CURRICULUM VITAE

Name:	**Gregory A. Petsko**
Position:	**Professor of Neurology, Ann Romney Center for Neurologic Diseases, Harvard Medical School and Brigham & Women's Hospital**
Home Addresses:	17 Commonwealth Ave., Unit 1, Boston, MA 02116; One Old Colby Way, Manchester-by-the-Sea, MA 01944; and 308 East 72nd St., Unit 10A, New York, NY 10021
Date of Birth:	August 7, 1948
Place of Birth:	Washington, D.C., USA
Marital Status	Married to Laurie H. Glimcher, MD, President and CEO, Dana Farber Cancer Research Institute, and Richard and Susan Smith Professor of Medicine, Harvard Medical School, Boston, MA

Education:

1970 B.A.	Princeton University, Princeton, NJ (*Summa Cum Laude* - Chemistry)
1973 D.Phil.	Oxford University, Oxford, England (Rhodes Scholar) Molecular Biophysics (Thesis Advisor: Prof. Sir David C. Phillips, FRS)

Postdoctoral Training:

1973	EMBO Fellowship with Prof. Pierre Douzou, Institut de Biologie Physico-Chemique, Universite de Paris, Paris, France

Academic Appointments (current active appointments in bold):

2020 -	**Professor of Neurology, Ann Romney Center for Neurologic Diseases, Harvard Medical School and Brigham & Women's Hospital**
2019 -	**Adjunct Professor of Neuroscience, Weill Cornell Medical College**
2012 -	**Adjunct Professor of Biomedical Engineering, Cornell University**
2012 - 2018	Arthur J. Mahon Professor of Neurology and Neuroscience, Weill Cornell Medical College
2014 - 2018	Director, Helen and Robert Appel Alzheimer's Disease Research Institute Weill Cornell Medical College
2008 - 2011	Chair, Department of Biochemistry, Brandeis University
2007-	Associate Member, Tufts-New England Medical Center Cancer Center
2010 -	Honorary Member, European Res. Institute for Integrated Cellular Pathology
1996 - 2012	Gyula and Katica Tauber Professor of Biochemistry and Chemistry, Brandeis University (now Emeritus)
1994 - 2007	Director, Rosenstiel Basic Medical Sciences Research Center, Brandeis University
1990 - 1993	Lucille P. Markey Professor, Department of Biochemistry and Department of Chemistry, Brandeis University
1985 - 1990	Professor, Department of Chemistry, Massachusetts Institute of Technology
1979 - 1984	Associate Professor, Department of Chemistry, Massachusetts Institute of Technology

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1976 – 1979 Assistant Professor, Department of Biochemistry, Wayne State Univ. Med. Sch
1974 – 1976 Instructor, Department of Biochemistry, Wayne State Univ. Med. School

Awards and Honors:

1969 Sigma Xi
1970 Phi Beta Kappa
1970 Chemical & Engineering News National Merit Award
1970 American Institute of Chemists Student Award
1970 Sigma Xi Student Award
1970-1973 Rhodes Scholarship to Oxford University
1970 Fullbright Fellowship (declined)
1970 Danforth Foundation Fellowship (declined)
1973 European Molecular Biology Organization Fellowship to the Institut de Biologie Physico-Chimique (Paris)
1974-1975 Wayne State University Faculty Research Award
1978-1983 U.S. Public Health Service Research Career Development Award
1978-1982 Alfred P. Sloan Foundation Fellowship
1980 Siddhu Award for outstanding contributions to X-ray diffraction, American Crystallographic Association
1986 Pfizer Award in Enzyme Chemistry - American Chemical Society
1987 Co-Chairman, Gordon Conference on Enzymes
1989 Alexander von Humboldt Senior Scientist Award
1991 Max Planck Prize (shared with Professor Roger Goody)
1995 **Elected to the National Academy of Sciences - later, with David Eisenberg, co-founded Section 29 of the Aacademy**
1996 Guggenheim Foundation Fellowship
1997 Honorary Fellow, Biochemical Society of Japan
2001 Lynen Medal (shared with Professor Janet Thornton)
2001 **Elected to the National Academy of Medicine**
2002 **Elected to the American Academy of Arts and Sciences**
2003 Elected Fellow, American Association for the Advancement of Science
2003 Duvoisin Fellowship, American Parkinson Disease Association
2004 McKnight Endowment for Neuroscience Brain Disorders Award (shared with Prof. Dagmar Ringe)
2005 Abram Sacchar Award (shared with Prof. Dagmar Ringe)
2008-2010 Elected President, American Society for Biochemistry and Molecular Biology
2009 Alexander Rich Medal
2010 **Elected a Foreign Member, Hungarian Academy of Sciences**
2010 Honorary Member, European Res. Institute of Integrated Cellular Pathology
2010 **Elected to the American Philosophical Society**
2011 Honorary Doctor of Laws, Dalhousie University, Halifax, Nova Scotia, Canada
2012-2015 Elected President, International Union of Biochemistry and Molecular Biology
2013 The Perry Award for excellence in research, education, and public policy
2014-2015 Phi Beta Kappa Visiting Scholar
2014 Named one of the 30 most influential people in the world in public health: http://www.masterspublichealth.net/30-most-influential-people-in-public-health/
2015 Martin J. Buerger Award of the American Crystallographic Association
2015 Debye Lectures, Cornell University
2015 Fellow, American Neurological Association

2016-2017	Elected President, The Harvey Society
2016-2017	Elected Chair of the Medical Sciences Section of the American Association for the Advancement of Science
2020	Honorary Master of Arts, Harvard University, Cambridge, Massachusetts, USA

2023 Awarded The National Medal of Science by President Joe Biden
(Established in 1963 by President John F. Kennedy, the NMoS is the highest honor the United States can confer on a scientist or engineer.)
2025 Elected a Fellow of the American Society for Biochemistry and Molecular Biology

Major National and Local Committee Assignments:

National: Member, Council of Scientific Society Presidents, 2008 -
Chair, NAS/NAM/NAE Committee on the Postdoctoral Experience, 2012-2015
Member, Biological and Environmental Research Advisory Committee, Department of Energy, 2007-2013
Member, Board of Life Sciences, National Research Council, 2001-2008
Member, Board of Chemical Sciences, National Research Council, 1995-2001
Brandeis: Member, Provost Search Committee 2001; Presidential Search Committee 2010

Scientific Advisory Boards:

Genetics Institute	1981-1989
Sterling-Winthrop, Inc.	1997-1999
Genome Therapeutics	1990-1999
ArQule, Inc.	1994-2001
New Chemical Entities	1997-2000
Tactix	1997-2003
MediQuest Therapeutics	1997- 2007
Microbia/Ironwood Phar.	1998- 2007
MannKind	2001- 2010
Compound Therapeutics	2003-2009
Link Medicines, Inc.	2005 -2009
Howard Hughes Med. Inst.	1994-2008
Pfizer, Inc.	2008-2011
Amicus Therapeutics	2005 –
Proclara Biosciences	2011 –
Meira GTx	2016 –
AnnovisBio	2017 –
Retromer Therapeutics	2020 –
Aevum Therapeutics	2023 –

Governance Boards:

Medical Advisory Board, Howard Hughes Medical Institutes	2004-2008
Board of Directors, The Dibner Institute, Cambridge, Mass.	1994-2003
Board of Directors, New York Structural Biology Center, Inc.	2013-2017
Board of Directors, ALS Therapy Alliance (Treasurer)	2012-2019
Council of Scientific Society Presidents	2008-
Board of Governors, New York Academy of Sciences	2013-

Board of Trustees, Brandeis University 2015-

Editorial Boards:

Protein Engineering (Founding Editor and Executive Editor)	1986-2003
Current Opinion in Structural Biology	1996-2004
Journal of Biochemical Education	2000-2010
Annual Reviews in Biochemistry	2000-2005
Current Protocols in Bioinformatics	2000-2010
Trends in Biochemical Sciences	2000-
PLoS Biology (one of the Founding Editors)	2001-
Proceedings of the National Academy of Sciences	2008 – 2018
Science Advances (Associate Editor)	2015 – 2019
Cell Stress (one of the Founding Editors)	2016 -

Professional Societies (leadership positions in bold):

American Academy of Neurology
American Neurological Association (Fellow)
American Crystallographic Association; **co-founder of Macromolecular Crystallography subsection**
American Association for the Advancement of Science (Fellow) **(Chair, Medical Sciences, 2016-2017)**
American Chemical Society
American Society for Biochemistry and Molecular Biology **(President, 2008-10)**
American Society for Microbiology
Biophysical Society
Genetics Society of America
American Academy of Arts and Sciences (Elected Member)
National Academy of Medicine (Elected Member)
National Academy of Sciences (Elected Member); **co-founder of Section 29 (Biophysics)**
American Philosophical Society (Elected Member)
Biochemical Society of Japan (Honorary Member)
Hungarian Academy of Sciences (Elected Foreign Member)

Founding Member, Museum of the American Revolution, Philadelphia, PA

Major Research Interests: Protein structure and function; enzyme catalysis; protein dynamics; yeast genetics; protein trafficking, neurodegenerative diseases, especially Alzheimer's and Parkinson's diseases, frontotemporal dementia, Multiple System Atrophy, and ALS (Lou Gehrig's disease).

