

Curriculum Vitae: **Michael S. Chapman**

Department of Biochemistry, 117 Schweitzer Hall, University of Missouri

503 S. College Ave., Columbia, MO 65211;

e-mail: chapmanms@missouri.edu; (573) 882-9825 (office)

CURRENT POSITION

Wurdack Professor of Biochemical Sciences, University of Missouri (2018 -)

Chair, Dept. Biochemistry, University of Missouri (2018 -).

EDUCATION

Post- doctoral	Structural virology Research: <i>Canine parvovirus, human rhinoviruses – antigenic sites and binding of anti-viral drugs</i> ; Advisor: Michael G. Rossmann	Purdue University, W. Lafayette, IN	1988-93
Ph.D.	Biochemistry Thesis: <i>The Atomic Structure of Ribulose-1,5-bisphosphate Carboxylase Oxygenase (RuBisCO) from Tobacco</i> ; Advisor: David S. Eisenberg	University of California, Los Angeles	1983-7
M.Sc.	Crystallography	Univ. London, Birkbeck College	1982-3
B.Sc.(Hons)	Cell/Molecular Biol.	Univ. London, Kings College	1979-82
A.K.C.	Divinity	University of London, Kings College	1979-82

PAST EMPLOYMENT

Interim Chair	Department of Biochemistry & Molecular Biology, Oregon Health & Science University (OHSU)		2014-18
Richard T. Jones Professor	Department of Biochemistry & Molecular Biology, Oregon Health & Science University (OHSU)		2006-18
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-doc. Assoc.	Department of Biological Science, Purdue Univ.	1988-93
Teaching Assistant	Department of Chemistry & Biochemistry, UCLA	1983-4
Teaching Associate	Program in Computing, UCLA	1984-5
Teaching Fellow	Department of Chemistry & Biochemistry, UCLA	1985
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

ADMINISTRATION

University of Missouri:**Director, Div. Biochemistry**, Coll. Agriculture, Food & Natural Resources (2018 -)**Chair, Department of Biochemistry**, School of Medicine (2018 -)***Oregon Health & Science University:*****Interim Chair**, Dept. Biochemistry & Molecular Biology (2014 - 18)**Director**, Quantitative Biosciences & Biomedical Engineering training pgm. (2013 - 18)***Florida State University:*****Director**, Ctr. 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

University of Missouri:

UM Center of Excellence in Electron Microscopy; chair oversight committee (2021 -)

MU Council of Chairs (2020 -)

Chair search, co-chair; Dept. Medical Pharmacology & Physiology (2019-20)

School of Medicine: Research Policy & Incentive Fund Committees (2020 - 2022)

Academic Medical Center and School of Medicine Strategic Planning – Research Infrastructure Working Group (2019)

Translational Precision Medicine Center, Imaging sub-committee (2018-20)

Missouri Symposium in Molecular Biophysics, co-chair (2019)

Oregon Health & Science University Committees:

Sch. Medicine 1st year Graduate Curriculum Revision Committee: co-chair (2017 - 18)

Prog. Molecular & Cellular Biosciences: Graduate Curriculum Committee (2017 - 18)

Dept. Molecular Microbiology & Immunology; Internal Review Committee (2015).

Center for Spatial Systems Biomedicine; Internal/External Review Committee (2014).

School of Medicine, Collaborative Research Leadership Group & Blueprint taskforce 1 (Research Investment), member (2011 - 18).

Quantitative Biosciences Graduate Program Steering Committee (2012 – 18).

School of Medicine, Conjoint Graduate Curriculum Committee, Chair (2012 – 18).

Program in Molecular & Cellular Biosciences: - Grad. Admissions Committee (2007-14)

Faculty search committee, Ctr. Systems & Spatial Biomedicine, Chair (2012-13).

Faculty search committee, Dept. Molecular & Medical Genetics (2010-11).

Electron Microscopy (EM) Core Facility Steering Committee (2012 - 18).

Oregon Health & Science Department of Biochemistry & Molecular Biology:

Promotions & Tenure Committee (2007-14), Chair (2010-14).

Faculty search committee, Chair (2012-3).

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); Seminar (1993-5; 1996-7; 2003)
– Capital Recourses & Space (1994-9; 2003-2005).
– Undergraduate curriculum & advising (1998-9).**Florida State University – Inst. Molecular Biophysics & Structural Biology Program****Committee Chair** – Director search (2) (1997 & 2004-5).
– Faculty search (2 recruitments, 2001 - 2004)
– Curriculum (1996 – 2000); Symposium (1999 – 2001)**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

Administrative Service:**Associate Director** (2018-20) Pacific Northwest Cryo-EM Center, a \$53M NIH-supported national resource. One of three PIs responsible for the planning and funding, with responsibilities for organizing peer review of user-applications and oversight of training. Succeeded by Steve Reichow, but continue under subcontract to provide management assistance and chair the advisory board (2020 -).**Conference organization:****Symposium co-Chair** (2019) 3rd Missouri Symposium in Molecular Biophysics: Structural Electron Microscopy.**Conference Vice Chair, Chair** (2000, 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**Session Chair:** Am. Soc. Virology (1998); NorthWest Crystallography Workshop (2008)

