional delegation, Washington, 2000

Journal Referee

Acta Crystallographica;
Biochimica & Biophysica Acta;
Crit. Rev. Biochemistry & Molecular Biology
Advances in Microbiology;
Biophysical Journal;
FEBS letters,

Journal of Biological Chemistry,	J. Crystal Growth;
Journal of Molecular Biology,	Journal of Virology,
Nature Structural Biology;	Journal of Structural Biology,
Protein Science,	PLoS Biology;
Proteins: Structure, Function & Genetics	Proceedings of the National Academy, USA;
Trends in Microbiology	Structure

Judge: Capital Regional Science Fair, Tallahassee, 2006.

Grant Review Panels

National Institutes of Health:

Chair, Special Emphasis Panel: Structural Genomics	(2001, 2006)
Chair, Special Panels (NCRR):	(2001, 2002, 2003)
Member, Macromolecular Structure & Function Panel C:	(2005 - 2008)
Member, Special Panels:	(2000, 2001, 2004)
Bioengineering (BST), 2 panels	(2007)
Temporary member, Virology A Panel	(2004)
Consultant, Neurological Sciences III & Experimental Virology panels	(1997)

Ad Hoc Grant Review:

Agence National de Recherches, France,	2008
DoD/EPSCoR (Dept. Defense / So. Carolina),	2004
National Science Foundation,	2000 - 2003
Welcome Foundation / UK Government,	2000
Petroleum Research Fund,	1996
International Human Frontier Science Program,	1994-5

Lecturer

International Union of Crystallography Macromolecular Computing School (1996)

NATO Advanced Study Institute on Direct Methods for Solving Macromolecular Structures (1997)

RESEARCH FUNDING

Agency / ID	Title	Role	Dates	Total award
FSU CRC (planning)	Improved Diagnosis of Recent Heart Attacks; Heart Muscle Energy Buffering and Enzyme Specificity: Atomic Structure-function Studies of Phosphagen Kinases	PI	11/95 – 11/96	$11,934 (inc. match)
Am Cancer Soc. F95-FSU-2	Towards Anti-tumor Viruses I: Crystallization of Adenoassociated Virus	PI	2/96 – 1/97	$22,000
FSU CRC (planning)	Adeno Associated Virus: Atomic Structure Leading to Improved vectors for Gene Therapy	PI	11/96 – 11/97	$12,062 (inc. match)
NSF BIR94-18741	Application of Real-Space Refinement to Macro-molecular Structure Analysis	PI	04/95-03/98	$325,981
FSU COFRS	Atomic Interactions in Macromolecules	PI	5-8/98	$ 7,778
Am. Heart Assoc., FL 9701728	Phosphagen Kinase Structure & Function: Immunoassay for the Diagnosis of Heart Attack	PI	7/97 – 6/99	$90,997
FSU Res. Fdn.	President's Developing Scholar Award	PI	4/00 – 4/01	$10,000 (inc.match)
Am. Heart Assoc.	Predoctoral fellowship (Smita Bhatia): The Atomic and Immunogenic Structure of Adenoassociated Virus - Improving a Gene Therapy Vector	Faculty PI	7/99 – 6/01	$31,000
NSF / RTG	Structural Biology of Macromolecular Assemblies (P.I.s = Lee Makowski & Piotr Fajer.)	1 of 5 authors	6/96 – 9/02	$1,523,242
Natl. Science Foundation DBI-9808098	Macromolecular structure: crystallographic structure determination / refinement using atomic electron density functions, and optimization of appropriate force fields for analysis (Incl. Research Opportunity Award Supplement).	PI	10/98 - 9/02	$331,432