Teaching Experience: Over 50 years experience teaching courses to undergraduates, graduate students, and medical students. I have taught Introductory Introductory Biochemistry, Kinetics, Statistical Thermodynamics, Mechanistic Enzymology, Protein Crystallography, Introductory Biophysics, Statistics, and Physical Chemistry. I have also taught laboratory courses in Biochemistry and General Chemistry. For over twenty years I taught Freshman Chemistry, the largest course at Brandeis (enrollment > 250). Since I started my college life as an humanities major (Classical Literature), I like to keep my hand in by teaching liberal arts courses from time to time; hence, every few years I teach either a course in The Social History of the Detective Story; The Treatment of Science and Scientists in the Cinema; or Critical Thinking. I have also taught courses in Chemistry and Art and Shakespeare.

Research Setting: Current supervision of five postdoctoral fellows and one research assistant.

Companies Founded: In addition to my academic career, I have helped found several biotechnology companies, including **ArQule, Inc**., a combinatorial chemistry companyacquired by Merck in 2018, and **New Chemical Entities**, a natural products company that was sold to Albany Molecular Research in 200I. I was a founding investor of **Ironwood Pharmaceuticals**, a public company (NASDAQ: IRWD) that develops drugs to treat, among other things, irritable bowel syndrome. I am also a co-founding scientist of **SPR Pharma, Inc.**, which became **Denali Therapeutics** (NASDAQ: DNLI)**,** and a co-founder of **Retromer Therapeutics and Aevum Therapeutics** (both privately held).

Patents:
United States Patent # 9,116,157: ICE-Cleaved Alpha-Synuclein as a Biomarker
United States Patent # 8,609,649: Compositions and methods for the diagnosis, treatment, and prevention of amyotrophic lateral sclerosis and related neurological diseases
United States Patent #10,533,038: Methods of reducing TDP-43-mediated neuronal cytotoxicity in Amyotrophic Lateral Sclerosis by a UPF1 polypeptide or polynucleotide
United States Patent #11,332,504: Methods of reducing FUS/TLS or TDP-43-mediated neuronal cytotoxicity by UPF1
United States Patent #12,275,764 Methods of reducing FUS/TLS or TDP-43-mediated neuronal cytotoxicity in amyotropic lateral sclerosis (ALS) by UPF1
European Patent #3,657,168 B1: Treatment of Amyotropic Lateral Sclerosis
Hong Kong Patent #40,030,841 B: Treatment of Amyotropic Lateral Sclerosis
Five others filed; under consideration.

Social Clubs: United Oxford and Cambridge University Club, 71-77 Pall Mall, London SW1Y 5HD, UK
The Cornell Club - New York, 6 E 44th St, New York, NY 10017
The Harmonie Club, 4 E 60th St, New York, NY 10022
The 'Quin House, 217 Commonwealth Avenue, Boston, MA 02116

Research Funding - Ongoing funded projects that I would like to highlight include:

NIH/NIA (National Institute on Aging) 1RF1AG091846
Petsko (PI)
09/01/2024-08/31/2029
SORL1-Retromer Structural Biology in the Pathogenesis of Alzheimer's Disease

Alzheimer's Association and Rainwater Foundation (The Tau Pipeline Program)
Petsko and Small (co-PIs)
01/01/2023 – 12/31/2025
Enhancing Retromer Function: A Novel Therapeutic Strategy for Tauopathies

Aevum Therapeutics
Petsko (PI)
04/30/24 – 04/29/26
Testing Irisin as a Potential Therapeutic for Progressive Supranucler Palsy and Frontemporal Dementia

NIH/NIA (National Institute on Aging) 1P01AG090268
Petsko and Small (Co-PIs)
01/09/25-08/31/30
SORL1 and its involvement in Alzheimer's disease pathogenesis and pathophysiology

Bibliography

(In addition to scientific publications, from 2000 through 2012 I wrote a monthly opinion column for the peer-reviewed journal *Genome Biology*. My columns are indexed on PubMed and many have been reprinted in other publications such as *Science* and *The Scientist*. A book of the first 10 years of columns has been published (see Books).)

Books:

Gregory A. Petsko, and Dagmar Ringe, ***Primers in Biology: Protein Structure and Function*** *New Science Press, Ltd.* , London (2003) 195 pp.

Gregory Petsko in Genome Biology: The first 10 years (BioMed Central, London and New York; Kindle Edition - Oct 6, 2010) - Kindle eBook; also available in iBooks for iPads.

Research Publications:

A full list of my publications may be obtained from:
http://www.ncbi.nlm.nih.gov/sites/myncbi/1HeDbpgv15yAr/bibliograpahy/40647176/public/?sort=date&direction=ascending

1. Petsko, G.A. "Proton Magnetic Resonance Spectrum of 'Anomalous' Water", **Science**, 167, 171-172 (1970).

2. Petsko, G.A. "Proton Magnetic Resonance Studies of 'Anomalous' Water-Water Mixtures", **J. Colloid and Interface Science**, 36, 503-508 (1971).

3. Russel Massey, W. Jr. and Petsko. G.A. "X-Ray Diffraction Investigations of 'Anomalous' Forms of Water", **J. Colloid and Interface Science**, 36, 508-512 (1971).

4. Banner, D.W., Bloomer, A.C., Petsko, G.A., Phillips, D.C., and Pogson, C.I. "Crystallographic Studies of Chicken Triose Phosphate Isomerase", **Cold Spring Harbour Symp. Quant. Biol.** XXXVI, 151-155 (1971).

5. Marsh, D.J. and Petsko, G.A. "A Low Temperature Device for Protein Crystallography", **J. Appl. Cryst.**, 6, 76-80 (1973).

6. Petsko, G.A. "X-Ray Crystallographic Studies of Enzyme-Substrate Interactions", **Proc. XVI Int. Table Rounde Roussel**, Paris, 9-19 (1973).

7. Banner, D.W., Bloomer, A.C., Petsko, G.A., Phillips, D.C., Pogson, C.I., and Wilson, I.A. "The Structure of Triose Phosphate Isomerase at 2.5A Resolution", **Nature**, 225, 609-614 (1975).

8. Douzou, P., Hui Bon Hoa, G., and Petsko, G.A. "Protein Crystallography at Sub-zero Temperatures: I. Lysozyme-Substrate Complexes in Cooled Mixed Solvents", **J. Mol. Biol.**, 96, 367-380 (1975).

9. Petsko, G.A. "Protein Crystallography at Sub-zero Temperatures: II. Cryo-Protective Mother Liquors for Protein Crystals", **J. Mol. Biol.**, 96, 381-392 (1975).

10. Petsko, G.A. "A New Synthesis for the Refinement of Heavy-Atom Parameters in Protein Crystallography", **Acta. Cryst.**, A32, 473-476 (1976).

11. Petsko, G.A. and Tsernoglou, D. "The Structure of Subtilopeptidase A. I. X-ray Crystallographic Data", **J. Mol.Biol.**, 106, 453-456 (1976).

12. Martin, P.D., Petsko, G.A., and Tsernoglou, D. "New High pH Crystal Forms of Ribonuclease A and S", **J. Mol. Biol.**, 108, 265-269 (1976).

13. Banner, D.W., Bloomer, A.C., Petsko, G.A., Phillips, D.C., and Wilson, I.A. "Atomic Coordinates for Triose Phosphate Isomerase from Chicken Muscle", **Biochem. Biophys. Res. Comm.**, 72, 146-155 (1976).

14. Alber, T., Petsko, G.A., and Tsernoglou, D. "Crystal Structure of an Elastase-Substrate Complex at -55˚C", **Nature**, 236, 297-300 (1976).

15. Tsernoglou, D. and Petsko, G.A. "The Crystal Structure of a Post-Synaptic Neurotoxin from Sea Snake at 2.2 Å Resolution", **FEBS Lett.**, 68, 1-4 (1976).

16. Tsernoglou, D. and Petsko, G.A. "The Three-Dimensional Structure of Neurotoxin A from Philippines Sea Snake Venom", **Proc. Nat. Acad. Sci. USA**, 7, 971-974 (1977).

17. Tsernoglou, D. and Petsko, G.A. "Protein Sequencing by Computer Graphics", **Biochim. Biophys. Acta**, 491, 605-608 (1977).

18. Tsernoglou, D. Petsko, G.A., and Walz, D.A. "Crystallization and X-ray Diffraction Studies of Bovine Thrombin", **Chemistry and Biology of Thrombin**, (R.L. Lundblat, J.W. Fenton II, and K.G. Mann, eds.) Ann Arbor Science Publishers, Inc., Ann Arbor, Michigan, 123-128 (1977).