Committees:

National Resource for Advanced NMR Technology – NIH (P41)-funded center at the National High Magnetic Field Laboratory, Tallahassee, FL – *External Advisory Committee* (2019 -)

MBC – Molecular Biology Consortium - Runs beamline 4.2.2 at the Berkeley synchrotron for a consortium of universities – *Executive committee* (2006 - 18)

SERCAT - SE 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

<i>Acta Crystallographica</i> ;	Advances in Microbiology;
Biochemistry;	Biophysical Journal;
Biochimica & Biophysica Acta;	
Cell Reports Medicine;	Colloids & Surfaces B: Interfaces;
Comparative Biochem. & Physiol.	Computational & Structural Biotech. J.;
Crit. Rev. Biochemistry & Molecular Biology;	FEBS letters;
Future Virology;	Human Gene Therapy;
HSFP Journal;	Insect Biochemistry & Molecular Biology;
International Union of Crystallography Journal;	
Journal of Biological Chemistry,	J. Chemical Theory & Computation;
J. Crystal Growth;	Journal of Molecular Biology,
Journal of Virology,	Journal of Structural Biology,
Molecular Therapy – Methods & Clinical Development;	
Nature;	Nature Communications;
Nature Materials	Nature Structural Biology;
PLoS Biology;	Proceedings of the National Academy, USA;
Protein Science,	Proteins: Structure, Function & Genetics
Science	Scientific Reports
Structure	Viruses

Grant Review Panels**National Institutes of Health:**

National Inst. General Medical Sciences (NIGMS) Advisory Council, <i>ad hoc</i> :	2023
(Nominated for 4-year council membership)	2024 – 28)
Chair, NIH MIRA review panel:	2019, 2023
Chair, Special Panels (NCRR / NIGMS):	2001, 2002, 2003, 2009, 2011, 2016
Chair, Special Emphasis Panel: Structural Genomics	2001, 2006

Member, Macromolecular Structure & Function Panel C:	2005 – 2008, 2020
Member, Special Panels:	
NCRR / NIGMS National Centers:	2000, 2001, 2004, 2014(x2)
NIGMS P50 Centers:	2022
Bioengineering (BST), 2 panels	2007
BST-M Challenge Grants panel 4	2009
K99	2011
R35 ZRG1 CB-N MIRA	2017
P50 ZRG1 BCMB-P	2022
R35 ZRG1 MBBC-R (55) R MIRA	2023
Temporary member:	
Virology A	2004
Macromolecular Structure & Function D:	2010, 2014, 2015, 2016, 2017, 2019
Macromolecular Structure & Function Panel B:	2012
Consultant, Neurological Sciences III & Experimental Virology panels	1997
Ad Hoc Grant Review:	
NSF EPSCoR	2019
Medical Research Council, UK	2010
Biotechnology and Biological Sciences Research Council, UK	2008, 2012-13
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 Adv. Study Inst. on Direct Methods for Solving Macromolecular Structures (1997)

GRANT SUPPORT

Funding as PI (total \$43.1M):**Active**

NIH R35 GM122564_01-10: *Adeno-Associated Virus Gene Therapy Vectors: Molecular Interactions on Cell Entry*. 08/17-07/28, \$7,476,319 (\$501,302 annual direct).

Fdn. for NIH 2021-BGTC002: *Bottlenecks in AAV cellular entry, trafficking and nuclear delivery*. 02/23-01/25, \$566,519 (\$246,463 annual direct).

OHSU (NIH U24 GM129547 sub 2): *Pacific Northwest Center for Cryo-EM*. 08/18-04/24, \$375,282 (\$40,353 annual direct).

Completed:

NIH U24 GM129547_01-02: *Pacific Northwest Center for Cryo-EM* (Gouaux, J.E.; Chapman, M.S.; Evans, J.E. mPI). 05/18-04/24, \$19,962,108 (\$8,823,184 annual direct).

UM System Strategic Invest Prog.: *Missouri Resource for Cryo-EM* (Chapman, M.S., PI; D. Burke, J. Tanner, T. White, L. Sumner, X. Yao, co-Is). 08/19-08/21, \$2,000,000 (\$1,000,000 annual direct).

Oregon Empl. Dept./Oregon Talent Council 16-098-0002: *Industry-relevant Training and Research Experiences for Biomedical Engineering and Data Science Students*. 04/16-06/17, \$496,384 (\$496,384 annual direct).

Hearst Fdn.: *Quantitative Bioscience & Bio-medical Engineering Scholars Program*. 12/14-06/18, \$250,000 (\$83,333 annual direct).

Oregon Engineering & Technology Council 16-098-0002: *Quantitative Bioscience & Biomedical Engineering*. 07/14-06/16, \$659,962 (\$329,981 annual direct).

NIH R01 GM066875_01-13: *Structure-Function of AAV - a Viral Gene Therapy Vector*. 02/03-08/17, \$4,334,279 (\$227,452 annual direct).