Am Cancer Soc. RPG-99-356-01-GMC	Towards an Anti-Cancer Virus: Structure & Function of Adenoassociated Virus	PI	7/99 – 12/02	$375,000
NSF / National High Magnetic Field Lab. IHRP 5024-641-22 project 5045	Functional Dynamics of Arginine Kinase: Development of TROSY-based spectroscopy (PI = Jack Skalicky)	PI (Co-PI 1/03 - 2/04)	01/03 – 12/05	$142,059
Natl. Inst. Health. R01-GM55837	Phosphagen Kinase Structure, Mechanism and Specificity	PI	3/98 – 2/04	$789,524
Am. Heart Assoc. 0315101B	Pre-doctoral fellowship (Jeff Bush): Lombricine kinase structure & specificity	Faculty PI	7/03 – 6/05	$38,000
FSURF Cornerstone	Center of Excellence: Biomolecular Computer Modeling & Simulation *(Funding primarily start-up of new faculty)*	PI	4/00 – 6/07	$995,107
National Institutes of Health P01 GM04676	Membrane Protein Structural Genomics: *M. tuberculosis*. (Consortium PI = T.A. Cross)	Sub-project PI	9/01 – 8/06	$8,100,000 ($663,167 subproject)
National Institutes of Health R01 GM066875	Structure-Function of AAV – a Viral Gene Therapy Vector	PI	2/03 – 7/07	$1,061,497
Am. Heart Assoc. 0415212B	Pre-doctoral fellowship (Eliza Ruben): A Computational Study of Arginine Kinase Catalysis	Faculty PI	7/04 – 6/07	$61,770
Am. Heart Assoc. 0415115B	Pre-doctoral fellowship (Omar Davulcu): Functional Dynamics of Arginine Kinase	Faculty PI	7/04 – 6/06	$40,000
National Institutes of Health S10 RR020919	Purchase of a large format CCD camera for 3-D EM	Co-PI	4/05 – 3/07	$281,300
Am. Heart Assoc. 0515201B	Pre-doctoral fellowship (Jason O'Donnel): Mapping Adeno-associated virus-2 cellular receptor binding sites using Cryo-Electron Microscopy	Faculty PI	7/05 – 6/07	$42,000
Am. Heart Assoc. 0515203B	Pre-doctoral fellowship (Heather Ongley): Structural Studies of Adeno-associated Virus Serotypes 3b and 6	Faculty PI	7/05 – 6/07	$42,000
National Institutes of Health: GM077643-01	Functional Dynamics during Induced-fit Enzyme Turnover.	PI	2/1/07 – 1/31/11	$1,162,222

National Institutes of Health: GM078538-01	Refinement of Macromolecular Assembly Structure using Electron Microscopy	PI	6/1/07 – 5/31/11	$1,079,225
National Institutes of Health: GM066875-06	Structure-Function of AAV - a Viral Gene Therapy Vector	PI	6/1/07 – 5/31/12	$1,424,152
National Institutes of Health S10 RR024561 (K.A. Taylor)	CryoEM Equipment Enhancements for Florida State University	Key personnel	3/1/08 – 2/28/09	$177,959
National Institutes of Health S10 RR025080 (K.A. Taylor)	Purchase of a FEI Titan Krios for 3-D EM	Key personnel	7/1/08 – 6/30/09	$2,000,000
Oregon Nanosciecne & Microtechnologies Inst. (E. Minot)	Electronic detection of single molecule dynamics	co-PI	1/1/09 – 12/31/09	$229,736; $5,000 sub-project

RESEARCH MENTORING

Name	Program	Dates	Subsequent employment
Genfa Zhou	Ph.D., Molecular Biophysics	1994 – 1998	Post-doc, Harvard U.; now CEO FusoGen Pharmaceuticals, Inc.
Eric Blanc	Post-doc.	1995 - 1998	Res. staff, Global Phasing, Ltd.; then Res. Sci., European Bioinformatics Inst.; Now Lecturer, Bioinformatics, Kings Coll. London.
Jeff Haber	M.S. Biochemistry	1996 – 1999	Law school, U. Michigan; Private practice, Washington, DC.
Qing Xie	Ph.D., Biochemistry	1993 – 2000	Post-doc., Florida State University
Zhi Chen	Ph.D., Physics	1994 - 2000	Post-doc., Brandeis University
Richard Bertram	Post-doc.	1999 – 2001	Assistant Professor; Associate Professor, Dept. Math., Florida State University
Pam Pruett	Post-doc.	1996 – 2002	Staff scientist, Univ. Alabama at Birmingham
Mohammad Yousef	Ph.D., Molecular Biophysics	1998 – 2002	Post-doc., HHMI/Univ. Oregon then Assist Prof. Biophysics, Univ. Cairo (July 2006). Now Texas Tech. U.
Arezki Azzi	Post-doc.	1999 – 2003	Staff Scientist, Laval Univ., Canada
Smita Bhatia	Ph.D., Molecular Biophysics	1997 – 2003	Post-doc., National Research Council, Canada
Andrei Korostelev	Ph.D., Biochemistry	1999 – 2003	Post-doc., FSU; Post-doc. UC Santa Cruz.
Jim Gattis	Ph.D., Biochemistry,	1997– 5/04	Post-doc., National Cancer Inst. ’04-‘08; Principle Scientist, Product development, Glaxo Smith-Kline
Jared Pikus	M.S., Biochemistry	2003-04	Student, Philadelphia College of Osteopathic Medicine, GA
Shawn Clark	Ph.D., Biochemistry	1998– 06	Post-doc. Fellowship awarded, Harvard Univ.
Weishu Bu	Ph.D., Molecular Biophys.	1999– 2/07	Post-doc. Univ. Michigan
Donald “Jeff” Bush	Ph.D., Biochem.	1999– 2/07	Post-doc., Univ. Alabama, Birmingham (2007-8); Chemist-3, Dept. Agriculture & Consumer