19. Hermans, J. Jr., McQueen, J.E. Jr., Petsko, G.A., and Tsernoglou, D. "Molecular Graphics: Application to the Structure Determination of a Snake Venom Neurotoxin", **Science**, 197, 1378-1381 (1977).

20. Petsko, G.A., Phillips, D.C., and Williams, R.J.P. "The Protein Crystal Chemistry of K_2PtCl_4": general principles and interactions with triose phosphate isomerase." **J. Mol. Biol.**, 120, 345-358 (1978).

21. Tsernoglou, D., Petsko, G.A., and Hudson, R.A. "Structure and Function of Snake Venom Curarimimetic Neurotoxins", **Mol. Pharm.**, 14, 710-716 (1978).

22. Rose, D., Satio, M.I., Petkso, G.A., Tsernoglou, D., and Yonetani, T.Y. "The Structure of Oxy Cobalt Myoglobin at 1.5 Å Resolution", **Frontiers of Biological Energetics,** P.L. Dutton, J. Leigh and A. Scarpa, eds., Academic Press, Volume II, pp. 1011-1016 (1978).

23. Smith, W.W., Ludwig, M.L., Pattridge, K.A., Tsernoglou, D., and Petsko, G.A. "Crystallographic Studies of Flavodoxins: some Correlations Between Structure and Redox Potential", **Frontiers of Biological Energetics**, P.L. Dutton, J. Leigh and A. Scarpa, eds., Academic Press, Volume II, pp. 957-964 (1978).

24. Frauenfelder, H., Petsko, G.A., and Tsernoglou, D. "Temperature-Dependent X-Ray Diffraction as a Probe of Protein Structural Dynamics", **Nature**, 280, 558-563 (1979).

25. Frauenfelder, H. and Petsko, G.A. "Structural Dynamics of Liganded Myoglobin", **Biophys. J.**, 10, 465-483 (1980).

26. Douzou, P. and Petsko, G.A. "Les Proteines en Action", **La Recherche**, 11, 534-542 (1980).

27. Alber, T., Fahnestock, M., Mowbray, S., and Petsko, G.A. "Preliminary X-Ray Data for the Galactose Binding Protein from *Salmonella typhimurium*", **J. Mol. Biol.**, 147, 471-474 (1981).

28. Fink, A.L. and Petsko, G.A. "X-Ray Cryoenzymology", **Adv. Enzymol.**, Vol. 52, 177-246 (1981).

29. Alber, T., Hartman, F.C. Johnson, R.M., Petsko G.A., and Tsernoglou, D. "Crystallization of Yeast Triose Phosphate Isomerase from Polyethylene Glycol", **J. Biol. Chem.**, 256, 1356-1361 (1981).

30. Alber, T., Banner, D.W., Bloomer, A.C., Petsko, G.A., Phillips, D.C., Rivers, P.S., and Wilson, I.A. "Structure and Catalytic Mechanism of Triose Phosphate Isomerase", **Phil. Trans. Royal Society London**, B293, 159-171 (1981).

31. Yamakura, F., Suzuki, K., Petsko, G.A., and Tsernoglou, D. "Metal Replacement Studies and Crystallographic Data on Iron-Superoxide-Dismutase from *Pseudomonas Ovalis"*, in **Chemical and Biophysical Aspects of Superoxide and Superoxide Dismutase**, J.V. Bannister and H.A.O. Hill, eds., Elsevier, Amsterdam, 1981, pp. 242-253.

32. Hartmann, H., Parak, F., Steigemann, W., Ringe Ponzi, D., Petsko, G.A., and Frauenfelder, H., "Conformational Substates in a Protein: The Structure of Myoglobin at 80K", **Proc. Nat. Acad. Sci.**, 79, 4967-4971 (1982).

33. E. Pinn, A. Pahler, W. Sanger, Petsko, G.A., and Green, N.M. "Crystallization and Preliminary X-Ray Investigation of Avidin", **Eur. J. Biochem.**, 123, 545-546 (1982).

34. Gilbert, W.A., Lord, R.C., Petsko, G.A., and Thamann, T.J. "Temperature Dependence of the Conformation of Crystalline Ribonuclease A from X-Ray Diffraction and Raman Spectroscopy", **J. Raman Spectroscopy**, 12, 173-179 (1982).

35. Mowbray, S. and Petsko, G.A. "Preliminary X-Ray Data for the Ribose Binding Protein from *Salmonella typhimurium*", **J. Mol. Biol.**, 160, 545-547 (1982).

36. Alber, T., Gilbert, W.A., Ringe Ponzi, D. and Petsko, G.A. "The Role of Mobility in the Substrate Binding and Catalytic Machinery of Enzymes", **CIBA Foundation Symposia**, 93, 4-24 (1982).

37. Gilbert, W.A., Kuriyan, J., Petsko, G.A., and Ringe Ponzi, D. "Mapping the Spatial Distribution of Protein Fluctuations by X-Ray Diffraction", in **Structure and Dynamics: Nucleic Acids and Proteins**, E. Clementi and R.H. Sarma, Eds. Adenine Press, N.Y., pp. 405-420 (1982).

38. Ringe Ponzi, D., Petsko, G.A., Yamakura, F., Ohmori, D., Suzuki, K., Stallings,W.C., Pattridge, K.A., Powers, T.B., Fee, J.A., and Ludwig, M.L. "The Three-Dimensional

Structure of Iron Superoxide Dismutase", in **Oxy Radicals and Their Scavenger Systems**, G. Cohen and R.A. Greenwald, Eds., Elsevier, N.Y., pp. 340-343 (1983).

39. Seaton, B.A., Head, J.F., Lord, R.C., and Petsko, G.A. "Studies of Calmodulin Structure: Laser Raman Spectroscopy of Biomolecules", **Biochemistry**, 22, 973-978 (1983).

40. Rose, D.R., Seaton, B.A., Petsko, G.A., Novotny, J., Margolies, M.N., Locke, E., and Haber, E. "Crystallization of the Fab Fragment of a Monoclonal Anti-Digoxin Antibody and its complex with Digoxin", **J. Mol. Biol.**, 164, 81-84 (1983).

41. Mowbray, S.L., and Petsko, G.A. "The Introduction of Specific Sites for Heavy Metal Binding in a Crystalline Protein", **J. Biol. Chem.**, 258, 5634-5637 (1983).

42. Smith, W.W., Pattridge, K.A., Ludwig, M.L., Petsko, G.A., Tsernoglou, D., Tanaka, M., and Yasunobu, K. "The Structure of Oxidized Flavodoxin from *anacystis Nidulans*", **J. Mol. Biol.**, 165, 737-755 (1983).

43. Ringe, D., Petsko, G.A., Yamakura, F., and Suzuki, K. "Determination of the Iron Content of Iron Superoxide Dismutase by Anomalous Scattering", **Proc. Roy. Soc. London,** B218, 119-126 (1983).

44. Ringe, D., Petsko, G.A., Yamakura, F., Suzuki, K., and Ohmori, D. "Structure of Iron Superoxide Dismutase from *Ps. Ovalis* at 2.9 Å Resolution", **Proc. Nat. Acad. Sci.**, 80, 3879-3883 (1983).

45. Mowbray, S.L. and Petsko, G.A. "The X-Ray Structure of the Periplasmic Galactose Binding Protein from *Salmonella Typhimurium* at 3 Å Resolution", **J. Biol. Chem.**, 258, 7991-7997 (1983).

46. Petsko, G.A. and Ringe, D. "Fluctuations in Protein Structure form X-Ray Diffraction", **Ann. Rev. Biophys. and Bioeng.**, 13, 331-371 (1984).

47. Davenport, R.C., Frankel, D., Petsko, G.A., and Raj Bhandary, U.L. "Site Specific Mutagenesis of Yeast Triose Phosphate Isomerase", **Biochem. Soc. Transactions**, 12, 229-232 (1984).

48. Ringe, D., Petsko, G.A., Kerr, D.E., and Ortiz de Montellano, P.R. "Reaction of Myoglobin with Phenylhydrazine: A Molecular Doorstop", **Biochemistry**, 23, 2-4 (1984).

49. Douzou, P. and Petsko, G.A. "Proteins at Work: 'Stop-Action' Pictures at Sub-Zero Temperatures", **Advances in Protein Chemistry**, 36, 245-361 (1984).

50. Stallings, W.C., Bull, C., Pattridge, K.A., Powers, T.B., Fee, J.A., Ludwig, M.L., Ringe, D., and Petsko, G.A. "The Three-Dimensional Structure of Iron Superoxide-Dismutase: Kinetic and Structural Comparisons with Cu/Zn and Mn Dismutase", in **Oxygen Radicals in Chemistry and Biology**, W. Bors, M. Saran and D. Tait, eds., W. de Gruyter & Co., New York (1984).

51. Ringe, D., Kuriyan, J., Petsko, G.A., Karplus, M., Frauenfelder, H., Tilton, R.F. Jr., and Kuntz, I.D. Jr., "The Temperature Dependence of Protein Structure and Mobility", **Transactions Am. Cryst. Assoc.**, 20, 109-122 (1984).