NIH R01 GM077643_01-08: *Functional Dynamics During Induced-Fit Enzyme Turnover*. 02/07-05/17, \$2,702,926 (\$254,636 annual direct).

OR Ctr Spatial Sys Biomedicine OCSSB 614: *Visualizing specificity in the targeting of AAV gene therapy vectors*. 07/13-06/14, \$69,968 (\$69,968 annual direct).

OHSU Emerging Tech. Fund: *Macromolecular X-ray Diffraction*. 07/11-06/12, \$567,102 (\$567,102 annual direct).

NIH P41 RR007707_18-18 sub 7934: *Structural Studies Of Adeno-Associated Virus In Complex With Its Cellular Rec*. 08/10-07/11, \$14,606 (\$14,606 annual direct).

Off. Naval Res to OR Nanoscience & Microtech Inst. N000141010082: *DNA delivery targeted to the liver*. 01/10-12/10, \$220,501 (\$220,501 annual direct).

- NIH P01 GM04676 sub 5: *Membrane Protein Structural Genomics*. 09/01-08/06, \$450,190 (\$90,038 annual direct).
- NIH P41 RR001646_15-23 sub 9-11&21: *Structure Determination of Adeno Associated Virus 2*. 09/97-06/06, \$71,538 (\$17,885 annual direct).
- NIH R01 GM055837_01-05: *Phospagen Kinase Structure, Mechanism and Specificity*. 03/98-02/04, \$745,733 (\$102,636 annual direct).
- NIH R13 GM065888_01-01: Conference: *Diffraction Methods in Structural Biology*. 07/02-06/03, \$5,000 (\$5,000 annual direct).
- FSURF Cornerstone: Ctr. Excelence: *Biomolecular Computer Modeling & Simulation*. 12/00-11/02, \$995,106 (\$497,553 annual direct).
- Am. Cancer Soc. RPG-99-356-01-GMC: *Towards an Anti-Cancer Virus: Structure & Function of Adenoassociated Virus*. 07/99-12/02, \$375,000 (\$100,000 annual direct).
- NSF DBI-9808098: *Crystallographic Structure Determination/Refinement: Using Atomic Electron Density Functions, and Optimization of Appropriate Force Fields for Analysis*. 10/98-09/02, \$331,432 (\$89,995 annual direct).
- FSU Fdn.: *President's Developing Scholar Award*. 04/00-03/01, \$10,000 (\$10,000 annual direct).
- Am Heart Assoc., FL 9701728: *Phosphagen Kinase Structure & Function: Immunoassay for the Diagnosis of Heart Attack*. 07/97-06/99, \$100,000 (\$45,454 annual direct).
- NSF BIR94-18741: *Applications of Real-Space Refinement for Macromolecular Structure Analysis*. 04/95-03/98, \$325,981 (\$75,128 annual direct).
- Am Cancer Soc. F95-FSU-2: *Towards Anti-tumor Viruses I: Crystallization of Adenoassociated Virus*. 02/96-01/97, \$22,000 (\$22,000 annual direct).

Non-PI Supporting Roles in Grants (total \$38.8M):

- NIH U24GM129547_03-06 (mPI: J.E. Gouaux; J.E. Evans & S.L. Reichow): *Pacific Northwest Center for Cryo-EM*. Role: Leadership key personnel (mPI yrs. 01-02), 05/20-04/24, \$31,972,293.
- NIH S19 OD026703 (PI: J.J. Tanner): *Circular dichroism spectrometer for the University of Missouri Molecular Interactions Core*. Role: Major user, 07/20-06/21, \$154,895.
- NIH S10RR024561 (PI: E.J. Barbar): *Acquisition of a 700 MHz NMR Spectrometer*. Role: Major user, 02/15-02/17, \$1,300,000.
- M.J. Murdock Charitable Trust (PI: E.J. Barbar): *Upgrade to an 800 MHz NMR Spectrometer*. Role: Major user, 02/15-02/17, \$504,000.
- Vertex Inc. (PI: J.C. Summerton): *Vertex Scholarship*. Role: Faculty mentor, 07/11-06/12, \$50,000.