			Affairs, State of Florida.
Pankaj Pal	B.S. Biochemistry, Honors thesis	2000–6/07	M.D./Ph.D. Washington Univ., 2007 Marjorie Schooch (φβφ) fellow.
Eliza Ruben	Ph.D., Molecular Biophys.	2000–6/07	Post-doc., Stanford Univ.
Omar Davulcu	Ph.D., Biochemistry	2002–12/07	Post-doc., Oregon Health & Sciences Univ.
Dan Mitchell	Ph.D., Molecular Biophys., 6/08	2000–4/08	NRC Associate, US Army Medical Research Institute of Infectious Diseases
Heather Ongley	M.S. Biochemistry	2003-4/08	
Undergraduate students:		32	1993-2008

Current group: 5 Post-docs.; 3 Grad students; 3 technicians.

PUBLICATIONS

1. Chapman, M. S., Smith, W. W., Suh, S. W., Cascio, D., Howard, A., Hamlin, R., Xuong, N. H. & Eisenberg, D. (1986). Structural studies of RuBisCO from tobacco. ***Phil. Trans. Roy. Soc. Lond.*** B313, 367-378.
2. Chapman, M., Suh, S. W., Cascio, D., Smith, W. W. & Eisenberg, D. (1987). Sliding-layer conformational change limited by quaternary structure in plant RuBisCO. ***Nature*** 329, 354-356.
3. Eisenberg, D., Almassy, R. J., Janson, C. A., Chapman, M. S., Suh, S. W., Cascio, D. & Smith, W. W. (1987). Some Evolutionary Relationships of the Primary Biological Catalysts Glutamine Synthetase and RuBisCO. ***Cold Spr. Har. Symp. Quant. Biol.*** LII, 483-90.
4. Eisenberg, D., Chapman, M. S., Suh, S. W., Cascio, D. & Smith, W. W. (1987). The Path of the Polypeptide Backbone of Ribulose-1,-5-*bis*-phosphate from *Nicotiana tabacum*. In *International Workshop on Ribulose-1,-5-bis-phosphate carboxylase-oxygenase* (Bohnert, H. J. & Jensen, R. G., eds.). University of Arizona Press, Tuscon, AZ.
5. Suh, S. W., Cascio, D., Chapman, M. S. & Eisenberg, D. S. (1987). A Crystal Form of Ribulose-1,-5-*bis*-phosphate Carboxylase--Oxygenase from *Nicotiana tabacum* in the Activated state. ***J. Mol. Biol.*** 197, 363-365.
6. Chapman, M. S., Suh, S. W., Curmi, P. M. G., Cascio, D., Smith, W. W. & Eisenberg, D. S. (1988). Tertiary Structure of Plant RuBisCO: Domains and their Contacts. ***Science*** 241, 71-74.
7. Hajdu, J., Clifton, I. J., Hadfield, A., Howell, P. L., Almo, S. C., Petsko, G. A., Greenhough, T. J., Shrive, A. K., Campbell, J. W., Parson, M., Harrison, S. C., Liddington, R. C., Rossmann, M. G. & Chapman, M. (1989). ***Daresbury Annal.***
8. Kim, S., Smith, T. J., Chapman, M. S., Rossmann, M. G., Pevear, D. C., Dutko, F. J., Felock, P. J., Diana, G. D. & McKinlay, M. A. (1989). Crystal Structure of Human Rhinovirus Serotype 1A (HRV1A). ***J. Mol. Biol.*** 210**,** 91-111.
9. Chapman, M. S., Giranda, V. L. & Rossmann, M. G. (1990). The Structures of Human Rhinovirus and Mengo Virus: Relevance to Function and Drug Design. ***Sem. Virol.*** 1, 413-27.
10. Giranda, V. L., Chapman, M. S. & Rossmann, M. G. (1990). Modelling of the Human Intercellular Adhesion Molecule-1, the Human Rhinovirus Major Group Receptor. ***Proteins*** 7, 227-33.
11. Giranda, V. L., Chapman, M. S., Rossmann, M. G., Staunton, D. & Springer, T. A. (1990). Modelling of the C1 Intercellular Adhesion Molecule 1 (ICAM-1), the Human Rhinovirus Major Group Receptor. In *International Symposium on Positive Strand RNA Viruses*, Vienna, Austria.
12. Chapman, M. S., Minor, I., Rossmann, M. G., Diana, G. D. & Andries, K. (1991). Human rhinovirus 14 complexed with antiviral compound R 61837. ***J. Mol. Biol.*** 217, 455-63.
13. Tsao, J., Chapman, M. S., Agbandje, M., Keller, W., Smith, K., Wu, H., Luo, M., Smith, T. J., Rossmann, M. G., Compans, R. W. & Parrish, C. (1991). The Three-Dimensional Structure of Canine Parvovirus and its Functional Implications. ***Science*** 251, 1456-1464.