52. Seaton, B.A., Campbell, R.L., Petsko, G.A., Rose, D.R., Edelstein, I., and Marcus, F. "Preliminary X-Ray Crystallographic Studies of Pig Kidney Fructose-1,6-bisphosphatase", **J. Biol. Chem.**, 259, 8915-8916 (1984).

53. Tilton, R.F., Kuntz, I.D. Jr., and Petsko, G.A. "Cavities in Proteins: Structure of Metmyoglobin-Xe Complex Solved to 1.9 Å", **Biochemistry**, 12, 2849-2857 (1985).

54. Ringe, D. and Petsko, G.A. "Mapping Protein Dynamics by X-Ray Diffraction", **Progress in Biophysics and Molecular Biology**, 45, 197-235 (1985).

55. Lord, R.C., Petsko, G.A., Seaton, B.A., and Goodfriend, L. "Laser Raman Spectroscopy of Biomolecules: Structural Studies of Ragweed Allergen Ra5", **Spectrochimica Acta**, 41A, 199-203 (1985).

56. Kozelka, J., Petsko, G.A., Lippard, S.J., and Quigley, G.J. "Molecular Mechanics Calculations on cis-[$Pt(NH_3)_2$<d(GpG)>] Adducts in Two Oligonucleotide Duplexes", **J. Am. Chem. Soc.**, 107, 4079-4081 (1985).

57. Burley, S.K. and Petsko, G.A. "Aromatic-Aromatic Interaction: A Mechanism of Protein Structure Stabilization", **Science**, 229, 23-28 (1985).

58. Petsko, G.A. "Flow Cell Construction and Use", **Methods in Enzymology**, 114, 141-146 (1985).

59. Petsko, G.A., Kuriyan, J., Gilbert, W.A., Ringe, D., and Karplus, M. "Crystallographic Studies of Enzyme-Substrate Complexes (and Other Things) at Low Temperature", in **Structural Biological Applications of X-Ray Absorption**, H. Bartunik and B. Chance, eds., Academic Press, New York (1985).

60. Kuriyan, J., Levy, R.M., Petsko, G.A., and Karplus, M. "The Effect of Anisotropy and Anharmonicity on Protein Crystallographic Refinement: An Evaluation by Molecular Dynamics", **J. Mol. Biol.**, 190, 227-254 (1986).

61. Kozelka, J., Petsko, G.A., Quigley, G.J., and Lippard, S.J. "High-Salt and Low-Salt Models for Kinked Adducts of cis-Diamminedichloroplatinum(II) with Oligonucleotide Duplexes", **Inorg. Chem.**, 25, 1075-1077 (1986).

62. Burley, S.K., and Petsko, G.A. "Dimerization Energetics of Benzene and Aromatic Amino Acid Side-Chains", **J. Am. Chem. Soc.**, 108, 7995-8001 (1986).

63. Burley, S.K., and Petsko, G.A. "Amino-Aromatic Interactions in Proteins", **FEBS Letters**, 203, 139-143 (1986).

64. Kuriyan, J., Wilz, S., Karplus, M., and Petsko, G.A. "The X-Ray Structure and Refinement of CO-Myoglobin at 1.5 Å Resolution", **J. Mol. Biol.**, 192, 133-154 (1986).

65. Ringe, D. and Petsko, G.A. "Study of Protein Dynamics by X-Ray Diffraction", **Methods in Enzymology**, 131, 389-433 (1986).

66. Kozelka, J., Archer, S., Petsko, G.A., Lippare, S.J., and Quigley, G.J. "Molecular Mechanics Modelling of Oligonucleotide Adducts of the Antitumor Drug-Diammedichloroplatinum (II)", **Biopolymers**, 26, 1245-1271 (1987).

67. Neidhart, D.J., Distefano, M.D., Tanizawa, K., Soda, K., Walsh, C.T., and Petsko, G.A. "X-ray Crystallographic Studies of the Alanine-specific Racemase from *Bacillus stearothermophilus*: Overproduction, Crystallization and Preliminary Characterization", **J. Biol. Chem.**, 262, 15323-15326 (1987).

68. Campbell, R. and Petsko, G.A. "Ribonuclease Structure and Catalysis: Crystal Structure of Sulfate-Free Native Ribonuclease A at 1.5 Å Resolution", **Biochemistry**, 26, 8579-8584 (1987).

69. Ahern, T.J., Casal, J.I., Petsko, G.A., and Klibanov A.M. "Control of Oligomeric Enzyme Thermostability by Protein Engineering", **Proc. Nat. Acad. Sci. USA**, 84, 675-679 (1987).

70. Casal, J.I., Ahern, T.J., Davenport, R.C., Petsko, G.A., and Klibanov, A.M. "Subunit Interface of Triose Phosphate Isomerase: Site-Directed Mutagenesis and Characterization of the Altered Enzyme", **Biochemistry**, 26, 1258-1263 (1987).

71. Frauenfelder, H.,Hartmann, H., Karplus, M., Kuntz, I.D. Jr., Kuriyan, J., Parak, F., Petsko, G.A., Ringe, D., Tilton, R.F., Connolly, M. and Max, N. "The Thermal Expansion of a Protein", **Biochemistry**, 26, 254-261 (1987).

72. Brunger, A.T., Cambell, R.L., Clore, G.M., Groneborn, A.M., Karplus, M., Petsko, G.A., and Teeter, M.M. "Solution of a Protein Crystal Structure with a Model Obtained from NMR Interproton Distance Restraints", **Science**, 235, 1049-1053 (1987).

73. Stoddard, B., Howell, P.L., Asano, S., Soda, K., Tanizawa, K., Ringe, D., and Petsko, G.A. "Preliminary X-ray Data for a Amino Acid Amino-transferase from a Novel Thermophilic Bacillus", **J. Mol. Biol.**, 196, 441-442 (1987).

74. Kuriyan, J., Karplus, M., and Petsko, G.A., "Estimation of Uncertainties in X-ray Refinement Results by Use of Perturbed Structure" in **Proteins: Structure, Function, and Genetics**, 2, 1-12 (1987).

75. Farber, G.K., Petsko, G.A., and Ringe, D. "The 3 Å Crystal Structure of Xylose Isomerase from *Streptomyces olivochromogenes*", **Protein Engineering**, 1, 459-466 (1987).

76. Farber, G.K., Machin, P., Almo, S.C., Petsko, G.A., and Hajdu, J. "X-ray Laue Diffraction from Crystals of Xylose Isomerase", **Proc. Natl. Acad. Sci. USA**, 85, 112-115 (1988).

77. Alber, T.C., Davenport, R.C. Jr., Giammona, D.A., Lois, E., Petsko, G.A., and Ringe, D. "Crystallography and Site-Directed Mutagenesis of Yeast Triose Phosphate Isomerase: What Can We Learn about Catalysis from a `Simple' Enzyme?", **Cold Spring Harbour Symp. Quant. Biol.** LII, 603-613 (1988).

78. Burley, S.K. and Petsko, G.A. "Weakly Polar Interactions in Proteins", **Adv. Prot. Chem.**, 39, 125-189 (1988).

79. Nickbarg, E.B., Davenport, R.C. Jr., Petsko, G.A., and Knowles, J.R. "Triosephosphate Isomerase from Yeast: Removal of a putatively Electrophilic Histidine Results in a Subtle Change in Catalytic Mechanism", **Biochemistry**, 27, 5948-5960 (1988).

80. Neidhart, D.J., Powers, V.M., Kenyon, G.L., Tsow, A.Y., Ransom, S.C., Gerlt, J.A., and Petsko, G.A. "Preliminary X-ray Data on Crystals of Mandelate Racemase", **J. Biol. Chem.**, 263, 9268-9270 (1988).

81. Tilton, R.F. Jr. and Petsko, G.A. "A Structure of Sperm Whale Myoglobin at a Nitrogen Gas Pressure of 145 Atmospheres", **Biochemistry**, 27, 6574-6582 (1988).

82. Glasfeld, A., Farber, G.K., Ringe, D., Marcel, T., Drocourt, D., Tiraby, G., and Petsko, G.A. "Characterization of Crystals of Xglose Isomerase from *S. violaceoniger*", **J. Biol. Chem**, 263, 14612-14613 (1988).

83. Niedhart, D.J. and Petsko, G.A. "The Refined Crystal Structure of Subtilisin Carlsberg at 2.5 Å Resolution", **Protein Engineering**, 2, 271-276 (1988).

84. Merola, M., Martinez, del Pozo, A., Ueno, H., Recsei, P., Di Donato, A., Manning, J.M., Tanizawa, K., Masu, Y., Asano, S., Tanaka, H., Soda, K., Ringe, D., and Petsko, G.A. "Site-Directed Mutagenesis of the Cysteinyl Residues and the Active-Site Serine Residue of Bacterial Amino Acid Transaminase", **Biochemistry**, 28, 505-509 (1989).