- Am. Heart Assoc., Pacific Mountain Affiliate 10POST2600203 (PI: T.F. Lerch): *Post-doctoral fellowship: The Structure and Function of Adeno-Associated Virus (AAV) – a Viral Gene Therapy Vector*. Role: Sponsor, 01/10-12/11, \$95,224.
- Am. Heart Assoc., Pacific Mountain Affiliate 09PRE2020112 (PI: J. Summerton): *Pre-doctoral fellowship: The role of stereoelectronics in kinase catalysis*. Role: Sponsor, 07/09-06/11, \$50,000.
- NIH S10RR025080 (PI: K.A. Taylor): *Purchase of a FEI Titan Krios for 3-D EM*. Role: Major user, 07/08-06/10, \$2,000,000.
- Off. Naval Res. / Oregon Nano-science & Micro-technologies Inst. (PI: E. Minot): *Electronic detection of single molecule dynamics*. Role: co-PI, 01/09-12/09, \$229,736.
- NIH S10RR024564 (PI: K.A. Taylor): *CryoEM Equipment Enhancements for Florida State University*. Role: Major user, 03/08-02/09, \$177,959.
- Am. Heart Assoc. 0515201B (PI: J.K. O'Donnell): *Pre-doctoral fellowship: Mapping Adeno-associated virus-2 cellular receptor binding sites using Cryo-Electron Microscopy*. Role: Sponsor, 07/05-06/07, \$42,000.
- Am. Heart Assoc. 0515203B (PI: H.M. Ongley): *Pre-doctoral fellowship: Structural Studies of Adeno-associated Virus Serotypes 3b and 6*. Role: Sponsor, 07/05-06/07, \$42,000.
- Am. Heart Assoc. 0415212B (PI: E.A. Ruben): *Pre-doctoral fellowship: A Computational Study of Arginine Kinase Catalysis*. Role: Sponsor, 07/04-06/07, \$63,000.
- NIH S10RR020919 (PI: K.A. Taylor): *Purchase of a large format CCD camera for 3-D EM*. Role: Co-PI, 04/05-03/07, \$480,600.
- Am. Heart Assoc. 0415115B (PI: O. Davulcu): *Pre-doctoral fellowship: Functional Dynamics of Arginine Kinase*. Role: Sponsor, 07/04-06/06, \$40,000.
- NSF / Natl. High Mag. Field Lab. IHRP 5024-641-22 project 5045 (PI: J. Skalicky): *Functional Dynamics of Arginine Kinase: Development of TROSY-based spectroscopy*. Role: Co-I, then PI from yr. 02, 01/03-12/05, \$49,700.
- Am. Heart Assoc. 0315101B (PI: J. Bush): *Pre-doctoral fellowship: Lombricine kinase structure & specificity*. Role: Sponsor, 07/03-06/05, \$38,000.
- NSF DBI96-02233 (PI: L. Makowski & P. Fajer): *Structural Biology of Macro-molecular Assemblies: A Research Training Group at Florida State University*. Role: co-author (5), 06/96-09/02, \$1,478,755.
- Am. Heart Assoc. (PI: S.Bhatia): *Pre-doctoral fellowship: The Atomic and Immunogenic Structure of Adenoassociated Virus - Improving a Gene Therapy Vector*. Role: Sponsor, 07/99-06/01, \$32,000.

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. PMID: 2878449.
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. PMID: 3627277.
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. PMID: 2900091.
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. PMID: 3681999.
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. PMID: 3133767.
7. Cascio, D., Chapman, M. S., Curmi, P. G. M., Suh, S. W. & Eisenberg, D. S. A *Modified Omit-map Procedure to Improve Partial Model* in NATO Advanced Study Institute on Crystallography of Molecular Biology. (ed W. Hol) (Kluwer, Dordrecht, NL).
8. 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). *Laue Crystallography of Macromolecules and Viruses*. In ***Daresbury Annal***. (Warrington, UK, Daresbury Laboratory) pp. 42-46.
9. 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. PMID: 2555523.
10. 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.
11. 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. PMID: 1972986.
12. 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 *New Aspects of Positive Strand RNA Viruses*, M.A. Brinton, and F.X. Heinz, eds. (Washington, DC: ASM Press).
13. 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. PMID: 1847215.

14. 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. PMID: 2006420.
15. 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. PMID: 1605933.
16. 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. PMID: 1335081.
17. 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. PMID: 1318726.
18. 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. PMID: 1616694.
19. Chapman, M. S. (1993). *Mapping the Surface Properties of Macromolecules*. **Prot. Sci.** 2, 459-469. PMID: 8384042.
20. 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.
21. Chapman, M. S. & Rossmann, M. G. (1993). *Structure, Sequence and Function Correlations among Parvoviruses*. **Virology** 194, 491-508. PMID: 8503170.
22. Chapman, M. S. & Rossmann, M. G. (1993). *Comparison of Surface Properties of Picornaviruses: Strategies for hiding the Receptor Site from Immune Surveillance*. **Virology** 195, 745-765. PMID: 8337843.
23. 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. PMID: 8383771.
24. Chapman, M. S. (1994). *Sequence Similarity Scores and the Inference of Structure/Function Relationships*. **Computer Applications in the Biosciences (CABIOS)** 10, 111-119. PMID: 8019858.
25. Chapman, M. S. (1995). *Restrained Real-Space Macromolecular Atomic Refinement using a New Resolution-Dependent Electron Density Function*. **Acta Crystallogr.** A51, 69-80. doi:10.1107/S0108767394007130
26. Chapman, M. S. & Rossmann, M. G. (1995). *Single-stranded DNA-protein interactions in Canine Parvovirus*. **Structure** 3, 151-62. PMID: 7735832.
27. 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. PMID: 15299756.
28. 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. PMID: 15299734.
29. 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. PMID: 15299734.
30. Xie, Q. & Chapman, M. S. (1996). *Canine parvovirus capsid structure, analyzed at 2.9 Å resolution*. **J. Mol. Biol.** 264, 497-520. PMID: 8969301.