14. Chapman, M. S., Tsao, J. & Rossmann, M. G. (1992). *Ab initio* Phase Determination for Spherical Viruses: Parameter Determination for Spherical Shell Models. ***Acta Crystallogr.*** A48, 301-312.
15. Mallamo, J. P., Diana, G. D., Pevear, D. C., Dutko, F. J., Chapman, M. S., Kim, K. H., Minor, I., Oliveira, M. & Rossmann, M. G. (1992). Conformationally Restricted Analogues of Disoxaril: A comparison of the Activity against Human Rhinovirus Type 14 and 1A. ***J. Med. Chem.*** 35, 4690-4695.
16. Tsao, J., Chapman, M. S. & Rossmann, M. G. (1992). *Ab initio* Phase Determination for Viruses with High Symmetry: A Feasibility Study. ***Acta Crystallogr.*** A48, 293-301.
17. Tsao, J., Chapman, M. S., Wu, H., Agbandje, M., Keller, W. & Rossmann, M. G. (1992). Structure Determination of Monoclinic Canine Parvovirus. ***Acta Crystallogr.*** B48, 75-88.
18. Chapman, M. S. (1993). Mapping the Surface Properties of Macromolecules. ***Prot. Sci.*** 2, 459-469.
19. Chapman, M. S., Kim, K. H. & Rossmann, M. G. (1993). Structural Comparisons of Several Antiviral Agents Complexed with Human Rhinoviruses of Different Serotypes. ***Antiviral News*** 1, 53-53.
20. Chapman, M. S. & Rossmann, M. G. (1993). Structure, Sequence and Function Correlations among Parvoviruses. ***Virology*** 194, 491-508.
21. Chapman, M. S. & Rossmann, M. G. (1993). Comparison of Surface Properties of Picornaviruses: Strategies for hiding the Receptor Site form Immune Surveillance. ***Virology*** 195, 745-765.
22. Kim, K. H., Willingmann, P., Gong, Z. X., Kremer, M. J., Chapman, M. S., Minor, I., Oliviera, M. A., Rossmann, M. G., Andries, K., Diana, G. D., Dutko, F. J., McKinlay, M. A. & Pevear, D. C. (1993). A comparison of the anti-rhinoviral drug binding pocket in HRV14 and HRV1A. ***J. Mol. Biol.*** 230, 206-227.
23. Chapman, M. S. (1994). Sequence Similarity Scores and the Inference of Structure/Function Relationships. ***Computer Applications in the Biosciences (CABIOS)*** 10, 111-119.
24. Chapman, M. S. (1995). Restrained Real-Space Macromolecular Atomic Refinement using a New Resolution-Dependent Electron Density Function. ***Acta Crystallogr.*** A51, 69-80.
25. Chapman, M. S. & Rossmann, M. G. (1995). Single-stranded DNA-protein interactions in Canine Parvovirus. ***Structure*** 3, 151-62.
26. Hadfield, A., Hajdu, J., Chapman, M. S. & Rossmann, M. G. (1995). Laue Diffraction Studies of Human Rhinovirus 14 and Canine Parvovirus. ***Acta Crystallogr.*** D51, 859-70.
27. Chapman, M. S. & Rossmann, M. G. (1996). Structural Refinement of the DNA-containing Capsid of Canine Parvovirus using ***RSRef***, a Resolution-Dependent Stereochemically Restrained Real-Space Refinement Method. ***Acta Crystallogr.*** D52, 129-39.
28. Chapman, M. S. (1996). Cross-validation R-factors and their use in comparing the qualities of refined models for the DNA-containing and empty capsids of canine parvovirus. ***Acta Crystallogr.*** D52, 140-2.
29. Xie, Q. & Chapman, M. S. (1996). Canine parvovirus capsid structure, analyzed at 2.9 Å resolution. ***J. Mol. Biol.*** 264, 497-520.
30. Zhou, G., Parthasarathy, G., Somasunduram, T., Ables, A., Roy, L., Strong, S. J., Ellington, W. R. & Chapman, M. S. (1997). Expression, Purification from Inclusion Bodies, and Crystal Characterization of Transition State Analog Complex of Arginine Kinase: a Model for Studying Phosphagen Kinases. ***Prot. Sci.*** 6, 444-9.