85. Martinez del Pozo, A., Merola, M., Ueno, H., Manning, J.M., Tanizawa, K., Nishimura, K., Asano, S., Tanaka, H., Soda, K., Ringe, D., and Petsko, G.A. "Activities and Spectroscopic Properties of Bacterial Amino Acid Transaminase after Multiple Site-Directed Mutagenesis of a Single Tryptophan Residue", **Biochemistry**, 28, 510-516 (1989).

86. Farber, G.K., Glasfeld, A., Gerard T., Dagmar R., and Petsko, G.A. "Crystallographic Studies of the Mechanism of Xylose Isomerase", **Biochemistry**, 28, 7289-7297 (1989).

87. Brunger, A.T., Karplus, M., and Petsko, G.A. "Crystallographic Refinement by Simulated Annealing: Application to Crambin", **Acta Cryst.**, A45, 50-61 (1989).

88. Burley, S.K., and Petsko, G.A. "Electrostatic Interactions in Aromatic Oligopeptides Contribute to Protein Stability", **Trends in Biotechnology**, 7, 354-354 (1989).

89. Rose, D.R., Strong, R.K., Margolies, M. N., Gefter, M. L., and Petsko, G.A. "Crystal Structure of the Antigen-binding Fragment of the Murine Anti-arsonate monoclonal antibody 36-71 at 2.9-Å resolution", **Proc. Natl. Acad. Sci. USA**, Vol. 87, pp. 338-342, (1990).

90. Schlichting, I., Almo, S.C., Rapp, G., Wilson, K., Petratos, K., Lentfer, A., Wittinghofer, A., Habsch, W., Pai, E.F., Petsko, G.A., and Goody, R.S. "Time-resolved X-ray Crystallographic Study of the Conformational Change in Ha-Ras p21 on GTP Hydrolysis", **Nature**, 345, 309-315 (1990).

91. Farber, G.K. and Petsko, G.A. "The Evolution of □/□ Barrel Enzymes", **Trends in Biochemical Sciences**, 15, 228-234 (1990).

92. Stoddard, B.L., Bruhnke, J., Porter, N., Ringe, D., and Petsko, G.A. "Structure and Activity of Two Photoreversible Cinnamates Bound to Chymotrypsin", **Biochemistry**, 29, 4871-4879 (1990).

93. Stoddard, B.L., Bruhnke, J., Koenigs, P., Porter, N., Ringe, D., and Petsko, G.A. "Photolysis and Deacylation of Inhibited Chymotrypsin", **Biochemistry**, 29, 8042-8051 (1990).

94. Lolis, E. and Petsko, G.A. "Transition-State Analogs in Protein Crystallography: Probes of the Structural Source of Enzyme Catalysis", **Ann. Rev. Biochem.**, 59, 597-630 (1990).

95. Lolis, E., Alber, T., Davenpot, R.C., Rose, D., Hartman, F.C., and Petsko, G.A. "Structure of Yeast Triosephosphate Isomerase at 1.9 Å Resolution", **Biochemistry**, 29, 6609-6618 (1990).

96. Lolis, E. and Petsko, G.A. "Crystallographic Analysis of the Complex between Triosephosphate Isomerase and 2-Phosphoglycolate at 2.5 Å Resolution: Implications for Catalysis", **Biochemistry**, 29, 6619-6625 (1990).

97. Pai, E.F., Krengel, U., Petsko, G.A., Goody, R.S., Kabsch, W., and Wittinghofer, A.. "Refined Crystal Structure of the Triphosphate Conformation of H-ras p21 at 1.35 Å Resolution: Implications for the Mechanism of GTP Hydrolysis", **EMBO J.**, 9, 2351-2359 (1990).

98. Ringe, D. and Petsko, G.A. "Cystic Fibrosis--A Transport Problem?", **Nature**, 346, 312-313 (1990).

99. Joseph, D., Petsko, G.A., and Karplus, M. "Anatomy of a Conformational Change: Hinged 'Lid' Motion of the Triosephosphate Isomerase Loop", **Science**, 249, 1425-1428 (1990).

100. Stoddard, B.L., P.L. Howell, Ringe, D., and Petsko, G.A. "The 2.1 Å Resolution Structure of Iron Superoxide Dismutase from *Pseudomonas ovalis*", **Biochemistry**, 29, 8885-8893 (1990).

101. Stoddard, B.L., Ringe, D., and Petsko, G.A. "The structure of iron superoxide idsmutase from *Pseudomonas ovalis* complexed with the inhibitor azide", **Protein Engineering**, 4, 113-119 (1990).

102. Karplus, M. and Petsko, G.A. "Molecular dynamics simulations in biology", **Nature,** 347, 631-639 (1990).

103. Neidhart, D.J., Kenyon, G.L., Gerlt, J.A., and Petsko, G.A. "Mandelate racemase and muconate lactonizing enzyme are mechanistically distinct and structurally homologous", **Nature,** 347, 692-694 (1990).

104. Danishefsky, A.T., Onnufer, J.J., Petsko, G.A., and Ringe, D. "Activity and Structure of the Active-Site Mutants R386Y of *Escherichia coli* Aspartate Aminotransferase", **Biochemistry** 30, 1980-1985 (1991).

105. Komives, E.A., Chang, L.C., Lolis, E., Tilton, R.F., Petsko, G.A., and Knowles, J.R. "Electrophilic Catalysis in Triosephosphate Isomerase: The Role of Histidine-95", **Biochemistry,** 30 3011-3019 (1991).

106. Strong, R.K., Petsko, G.A., Sharon, J., and Margolies, M.N. "Three-Dimensional Structure of Murine Anti-azophenylarsonate Fab 36-71. 1. X-ray Crystallography, Site-Directed Mutagenesis, and Modeling of the Complex with Hapten", **Biochemistry,** 30, 3739-3748 (1991).

107. Strong, R.K., Petsko, G.A., Sharon, J., and Margolies, M.N. "Three-Dimensional Structure of Murine Anti-azophenylarsonate Fab 36-71. 2. Structural Basis of Hapten Binding and Idiotypy", **Biochemistry,** 30, 3749-3757 (1991).

108. Stoddard, B.L., Koenigs, P., Porter, N., Petratos, K., Petsko, G.A., and Ringe, D. "Observation of the Light-Triggered Binding of Pyrone to Chymotrypsin Using Laue X-ray Crystallgraphy", **PNAS**, 88, 5503-5507 (1991).

109. Bash, P.A., Field, M.J., Davenport, R.C., Petsko, G.A., Ringe, D. and Karplus, M. "Computer Simulation and Analysis of the Reaction Pathway of Triosephosphate Isomerase", **Biochemistry**, 30, 5826-5832 (1991).

110. Davenport, R.C., Bash, P.A., Seaton, B.A., Karplus, M., Petsko, G.A., and Ringe, D. "Structure of the Tiosephosphate Isomerase-Phosphoglycolohydroxamate Complex: An Analogue on the Intermediate on the Reaction Pathway", **Biochemistry,** 30, 5821-5826 (1991).

111. Petsko, G.A. "Enzyme Evolution--Deja vu all over again", **Nature,** 352, 104-105 (1991).

112. Neidhart, D.J., Howell, P.L., Petsko, G.A., Powers, V.M., Li, R., Kenyon, G.L. and Gerlt, J.A. "Mechanism of the Reaction Catalyzed by Mandelate Racemase: Crystal Structure of Mandelate Racemase at 2.5 Å Resolution, Identification of the Active Site and Possible Catalytic Residues", **Biochemistry**, 30, 9264-9273 (1991).

113. Ringe, D. and Petsko, G.A. "Viral Proteases--Molecular Metamorphosis," **Nature**, 354, 22-23 (1991).

114. Tilton, R.F. Jr., Dewan, J.C. and Petsko, G.A. "The Effects of Temperature on Protein Structure and Dynamics--X-ray Crystallographic Studies of the Protein Ribonuclease A at Nine Different Temperatures from 98K to 320K", **Biochemistry**, 31, 2469-2481 (1992).

115. Howell, P.L., Warren, C, Amatayakul-Chantler, S. Petsko, G.A., and Hajdu, J. "Activity of Crystalline Turkey Egg White Lssozyme", **Proteins: Structure, Function and Genetics**, 12, 91-99 (1992).

116. Stoddard, B.L., Strong, R.K., Farber, G.K., Arrott, A. and Petsko, G.A. "Design of apparatus and experiments to determine the effect of microgravity on the crystallization of biological macromolecules using the Soviet MIR spacestation", **J. Cryst. Growth**, in press (1992).

117. Rasmussen, B.F., Stock, A.M., Ringe, D., and Petsko, G.A. "Crystalline Ribonuclease A Loses Function Below the Dynamical Transition at 220K", **Nature**, 357, 423-424 (1992).

118. Lynne Howell, P., Almo, S.C., Parsons, M.R., Hajdu, J., and Petsko, G.A. "Structure Determination of Turkey Egg-White Lysozyme Using Laue Diffraction Data", **Acta Cryst.**, B48, 200-207 (1992).