31. Zhou, G., Parthasarathy, G., Somasundaram, 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. PMID: 9041648.
32. 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. [doi:10.1107/S002188989700592X](https://doi.org/10.1107/S002188989700592X)
33. Chapman, M. S. & Blanc, E. (1997). *Potential use of Real Space Refinement in Protein Structure Determination*. **Acta Crystallogr.** D53, 203-6. PMID: 15299957.
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125. Large, E. E., Silveria, M. A., Weerakoon, O., White, T. A. & Chapman, M. S. *Cross-species permissivity: structure of a goat adeno-associated virus and its complex with the human receptor, AAVR*. **J. Virol.** 96, e01484-22 (2022) doi: [10.1128/jvi.01484-22](https://doi.org/10.1128/jvi.01484-22).
126. Zane, G.M. Silveria, M.A., Meyer, N.L., White, T.A., Duan, R, Zou, X and Chapman, M.S. *Cryo-EM Structure of Adeno-associated virus-4 at 2.2 Å resolution*. **Acta Crystallographica D**79: 140-153 (2023) doi: [10.1107/S2059798322012190](https://doi.org/10.1107/S2059798322012190)
127. Large, E. & Chapman, M. S. *AAV Receptor complexes and implications for AAV immune neutralization*. **Front. Microbiol.** 14 (2023) doi: [10.3389/fmicb.2023.1116896](https://doi.org/10.3389/fmicb.2023.1116896).

PATENT

US Patent 10633662 Methods and compositions for modulating AAV infection (2020); Pillay, S., Carette, J, Chapman, M.S., Meyer, N., Pushnik, A. & Davulcu, O.

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.; Lecturer, Bioinformatics, Kings Coll. London; Curr.: Bioinformatician, Charité Hosp., Berlin.
Jeff Haber	M.S. Biochemistry	1996 – 1999	Law school, U. Michigan; Private practice, Washington, DC.
Qing Xie	Ph.D., Biochemistry	1993 – 2000	Snr. Res. Assoc., Oregon Health & Science University
Zhi Chen	Ph.D., Physics	1994 - 2000	Post-doc., Howard Hughes Medical Inst. & Brandeis University; Res. Assoc., MIT (2009-13). Assist. Prof., OHSU (2013-19); Snr. Res. Assoc. Ctr. Brain Health, UBC
Richard Bertram	Post-doc.	1999 – 2001	Assist. Professor (2001-5); Assoc. Prof. (2005-9); Prof. & Director Biomedical Math, Florida State Univ. (2009-)
Pam Pruet	Post-doc.	1996 – 2002	Staff scientist, Univ. Alabama at Birmingham; Snr. Microbiologist, AL Dept. Public Health
Mohammad Yousef	Ph.D., Molecular Biophysics	1998 – 2002	Post-doc., HHMI/Univ. Oregon then Assist Prof. Biophysics, Univ. Cairo (July 2006). Res. Assoc. Texas Tech. U. (2009-11); Assist. /Assoc. Prof., Dept. Physics, So. Illinois U. (2011-8); Prof. Physics, Weill Cornell Medicine, Qatar.
Arezki Azzi	Post-doc.	1999 – 2003	Staff Scientist, Laval Univ., Canada; Prof. Biochem./Mol. Biol., now Exec. Director, Biomed. & Clinical Res. Ctr., Al-Imam Mohammad ibn Saud Univ., Saudi Arabia

Name	Program	Dates	Subsequent employment
Smita Bhatia	Ph.D., Molecular Biophysics	1997 – 2003	Post-doc., National Research Council, Canada; curr. Snr. Manager, Economics & Environment, Chemical Industry Assoc. of Canada.
Andrei Korostelev	Ph.D., Biochemistry	1999 – 2003	Post-doc., FSU; Post-doc. UC Santa Cruz. ('04-10); Prof., U. Mass., Worcester.
Jim Gattis	Ph.D., Biochemistry,	1997– 2004	Post-doc., National Cancer Inst. '04-'08; Principle Scientist, Glaxo Smith-Kline ('08-'09); Group Leader, PPDi (2010-2); Principal Scientist, Liquidia Technologies (2012-).
Jared Pikus	M.S., Biochemistry	2003-04	DO, Philadelphia Coll. Osteopathic Med., 2009; Resident, Utah Valley Family Medical Residency Prog. (2009-12), Family Physician, Cottonwood, ID (2012-).
Sarah Schlatterer (née Murray)	B.S. Biochemistry, Individual Study, Technician	2003– 05	MD/PhD Einstein Coll. Medicine, 2005-13, now Medical Dir. Neonatal Neurocardiac Critical Care, Childrens Natl. Hosp.
Shawn A. Clark	Ph.D., Biochemistry	1998– 2006	Res. Assist, then post-doc fellow, Harvard Univ. & Max Planck Inst. ('04-'07); Senior Scientist, XTAL Biostructures ('07- 13); President & Chairman DeltaTm Technologies Inc.
Felcy Fabiola	Post-doc.	2000-06	Home-maker; Consultant (2006-); App. Design / Proc. Mgr., Florida Board of Governors (2016-)
Weishu Bu	Ph.D., Molecular Biophys.	1999– 2007	Post-doc. Univ. Michigan ('07-09); Res. Assoc. Veterans Admin, Ann Arbor, MI ('09-); Prof. Physics, Washtenaw Comm. Coll., Ann Arbor, MI ('13-).
Donald "Jeff" Bush	Ph.D., Biochem.	1999– 2007	Post-doc., Univ. Alabama, Birmingham (2007-8); Nurse Navigator, Cooper Hosp., PA.
Pankaj Pal	B.S. Biochemistry, Honors thesis	2003– 07	M.D./Ph.D. Wash. U., 2007-15, Resident & Fellow, Harvard U. (2018-22); Assoc. Med. Dir., BioNTech (2022-)