31. Blanc, E. & Chapman, M. S. (1997). *RSRef*: Interactive real-space refinement with stereochemical restraints for use during model-building. ***J. Appl. Cryst.*** 30: 566-7.
32. Chapman, M. S. & Blanc, E. (1997). Potential use of Real Space Refinement in Protein Structure Determination. ***Acta Crystallogr.*** D53, 203-6.
33. Chapman, M. S. (1998). Watching "One's" Ps and Qs: Promiscuity, Plasticity and Quasi-Equivalence in a T=1 virus. ***Biophys. J.*** 74: 639-44.
34. Chapman, M. S. (1998). Introduction to the use of non-crystallographic symmetry in phasing. In *Direct Methods for Solving Macromolecular Structures* (Fortier, S., ed.), pp. 99-108. Kluwer, Dortrecht, Netherlands.
35. Chapman, M. S., Blanc, E., Johnson, J. E., McKenna, R., Munshi, S., Rossmann, M. G. & Tsao, J. (1998). Use of non-crystallographic symmetry for ab initio phasing of virus structures. In *Direct Methods for Solving Macromolecular Structures* (Fortier, S., ed.), pp. 433-442. Kluwer, Dortrecht, Netherlands.
36. Blanc, E., Chen, Z. & Chapman, M. S. (1998). Real-Space Refinement Using RSRef. In *Direct Methods for Solving Macromolecular Structures* (Fortier, S., ed.), pp. 513-9. Kluwer, Dortrecht, Netherlands.
37. Zhou, G., Wang, J., Blanc, E. & Chapman, M. S. (1998). Determination of the Relative Precision of Atoms in a Macromolecular Structure. ***Acta Crystallographica*** D54, 391-9.
38. Zhou, G., Somasundaram, T., Blanc, E., Parthsarathy, G., Ellington, W. R. & Chapman, M. S. (1998). Transition state structure of arginine kinase: Implications for catalysis of bimolecular reactions. ***Proceedings of the National Academy of Sciences, USA*** 95, 8449-54.
39. Chen, Z., Blanc, E. & Chapman, M. S. (1998). Real Space Molecular Dynamics Refinement. ***Acta Crystallographica*** D55: 464-8.
40. Chen, Z., Blanc, E. & Chapman, M. S. (1999). Improved free R-factors for the cross-validation of structures. ***Acta Crystallographica*** D55: 219-224.
41. Zhou, G., Somasundaram, T., Blanc, E. & Chapman, M. S. (1999). Critical Initial Real Space Refinement in the Structure Determination of Arginine Kinase. ***Acta Crystallographica*** D55: 835-845
42. Zhou, G., Ellington, W.R. & Chapman, M.S. (2000). Induced Fit in Arginine Kinase. Biophys J 78: 1541-1550.
43. Bertram, R., J. R. Quine, M. S. Chapman and T. A. Cross (2000). “Atomic Refinement Using Orientational Restraints from Solid-State NMR.” ***J. Magnetic Resonance***, 147: 9-16.
44. Blanc, E., G. Zhou, Z. Chen, Q. Xie, J. Tang, J. Wang, and M.S. Chapman. 2001. Electron Density Representation and Real Space Refinement (New tricks from an old dog). In: Watenpaugh, K.D., and P.E. Bourne, editors. Crystallographic Computing 7: Proceedings of the IUCr Macromolecular Computing School, 1996. Corby, UK: Oxford University Press..
45. Gerstein, M., F. Richards, M.S. Chapman, and M. Connolly. 2001. Protein surfaces and volumes: measurement and use. In: Rossmann, M.G., and E. Arnold, editors. International Tables for Crystallography. Crystallography of Biological Molecules. Dortrecht, Netherlands: Kluwer Academic Publishers. p 531-45 (Cpt. 22.1).
46. Chen, L.F., E. Blanc, M.S. Chapman, and K.A. Taylor. 2001. Real space refinement of acto-myosin structures from sectioned muscle. ***J Struct Biol*** 133:221-32.
47. Chen, Z., and M.S. Chapman. 2001. Conformational Disorder of Proteins Assessed by Real-Space Molecular Dynamics Refinement. ***Biophys J*** 80:1466-1472.
48. Korostelev, A., Bertram, R., and Chapman, M.S. 2002. Simulated Annealing Real-Space Refinement as a Tool in Model Building. ***Acta Crystallogr***. D58: 761-767.