119. Petsko, G.A. "On the Other Hand...", **Science**, 256, 1403-1404 (1992).

120. Gerlt, J.A., Kozarich, J.W., Kenyon, G.L., Neidhart, D.J., and Petsko, G.A. "Mechanism of the Reaction Catalyzed by Mandelate Racemase: Lessons from Protein Engineering, Chemical Modification and X-ray Crystallography", Harnessing Biotechnology for the 21st Century, in **ACS Conference Proceedings Series**, 155, 7487 (1992).

121. Petsko, G.A. "Art is Long and Time is Fleeting: The Current Problems and Future Prospects for Time-Resolved Enzyme Crystallography", **Philosophical Transactions of the Royal Society of London, Series A.** 340, 1657: 167-334, (1992).

122. Gerlt, J.A., Kenyon, G.L., Kozarich, J.W., Neidhart, D.J., Petsko, G.A., and Powers, V.M. "Mandelate racemase and class-related enzymes", **Current Opionion in Structural Biology**, 2, 736-742 (1992).

123. Petsko, G.A. "Fishing in Src-infested waters", **Nature**, 358, 625-626 (1992).

124. Kryger, G., Petsko, G.A., Ouyang, J., and Viola, R.E. "Crystallization and Preliminary Crystallographic Analysis of Aspartate-b-semialdehyde Dehydrogenase from Escherichia coli. **J. Mol. Biol.**, 228, 300-301 (1992).

125. Petsko, G.A. "Large Cast, but no plot", **Nature**, 359, 596-597 (1992).

126. Jeffrey, P.D., Strong, R.K., Sieker, L.C., Chang, C.Y., Campbell, R.L., Petsko, G.A., Haber, E., Margolies, M.N., and Sheriff, S. "26-10 Fab:digoxin complex -- affinity and specificity due to surface complementarity", **Proc. Natl. Acad. Sci. USA**, 90, 10301-10314 (1993).

127. Petsko, G.A., Kenyon, G.L., Gerlt, J.A., Ringe, D., and Kozarich, J.W. "On the Origin of Enzymatic Species", **TIBS**, 18, 372-377 (1993).

128. Mitra, B., Gerlt, J.A., Babbitt, P.C., Koo, C.W., Kenyon, G.L., Joseph, D., and Petsko, G.A. "A novel structural basis for membrane association of a protein: Construction of a chimeric soluble mutant of (S)-mandelate dehydrogenase from *Pseudomonas putida*", **Biochemistry**, 32, 12959-12967 (1993).

129. Stock, A.M., Martinez-Hackert, E., Rasmussen, B.F., West, A.H., Stock, J.B., Ringe, D., and Petsko, G.A. "Structure of the Mg^{2+}-bound form of CheY and mechanism of phosphoryl transfer in bacterial chemotaxis", **Biochemistry**, 32, 13375-13380 (1993).

130. Allen, K.N., Lavie, A., Glasfeld, A., Tanada, T.N., Gerrity, D.P., Carlson, S.C., Farber, G.K., Petsko, G.A., and Ringe, D. "Role of the Divalent Metal Ion in Sugar Binding, Ring Opening and Isomerization by D-xylose Isomerase: Replacement of a Catalytic Metal by an Amino Acid", **Biochemistry**, 33, 1488-1494 (1994).

131. Joseph-McCarthy, D., Rost, L.E., Komives, E.A., Knowles, J.R., and Petsko, G.A. "Crystal Structure of the Mutant Yeast Triosephosphate Isomerase in which the Catalytic Base Glu-165 is Changed to Asp", **Biochemistry**, 33, 2824-2829 (1994).

132. Joseph-McCarthy, D., Lolis, E.M., Komives, E.A., Knowles, J.R., and Petsko, G.A. "Crystal Structure of the K12M/G15A Triosephosphate Isomerase Double Mutant and Electrostatic Analysis of the Active Site", **Biochemistry**, 33, 2815-2823 (1994).

133. Landro, J.A., Gerlt, J.A., Kozarich, J.W., Koo, C.W., Shah, V.J., Kenyon, G.L., Neidhart, D.J., Fujita, S., and Petsko, G.A. "The Role of 166 in the Mechanism of Mandelate Racemase from *Pseudomonas putida*: Mechanistic and Crystallographic Evidence for Stereospecific Alkylation by (R)-□-Phenylglycidate", **Biochemistry**, 33, 635-643 (1994).

134. Zhang, Z., Sugio, S., Komives, E.A., Liu, K.D., Knowles, J.E., Petsko, G.A., and Ringe D. "1.8Å Resolution Crystal Structure of Wild-Type Chicken Muscle Triosephosphate Isomerse-Phosphoglycolic Acid Complex", **Biochemistry**, 33, 2830-2837 (1994).

135. Zhang YX, Shi Y, Zhou M, Petsko GA. "Cloning, sequencing, and expression in Escherichia coli of the gene encoding a 45-kilodalton protein, elongation factor Tu, from Chlamydia trachomatis serovar F. **J Bacteriol.** 176(4):1184-1187 (1994).

136. Allen, K.N., Lavie, A., Farber, G.K., Glasfeld, A., Petsko, G.A., and Ringe, D. "Isotope Exchange Plus Substrate and Inhibition Kinetics of D-xylose Isomerase Do Not Support a Proton-Transfer Mechanism", **Biochemistry**, 33, 1481-1487 (1994).

137. Harrison, D.H., Bohren, K.M., Ringe, D., Petsko, G.A., and Gabbay, K.H. "An Anion Binding Site in Human Aldose Reductase: Mechanistic Implications from the Binding of Citrate, Cacodylate and Glucose-6-Phosphate", **Biochemistry**, 33, 2011-2020 (1994).

138. Bohren, K.M., Grimshaw, C.E., Lai, C.-J., Harrison, D.H., Ringe, D., Petsko, G.A., and Gabbay, K.H. "Tyrosine-48 is the Proton Donor and Histidine-110 Directs Substrate Stereochemical Selectivity in the Reduction Reaction of Human Aldose Reductase: Enzyme Kinetics and Crystal Structure of the Y48H Mutant Enzyme", **Biochemistry**, 33, 2021-2032 (1994).

139. Mattos, C., Rasmussen, B.F., Ding, X., Petsko, G.A., and Ringe, D. "Analogous Inhibitors of Elastase Do Not Always Bind Analogously", **Nature Structural Biology**, 1, 55-58 (1994).

140. Lavie, A., Allen, K.N., Petsko, G.A., and Ringe, D. "X-ray Crystallographic Structures of D-xylose Isomerase-Substrate Complexes: Position of the Substrate and Evidence for Metal Movement During Catalysis", **Biochemistry** 33, 5469-5480 (1994).

141. Mattos, C., Petsko, G.A., and Karplus, M. "Analysis of Two-Residue Turns in Proteins", **J. Mol. Biol.** 238, 733-747 (1994).

142. Schiering, N., Tao, X., Murphy, J.R., Petsko, G.A., and Ringe, D. "Crystallization and Preliminary X-ray Studies of the Diphtheria Tox Repressor from *Corynebacterium Diptheriae*", **J. Mol. Biol.** 244, 654-656 (1994).

143. Ding, X., Ramussen, B.F., Petsko, G.A., and Ringe, D. "Direct Structural Observation of an Acyl-Enzyme Intermediate in the Hydrolysis of an Ester Substrate by Elastase", **Biochemistry**, 33, 9285-9293 (1994).

144. Kallarakal, A.T., Mitra, B., Kozarich, J.W., Gerlt, J.A., Clifton, J.R., Petsko, G.A., and Kenyon, G.L. "Mechanism of the Reaction Catalyzed by Mandelate Racemase: Structure and Mechanistic Properties of the K166R Mutant" **Biochemistry**, 34, 2788-97 (1995).

145. Mattos, C., Giammona, D.A., Petsko, G. A., and Ringe, D. "Structural Analysis of the Active Site of Porcine Pancreatic Elastase Based on the X-ray Crystal Structures of Complexes with Trifluoracetyl-Dipeptide-Anilide Inhibitors, **Biochemistry**, 34, 3193-203 (1995).

146. Mitra, B., Kallarakl, A.T., Kozarich, J.W., Gerlt, J.A. Clifton, J.R., Petsko, G.A., and Kenyon, G.L., "Mechanism of the Reaction Catalyzed by Mandelate Racemase: Importance of Electrophilic Catalysis by Glutamic Acid 317", **Biochemistry**, 34, 2777-87 (1995).

147. Kenyon, G.L., Gerlt, J.A., Petsko, G.A., and Kozarich, J.W. "Manelate Racemase: Structure-Function Studies of a Pseudosymmetric Enzyme" **Acc. Chem. Res.**, 28, 178-86 (1995).

148. Sugio, S., Petsko, G.A., Manning, J.M., Soda, K., and Ringe, D. "Crystal Structure of a D-Amino Acid Aminotransferase: How the Protein Controls Stereoselectivity" **Biochemistry,** 34, 9661-9 (1995).