Name	Program	Dates	Subsequent employment
Eliza Ruben	Ph.D., Molecular Biophys.	2000–07	Post-doc., Staff Sci, Stanford Univ (2007-13); Director, Protein Expression Core, Univ. Oklahoma (2013-16); Core director, St. Louis Univ. (2016-22); EM Core director, U. Texas, San Antonio (2022-)
Omar Davulcu	Ph.D., Biochemistry	2002–07	Post-doc., Snr. Res. Ass., OHSU (2007-18); Snr. Sci., Pfizer, (2018-20); Chemist, Pac. NW Natl. Lab.
Dan Mitchell	Ph.D., Molecular Biophys., 6/08	2000–08	NRC Associate, US Army Medical Res. Inst. of Infectious Diseases (2008-11); Staff Sci., Texas Biomed. Res. Inst. (2011-).
Heather Ongley	M.S. Biochemistry	2003-08	Jnr. Dental Assist., Broward Co., Florida
Jason O'Donnell	Ph.D. Biochemistry	2003-4/09	Post-doc., Florida State Univ. (2009-11); Post-doc. Univ. Georgia (2011-4); Lecturer, Univ. Georgia (2014-)
Olga Kirillova	Post-doc.	2008-11	ICOLL LLC. Founder, 2011-13; Rentrak Corp., Data analytics software, 2013 -
Sudha Dorairaj	Post-doc.	2010-11	Adjunct Assist. Prof., Univ. Portland; Sci. Teacher, Waldorf Sch. of San Diego (2018-).
Dustin McCraw	Ph.D. Biochemistry & Molecular Biology	2005-12	Post-doc., Natl. Inst. Allergy & Infectious Diseases (2013 - 19); CMC Operations Mgr. SwanBio Therapeutics, Inc.
Thomas F. Lerch	Post-doc.	2007-12	Senior Director, Pfizer, St. Louis
Jean C. Summerton	Ph.D. Biochemistry & Molecular Biology	2007-14	Scientist, Gene Tools, LLC. (2014-21); Founder, Mgr., EndoRel Biosci. (2021-)
Chiara Del Picollo	Ph.D. Biochemistry & Molecular Biology	2014-16	Personal leave / withdrawn; deceased (2018).
Geoffrey Diemer	Post-doc.	2015-16	Principal Scientist, Sirona Dx.,

Name	Program	Dates	Subsequent employment
Rachel (Sauer)	Neff B.S. Biochem. (Honors project)	2018-20	Med. Sch., Mayo Clinic, Scottsdale, AZ.
Mark Silveria	Ph.D. Biochemistry	2019-22	Founder, Retro Reflow Inc.
Ella Wright	B.S. Biochem. (Honors project)	2019-23	
Onellah Weerakoon	P. Ph.D. Biochemistry	2020-	
Undergraduate students:		48	1993-2023

TEACHING

Course Title	Level	Credit hours	Role	Enrollment	Comment	
<i>Enzyme Structure & Function:</i>	Grad.	3	Instructor, whole course	20 - 30	Redesigned	1994 – 2005 (annual)
<i>Macromolecular Crystallography:</i>	Grad.	3	Instructor, whole course	10-22	New course	1993 – 2006 (biannual)
<i>General Chemistry:</i>	U-Grad.	3	Instructor, whole course	150		1995
<i>General Biochemistry II:</i>	U-Grad.	3	Instructor, whole course	75 - 140		1999, 2005
<i>Medical Biochemistry:</i>	Medical student	3	Lecturer (1 of 6); case-based learning facilitator	40	New course	2002, 2003
<i>Bioinformatics:</i>	Grad / U-grad.	2	Coordinator, 2003, Lecturer (1 of 6)	12	New course	2002, Sp '03, Fa '03
<i>Molecular Biophysics and Experimental Bioinformatics:</i>	Grad	3	Lecturer (1 of 9)	9	CONJ668	Sp 2007-17
<i>PMCB Journal Club:</i>	Grad	2	Lecturer / Facilitator	17	CONJ605 – Faculty team	Fa 2008
Cell Structure & Function	Medical student		Facilitator	20	Faculty team	Fa 2009-10
HHMI Biophysics Workshop	Faculty / Grad / U-grad		Instructor	12	4 x 3-hr workshops on crystallography	Fa 2009
Introductory Biophysics	Grad / U-grad		Course director, Instructor	12	New course, team-taught	Winter 2011-13
Advanced Biophysics	Grad / U-grad		Course director, Instructor	10	New course, team-taught	Spring 2011-12
Biophysics Book Club	Grad / Post-doc		Faculty mentor	15	New “journal club”	2011-12 academic year
<i>Gene & Cell Therapy</i>	Grad		Team instructor	10		2013 - (annual)