49. Bubb, M.R., Govindasamy, L., Yarmola, E.G., Vorobiev, S.M., Almo, S.C., Somasundaram, T., Chapman, M.S., Agbandje-McKenna, M., and McKenna, R. 2002. Polylysine induces an antiparallel actin dimer that nucleates filament assembly: crystal structure at 3.5-A resolution. ***J Biol Chem*** 277: 20999-21006.
50. Fabiola, F., Bertram, R., Korostelev, A., and Chapman, M.S. 2002. An improved hydrogen bond potential: impact on medium resolution protein structures. ***Protein Sci*** 11: 1415-1423.
51. Xie, Q., Bu, W., Bhatia, S., Hare, J., Somasundaram, T., Azzi, A., and Chapman, M.S. 2002. The atomic structure of adeno-associated virus (AAV-2), a vector for human gene therapy. ***Proc Natl Acad Sci U S A*** 99: 10405-10410.
52. Yousef, M.S., Fabiola, F., Gattis, J., Somasundaram, T., and Chapman, M.S. 2002. Refinement of Arginine Kinase Transition State Analogue Complex at 1.2 Å resolution; mechanistic insights. ***Acta Crystallogr. D. Biol. Crystallogr.*** 58: 2009-2017.
53. Yousef, M.S., Clark, S., Pruett, P.S., Somasundaram, T., Ellington, W.R., and Chapman, M.S. 2003. Induced Fit in Guanidino Kinases - Comparison of Substrate-free and Transition State Analog Structures of Arginine Kinase. ***Protein Sci.*** 12: 103-111.
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The Refined Structure of Canine Parvovirus Full Particles. in 5th Parvovirus Workshop. 1993. Crystal River, FL.

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The refined structure of canine parvovirus: DNA-protein interactions and encapsidation, in American Society for Virology. 1994: Madison, WI.

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Real space refinement. in Gordon Research Conference: *Diffraction Methods in Molecular Biology*. 1996. Proctor Academy, NH.

Towards an Engineered Anti-Cancer Virus: Crystallographic Investigation of Adeno-Associated Virus (AAV). in American Cancer Society, Florida Division Inc., Research Seminar. 1996. Orlando, FL.

Icosahedral Virus Structure: The Devil in the Detail. Quasi-equivalence: Motion and Adaptability in Living Molecules, 1997, Tallahassee, FL.