149. Komives, E.A., Lougheed, J.C., Liu, K., Sugio, S., Zhang, Z., Petsko, G.A., and Ringe, D. "The Structural Basis for Pseudoreversion of the E165D Lesion by the Secondary S96P Mutation in Triosephosphate isomerase Depends on the Positions of Active Site Water Molecules" **Biochemistry**, 34, 13612-21 (1995).

150. Warren, G.L., and Petsko, G.A. "Composition analysos of □-helixes in thermophilic organisms", **Protein Eng.**, 8, 905-13 (1995).

151. Allen, K.N., Lavie, A., Petsko, G.A., and Ringe, D. "Design Synthesis and Characterization of a Potent Xylose Isomerase Inhibitor, D-Threonohydroxamic Acid, and High-Resolution X-ray Crystallographic Structure of the Enzyme-Inhibitor Complex", **Biochemistry**, 34, 3742-3749 (1995).

152. Ringe, D. and Petsko, G.A. "The Age of Structure: The Role of Protein Crystallography in Drug Design"**, New Perspectives in Drug Design,** Academic Press Ltd. (1995).

153. Hasson, M.S., Muscate, A., Henehan, G.T.M., Guidinger, P.F., Petsko, G.A., Ringe, D., and Kenyon, G.L. "Purification and crystallization of benzoylformate decarboxylase", **Protein Science**, 4, 955-959 (1995).

154. Peisach, E., Casebier, D., Gallion, S.L., Furth, P., Petsko, G.A., Hogan, J.C. Jr., and Ringe, D. "Interaction of a Peptidomimetic Arminimide Inhibitor with Elastase", **Science**, 269, 66-69 (1995).

155. Babbit, P.C, Mrachko, G.T., Hasson, M.S., Huisman, G.W., Kolter, R., Ringe, D., Petsko, G.A., Kenyon, G.L., and Gerlt, J.A. "A Functionally Diverse Enzyme Superfamily that Abstracts the □ Protons of Carboxylic Acids", **Science**, 267, 1159-1161 (1995).

156. Miranda, R. R. and Petsko, G.A. "Oligonucleotide-Directed Mutagenesis of the Rat Ribonuclease Gene", **The Phillippine Journal of Science,** 124, 125-139 (1995).

157. Schiering, N., Tao, X., Zeng, H., Murphy, J.R., Petsko, G.A., and Ringe, D. "Structures of the Apo- and the metal ion-activated forms of the Diphtheria *Tox* Repressor from *Corynebacterium Diphtheriae*", **Proc. Natl. Acad. Sci.**, 92, 9843-9850 (1995).

158. Kryger, G., Wallon, G., Lovett, S.T., Ringe, D., and Petsko, G.A. "Revision of the Amino-Acid Sequence of 3-Ispropoylmalate Dehydrogenase from Salmonella Typhimurium by Means of X-ray Crystallography", **Gene**, 164, 85-87 (1995).

159. Van Ophem, P.W., Pospischil, M.A., Ringe, D., Peisach, D., Petsko, G.A., Soda, K., and Manning, J.M. "Catalytic Ability and Stability of Two Recombinant Mutants of D-amino Acid Transaminase Involved in Coenzyme Binding", **Protein Science**, 4, 2578-2586 (1995).

160. Martinez del Pozo, A., Van Ophem, P., Ringe, D., Petsko, G., Soda, K., and Manning, J.M. "Interaction of Pyridoxal 5'-phosphate with Tryptophan-139 at the subunit interface of dimeric D-amino acid transaminase" **Biochemistry**, 35, 2112-16 (1996).

161. Allen, K.N., Bellamacina, C.R., Ding, X., Jeffrey, C.J., Mattos, C., Petsko, G.A., and Ringe, D. "An Experimental Approach to Mapping the Binding Surfaces of Crystalline Proteins", **J. Phys. Chem**., 100, 2605-2611 (1996).

162. Ringe, D. and Petsko, G.A. "A Consumer's Guide to Protein Crystallography", **Protein Engineering and Design,** P. Carey, ed. Academic Press, NY (1996).

163. Petsko, G.A. "For Medicinal Purposes". **Nature**, 384, (6604 suppl), 7-9 (1996 Nov 7).

164. Komives, A.E., Longheed, J.C., Zhang, Z., Sugio, S., Narayana, N., Xuong, N.G., Petsko, G.A., and Ringe, D., "The Structural Basis for Pseudoreversion of the H95N Lesion by the Secondary S996P Mutation in Triosephosphate Isomerase" **Biochemistry,** 35, 15479-15484 (1997).

165. Wallon, G., Kryger, G., Lovett, S.T., Oshima, T., Ringe, D., and Petsko, G.A. "Crystal Structures of *Escherichia coli* and *Salmonella typhimurium* 3-isorpropylmalate Dehydrogenase and Comparison with their Thermophilic Counterpart from *Thermus thermophilus*", **J. of Mol. Biol.** 266 (5), 1016-1031 (1997).

166. Wallon, G., Kazutaka, Y., Kirino, H., Yamagishi, A., Lovett, S. T., Petsko, G. A., and Oshima, T., "Purification, catalytic properties and thermostability of 3-isopropylmalate dehdrogenase from *Esherichia coli* " **Biochimica Et Biophysica Acta**, 1337, 105-112 (1997).

167. Shaw, J.P., Petsko, G.A., and Ringe, D. "Determination of the Structure of Alanine Racemase from *Bacillus stearothermophilus* at 1.9-Å Resolution" **Biochemistry**, 36, 1329-1342 (1997).

168. Brenner, C., Garrison, P., Gilmour, J., Peisach, D., Ringe, D., Petsko, G.A., and Lowenstein, J.M. "Crystal Structures of HINT Demonstrate that Histidine Triad Proteins are GalT-ralated Nucleotide-Binding Proteins" **Nature Structural Biology**, 4, number 3 (1997).

169. Hasson, M.S., Schlichting, I., McGowen, M.M.,Woolridge, E. M., Kozarich, J.W., Petsko, G.A. and Ringe, D. "Characterization of two crystal forms of3-carboxy-cis, cis-muconate lactonizing enzyme form Pseudomonas putida" **Acta Cryst.,** D53, 352-353 (1997).

170. Vitkup D., Petsko, G.A., and Karplus, M. "A Comparison Between Molecular Dynamics and X-ray Results for the Dissociated CO in Myoglobin" **Nature Structural Biology**, 4, 202-208 (1997).

171. Hasson, M.S., Muscate, A., McLeisk, M.J., Harris, T.K., Babbit, P.C., Gerlt, J.A., Kenyon, G.L., Petsko, G.A., Ringe, D. "The Crystal Structure of Bernzoylformate Decarboxylase at 1.6Å Resolution." **Biochemistry**, 37, 9918-9930 (1998).

172. Harrison, D.H.T., Bohren, K.M., Petsko, G.A., Ringe, D., and Gabbay, K.H. "The Alrestatin Double-Decker: Binding of Two Inhibitor Molecules to Human Aldose Reductase Reveals a New Specificity Determinant." **Biochemistry**, 36, 16134-16140 (1998).

173. Hasson, M.S., Schlichting, I., Moulai, J. Taylor, K., Barrett, W., Kenyon, G.L., Babbitt, P.C., Gerlt, J.A., Petsko, G.A., and Ringe, D. "Evolution of an Enzyme Active Site: The Structure of a New Crystal Form of Muconate Lactonizing Enzyme Compared with Mandelate Racemase and Enolase." **Proc. Natl. Acad. Sci. USA**, 95, 0396-10401 (1998).

174. Jeffery, C.J., Barry, T. Doonan, S., Petsko, G.A., and Ringe, D. "Crystal Structure of *Saccharomyces cerevisiae* cytosolic aspartate aminotransferase." **Protein Science** 7, 1380-1387 (1998).

175. Yamakura, F., Rardin, R.L., Petsko, G.A. Ringe, D., Hiraoka, B.Y., Nakayma, K. Fujimura, T. Taka, H., and Murayama, K. "Inactivation and Destruction of Tryptophan 159 by Hydrogenperoxide of Fe-Superoxide Dismutase from *Porphyromonas Gingivalis*", **Eur. J. Biochem.**, 253, 49-56 (1998).

176. Sugio, S., Kashima, A., Kishimoto, K., Peisach, D., Petsko, G.A., Ringe, D., Yoshimura, T., Esaki, N., "Crystal Structures of L 201 A Mutant of D-Amino Acid Aminotrausferase at 2.0 Å Resolution", **Protein Engineering**, 11, 613-618 (1998).

177. Jeffery, C.J., Barry, T. Doonan, S., Petsko, G.A., and Ringe, D. "Crystallization and Preliminary X-ray Diffraction Analysis of Aspartate Aminotransferase from *S. Cerevisiae* ", **Acta Cryst.**,D54, 659-661 (1998).

178. Morollo, A., Petsko, G.A., and Ringe, D. "Structure of a Michaelis Complex Analog: Propionate Binds in the Substrate Carboxylate Site of Alanine Racemase", **Biochemistry,** 38, 3293-3301 (1999).