Course Title	Level	Credit hours	Role	Enrollment	Comment	
Fundamentals of Medicine	Medical student		Team Lecturer, Facilitator	139	New course	Fa 2014
Foundations of Measurement Science	Grad		Developer, Team Lecturer	6	New course	Fa 2014-15
Analysis in Quantitative Science	Grad		Developer, Team Lecturer	3	New course	Winter 2015-17
Biochemistry (Biochm 4270/7270)	U-grad / Grad		Substitute instructor, 1 week	141	Comprehensive course, semester 1 of 2	Fall 2018
Ethical conduct of Research (Biochm 8060)	Grad		Facilitator, 1 week	10	Discussion section	Spr 2019, 2022
Patient-Based Learning	Medical student		Facilitator, block 2	8	Discussion section	Fall 2019-22
Snr. Capstone in Biochemistry (Biochm 4970)	U-grad		Instructor	14		Spr 2020
Topics in Biochemistry (Biochm 9001)	Grad		Team Instructor	20		Spr 2021, 2022

SEMINARS & CONFERENCE TALKS

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, 1987, Tuscon, AZ.

The Partial Structure of Ribulose-1,5-Bisphosphate Carboxylase Oxygenase (RuBisCO). in Annual meeting, American Crystallographic Association. 1986. Hamilton, Ontario, Canada.

Sequence-Structure Correlations among Picornaviruses and to Parvoviruses. in American Society for Virology. 1992.

The Refined Structure of Canine Parvovirus Full Particles. in 5th Parvovirus Workshop. 1993. Crystal River, FL.

Structure, Sequence, and Function Correlations among Parvoviruses. in 5th Parvovirus Workshop. 1993. Crystal River, FL.

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

Single-stranded DNA-protein interactions in the refined structure of canine parvovirus (CPV), in American Crystallographic Association, Annual meeting. 1994: Atlanta, GA.

Structural Studies of Parvoviruses. in Vth Parvovirus Workshop. 1995. Montpellier, France: Societe Francais de Microbiologie.

Parvoviral Structure in Vth Parvovirus Workshop. 1995. Montpellier, France: Societe Francais de Microbiologie.

Ab Initio Phase Determination for Viruses: The Use of Non-Crystallographic Symmetry for Phase Refinement. in XVII Congress and General Assembly of the International Union of Crystallography. 1996. Seattle, WA

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.

Real-Space Refinement Using R_SRef. in NATO Advanced Study Institute on Direct Methods for Solving Macromolecular Structures. 1997. Erice, Italy.

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);

The Atomic Structure of Adeno-Associated Virus 2 at 3.0 Å Resolution. in The IX Parvovirus Workshop. 2002. Bologna, Italy.

Seminar: Beckman Institute & Dept. Physics, Univ. Illinois at Urbane-Champaign, 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.*

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

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

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

Structure and Function of Adeno-Associated Virus Capsids. in The XIth Parvovirus Workshop. 2006. Les Diablerets, Switzerland.

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

Seminar: More than Structure: Stereoelectronics and Dynamics in Arginine Kinase, University of Colorado Health Science University, 2008.

Seminar: More than Structure: Stereoelectronics and Dynamics in Arginine Kinase, Oregon Graduate Institute, 2008.

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

Accuracy of Pseudoatomic models fit into Cryo-Electron Microscopy Density Reconstructions, Maxinf2 Workshop: New algorithms in Macromolecular Crystallography and Electron Microscopy, Leiden, Netherlands, 2008.

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.

Workings of Arginine Kinase – Crystallographic, NMR & Quantum Mechanical Studies, West Coast Protein Crystallography Workshop, Asilomar, CA, 2009.

Seminar: Workings of Arginine Kinase – Crystallographic, NMR & Quantum Mechanical Studies, Uppsala University, Sweden, 2009.

Nearly Natural – A Structural Foundation for Viral-based DNA Delivery Vectors, Micro Nano Breakthrough Conference, Portland, OR, 2009

Seminar: Beyond Structure - A Dynamic Enzyme!, Reed College, 2009

Structural Studies with Implications for Cell Attachment. XIIIth Parvovirus Workshop (Helsinki, Finland, 2010).