Seminar: Baxter Health Products Inc., (1997);

Seminar: Targeted Genetics Inc. (1997);

Seminar: Chemistry Departmental, Florida State University (1997);

Electron Density Representation and Real Space Refinement (New tricks from an old dog)., in International Union of Crystallography Workshop on Computing Techniques, 1997, Bellingham, WA.

Introduction to the use of non-crystallographic symmetry in phasing. in NATO Advanced Study Institute on Direct Methods for Solving Macromolecular Structures. 1997. Erice, Italy.

Use of non-crystallographic symmetry for *ab initio* phasing of virus structures. in NATO Advanced Study Institute on Direct Methods for Solving Macromolecular Structures. 1997. Erice, Italy.

Structural Studies of Cellular Energy Buffering and Virus-Drug Complexes. in Florida Division of the American Chemical Society. 1997. Orlando, FL.

Real-space refinement in Computing in Crystallography & NMR, Cold Spring Harbor Symposium, 1997

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Preliminary Crystal Characterization of Adeno-Associated Virus 2. in 7th International Parvovirus Workshop. 1997. Heidelberg, Germany.

Seminar FSU/FAMU Chemical Engineering (1998);

Seminar: Florida Southern College (1998);

Seminar: Florida State University Martech (1998);

Seminar: Mercer College (1998);

Transition State Structure of Arginine Kinase: Implications for the Enzyme Catalysis of Bimolecular Reactions. American Chemical Society, Florida Division, 1999, Orlando, FL.

Seminar: Rutgers University (1999);

Seminar: University of South Florida (2000).

Towards the Atomic Structure of the Adenoassociated Virus 2 Capsid. in VIII th Parvovirus Workshop. 2000. Mt. Tremblant, Canada

Seminar: Eastern Carolina University (2002);

Seminar: California State University, Fullerton (2002);

Real-Space Simulated Annealing Refinement - A tool in model-building and a paradigm for holistic refinement. in Interdisciplinary Workshop Promoting Collaboration In High-Throughput X-ray Structure Determination. 2002. Santa Fe, NM: Los Alamos National Laboratory.

Seminar: ETH – Zurich (2002);

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Seminar: Beckman Institute & Dept. Physics, Univ. Illinois at Urbane-Champagne, 2003.

Fitting known structures to EM maps - real-space refinement with stereochemical restraints. Gordon Research Conference: 3D Electron Microscopy, 2003.

Far from the MADing crowd: infectious and reactionary research. SERCAT Symposium, Univ. Alabama at Birmingham, 2004.

Seminar: *Structural Enzymology of Arginine Kinase - a Paradigm for the Catalysis of Two-Substrate Reactions,* Dept. Biochemistry & Molecular Biology, Indiana University Medical School, 2004.

Adeno-associated Virus – Structural studies of a gene therapy vector. National Synchrotron Light Source Workshop: Anatomy of a Virus, 2004

Holistic Macromolecular Models – When One Technique is Not Enough. Keynote lecture, EMSL 2004 Workshop; Pacific Northwest Laboratories.

The Structure of AAV. FASEB meeting: Virus Assembly, 2004

Viral Engineering – Where Biology meets Physics. Joint meeting of the National Societies for Black and Hispanic Physicists (2005).

Seminar: *Still Learning about Enzyme Catalysis with Arginine Kinase,* Ctr. for Biomolecular Structure & Dynamics, University of Montana, 2005.

Seminar: *New tricks from an old dog; The structural enzymology of arginine kinase.,* Dept. Biochemistry & Molecular Biology, Oregon Health Sciences University, 2006.

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NCS and Bias in free R-factors. in Gordon Research Conference: Diffraction Methods in Structural Biology, Lewiston, ME, 2006.

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Seminar: *More than Structure: Stereoelectronics and Dynamics in Arginine Kinase*, Oregon State University, 2008.

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Accuracy of Pseudoatomic models fit into Cryo-Electron Microscopy Density Reconstructions, Hybrid Methods conference, Tahoe, CA, 2008.

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Structural Studies of Adeno-Associated Viruses: Crystal Structure of AAV-6 and Electron Microscopy of AAV-2 Complexed with Heparan Sulfate Analogs, XII Parvovirus Workshop, Córdoba, Spain, 2008.