Hybrid Structure Refinement Algorithms: Precisely is the Point. In Gordon Research Conference: 3D Electron Microscopy; New London, NH., 2011

DNA delivery targeted to the liver. In Oregon Nanoscience and Microtechnologies Institute Conference, Portland, 2011

Improving delivery in Human Gene Therapy. Imaging Adeno-Associated Virus at near-atomic resolution. In Biomedicine in 4D; Portland, OR, 2012

Structure of the Retargeted Vector, AAV-DJ. In IXth Parvovirus Workshop, Ithaca, NY, 2012

Gene Therapy Delivery: Interactions of AAV Vectors at near-atomic resolution. Dept. Biomedical Engineering, Oregon Health & Sciences University, 2012.

Visualizing Molecular Specificity in the Targeting of AAV Gene Therapy Vectors. OHSU Center for Spatial Systems Biomedicine, 2013.

Vector Delivery: AAV's 1st Cellular Encounters. OHSU Gene Therapy Symposium, 2013.

Seminar: Arginine Kinase – A Dynamic Enzyme. Lewis & Clark University, 2014.

AAV Attachment – Binding and Structural Studies. In Xth Parvovirus Workshop, Bordeaux, France, 2014

Functional Dynamics during Induced Fit Turnover. Oregon State University, 2014.

Seminar: Cell Entry by Adeno-Associated Virus. Dept. Biochem. & Mol. Biol., Oregon Health & Science University, 2015.

An Essential & Ubiquitous Protein Receptor for AAV; Glycans as Attachment Receptors. Invited talk: Presidential Symposium of Am. Soc. Gene & Cell Therapy, 2016.

An Essential & Ubiquitous Protein Receptor for AAV; Glycans as Attachment Receptors. In XIth Parvovirus Workshop, Ajaccio, France, 2016

Adeno-Associate Virus: Cell Entry. Caspar Structural Biology Symposium, Florida State University, 2017.

Seminar: Visualizing & Modeling Conformational Flexibility. Dept. Biochem. & Mol. Biol., Oregon Health & Science University, 2017.

Seminar: Seeing and believing: AAV and the cellular entry of a gene therapy vector. Dept. Biochem. & Mol. Biol., Indiana University, 2017.

Rate-limiting conformational change along the reaction path of an enzyme. BioNMR Symposium, Oregon State University, 2017.

Seminar: Seeing and believing: AAV and the cellular entry of a gene therapy vector. PacNow QB Meeting, Reed College, OR, 2017.

So, what are we working on? AAV, cell entry and lessons of mistaken identity when venturing outside the "Rossmann fold". Rossmann Symposium, Purdue University, IN, 2017

Interactions of AAV-2 with its Cellular Receptor (AAVR), visualized by cryo-Electron Microscopy, Am. Soc. Gene & Cell Therapy, 2018.

Interactions of AAV-2 with its Cellular Receptor (AAVR), visualized by cryo-Electron Microscopy, XIIth Parvovirus Workshop, Miami, FL, 2018.

AAV cell entry: Structural Biology foundations for Gene Therapy Delivery; Seminar, Department of Medical Pharmacology & Physiology, Univ. Missouri, Sept. 2018.

Binding of the AAV viral gene therapy vector to its cell receptor: Hybrid electron microscopy visualization of a flexible multi-domain complex. St. Louis Univ. Structural Biology Symposium, December, 2018.

AAV cell entry: Structural Biology foundations for Gene Therapy Delivery; Seminar, School of Biological Sciences, University of Missouri, Kansas City, December, 2018.

Invited speaker, 8th CASSS International Symposium on the Higher Order Structure of Protein Therapeutics, San Mateo, CA, April 2019.

Seminar, University of Massachusetts Medical School, Worcester, MA, May 2019.

Seminar, Schepens Eye Research Inst., Harvard University, Boston, MA, May 2019.

Invited speaker: *Interactions of AAV-2 with its Cellular Receptor (AAVR), visualized by cryo-Electron Microscopy* at the XXVI Biennial conference on Phage/Virus Assembly, Brainerd, MN, July 2019.

Invited speaker: Salvatore Sechi & Michael Chapman *NIH Transformative High Resolution Cryo-Electron Microscopy Program* in Protein Soc. Annual Symposium, Seattle, July 2019.

Invited speaker: *Atomic Structure from Cryo-Electron Microscopy,* Dept. Mathematics, Univ. Missouri, Feb. 2020.

Invited speaker: *AAV & the Circle of Life,* Taylor Symposium, Florida State Univ., May. 2022.

Invited speaker: *Donald L.D. Caspar 1927-2021*, Taylor Symposium, Florida State Univ., May. 2022.

Receptor and Antibody Interactions of AAV by cryo-EM and Tomography, Am. Soc. Gene & Cell Therapy 25th annual meeting, Washington DC, May 2022.

Receptor and Antibody Interactions with AAV by cryo-EM/ET, XIIIth Parvovirus Workshop, Rimini, Italy, June 2022.

Invited speaker: *Gene therapy delivery: AAV cell entry by cryo-Electron Microscopy*, Kansas University Medical Center, March 2023.

Diverse cell receptor interactions of AAV: EM structures and biological implications, Phage and Virus Assembly Conference, Manchester, UK. June 2023.