179. Zhang, Z., Komives, E.A., Sugio, S., Blacklow, S.C., Narayana, N., Xuong, N-H., Stock, A.M., Petsko, G.A., Ringe, D., "The Role of Water in the Catalytic Efficiency of Triosephosphate Isomerase", **Biochemistry,** 38, 4389-4397 (1999).

180. De Paola, C., Bennett, B., Holz, R.C., Ringe, D., Petsko, G.A., "1-Butaneboronic Acid Binding to A. proteolytica Aminopeptidase: A Case of Arrested Development", **Biochemistry,** 38 , 9048-9053 (1999).

181. Hadfield, A.T., Kryger, G., Ouyang, J., Petsko, G.A., Ringe, D., and Viola, R. "Structure of Aspartate-□-semialdehyde dehydrogenase from *Escherichia coli*, a key enzyme in the aspartate family of amino acid biosynthesis", **J. Mol. Biol.**, 259, 991-1002 (1999).

182. Hadfield, A.T., Petsko, G.A., Lindo, P. and Singh, B.R. "Preliminary crystallographic studies of a protease-resistant botulinum neurotoxin-associated protein Hn-33. **Acta Cryst. D.** 55, 1237-1239 (1999).

183. Wieczorek, Stacey J., Clifton, James G., Kalivoda, Kathryn A., Ringe, Dagmar, Petsko, Gregory A., and Gerlt, John, "Evolution of Enzymatic Activities in the Enolase Superfamily: Indentification of a "New" General Acid Catalyst in the Active Site of D-Galactonate Dehydratase from *Esherichia coli*", **J. Am. Chem. Soc.**, 121, 4540-4541 (1999).

184. Ringe, D. and Petsko, G.A., "Quantum Enzymology: Tunnel Vision", **Nature,** 399**,** 417-418 (1999).

185. Johnson, L.N. and Petsko, G.A. "David Phillips and the origin of structural enzymology." **Trends Biochem. Sci.** 24, 287-289 (1999).

186. Johnson, L.N. and Petsko, G.A. "David Phillips (1924-99)." **Nature** 399, 26 (1999).

187. Jeffery, C.J., Bahnson, B.J., Chien, W., Ringe, D. and Petsko, G.A., "Crystal Structure of Rabbit Phosphoglucose Isomerase, a Glycolytic Enzyme that Moonlights as Neuroleukin, Autocrine Motility Factor, and Differentiation Mediator", **Biochemistry,** 39, 955-964 (2000).

188. Petsko, G.A., "Chemistry and Biology", **Proc. Natl. Acad. Sci. USA**, 97, 538-540 (2000).

189. Petsko, G. A. and Ringe, D., "Observation of unstable species in enzyme-catalyzed transformations using protein cyrstallography", **Current Opinion in Chemical Biology**, 4, 89-94 (2000).

190. Jeffery, C.J., Gloss, L.M., Petsko, G.A. and Ringe, D., "The Role of Residues Outside the Active Site in Catalysis: Structural Basis for Function of C191 Mutants of *E. Coli* Aspartate Aminotransferase", **Protein Engineering,** 13, 105-112 (2000).

191. Vitkup, D., Ringe, D., Petsko, G.A., and Karplus, Martin, "Solvent Mobility and the Protein "Glass" Transition", **Nature Structural Biology** 7, 34-38 (2000).

192. Schlichting, I., Berendzen, J., Chu, K., Stock, A.M., Maves, S.A., Benson, D.E., Sweet, R.M., Ringe, D., Petsko, G.A. and Sligar, S.G., "The Catalytic Pathway of Cytochrome P450 at Atomic Resolution", **Science** 287**,** 1615-1622 (2000).

193. McMillan, F.M., Cahoon, M., White, A., Hedstrom, L., Petsko, G.A. and Ringe, D., "2.4 Å Crystal Structure of *Borrelia burgdorferi* IMP Dehydrogenase: Evidence of a Substrate Induced Hinged-Lid Motion by Loop 6", **Biochemistry** 39, 4533-4542 (2000).

194. Petsko, G.A., "Enzyme evolution. Design by necessity." **Nature** 403, 606-607 (2000).

195. Petsko, G.A. "A Gordon Conference survival guide." **Science** 288, 1589 (2000).

196. Heymont, J., Berenfeld, L., Collins, J., Kaganovich, A., Maynes, B., Moulin, A., Ratskovskaya, I., Poon, P.P., Johnston, G.C., Kamenetsky, M., DeSilva, J., Sun, H., Petsko, G.A. and Engebrecht, J. "*TEP1*, the yest homolog of the human tumor suppressor gene PTEN/MMAC/TEP1, is linked to the phosphatidylinositol pathway and plays a role in the developmental process of sporulation." **Proc. Natl. Acad. Sci. USA** 97, 12672-12677 (2000).

197. Trotter, E.W., Berenfeld, L., Krause, S.A., Petsko, G.A. and Gray, J.V. "Protein misfolding and temperature up-shift cause G1 arrest via a common mechanism dependent on heat shock factor in *Saccharomyces cerevisiae***."** **Proc. Natl Acad Sci U S A.** 98, 7313-7318 (2001).

198. Hadfield, A., Shammas, C., Kryger, G., Ringe, D., Petsko, G.A., Ouyang, J, and Viola, R.E. "Active Site Analysis of the Potential Antimicrobial Target Aspartate Semialdehyde Dehydrogenase." **Biochemistry** 40, 14475-14483 (2001).

199. Petsko, G.A. "Structural basis of thermostability in hyperthermophilic proteins, or 'there's more than one way to skin a cat*'".* **Methods Enzymol.** 334, 469-478 (2001).

200. De Paola-Stamper, C., Bennett, B., Edwards, T., Holz, R.C., Petsko, G.A., and Ringe, D. "Inhibition of the aminopeptidase from *Aeromonas proteolytica* by L-leucinephosphonic acid: Spectroscopic and crystallographic characterization of the transition state of peptide hydrolysis*."* **Biochemistry** 40 , 7035-7046 (2001) .

201. Gan, L., Petsko, G.A., and Hedstrom, L. "Crystal structure of a ternary complex of *Tritrichomonas foetus* inosine 5'-monophosphate dehydrogenase: NAD+ orients the active site loop for catalysis." **Biochemistry**. 41, 13309-13317 (2002).

202. Trotter, E.W., Kao, C.M., Berenfeld, L., Botstein, D., Petsko, G.A., and Gray, J.V. "Misfolded proteins are competent to mediate a subset of the responses to heat shock in *Saccharomyces cerevisiae*." **J Biol. Chem**. 277, 44817-44825 (2002).

203. Desmarais, W.T., Bienvenue, D.L., Bzymek, K.P., Holz, R.C., Petsko, G.A., and Ringe, D. "The 1.20 A resolution crystal structure of the aminopeptidase from *Aeromonas proteolytica* complexed with tris: a tale of buffer inhibition." **Structure** (Camb). 10, 1063-1072 (2002).

204. Bahnson, B.J., Anderson, V.E., and Petsko, G.A. "Structural mechanism of enoyl-CoA hydratase: three atoms from a single water are added in either an E1cb stepwise or concerted fashion." **Biochemistry**. 41, 2621-2629 (2002).

205. Vitkup, D., Ringe, D., Karplus, M., and Petsko, G.A. "Why protein R-factors are so large: a self-consistent analysis." **Proteins**. 46, 345-354 (2002).

206. Vogan, E.M., Bellamacina, C.R., He, X., Foxman, B.M., Ringe, D., Liu, H.W., and Petsko, G.A. "Purification, crystallization and molecular symmetry of CDP-D-glucose 4,6-dehydratase from *Yersinia pseudotuberculosis.*" **Acta Crystallogr. D Biol. Crystallogr.** 58, 370-373 (2002).

207. Kenyon GL, DeMarini DM, Fuchs E, Galas DJ, Kirsch JF, Leyh TS, Moos WH, Petsko GA, Ringe D,Rubin GM, Sheahan LC; National Research Council Steering Committee. "Defining the mandate of proteomics in the post-genomics era: workshop report." **Mol. Cell. Proteomics**. 1, 763-780 (2002).

208. Holyoak, T., Wilson, M.A., Fenn, T.D., Kettner, C.A., Petsko, G.A., Fuller, R.S. and Ringe, D. "The 2.4A resolution crystal structure of the prototypical hormone-processing protease Kex2 in complex with an Ala-Lys-Arg boronic acid inhibitor." **Biochemistry**. 42, 6709-6718 (2003).

209. Wilson, M.A., Collins, J.L., Hod, Y., Ringe, D., and Petsko, G.A. "The 1.1-A resolution crystal structure of DJ-1, the protein mutated in autosomal recessive early onset Parkinson's disease." **Proc. Natl Acad Sci U S A.** 100, 9256-9261 (2003).

210. Gan, L., Seyedsayamdost, M.R., Shuto, S., Matsuda, A., Petsko, G.A., and Hedstrom, L. "The immunosuppressive agent mizoribine monophosphate forms a transition state analogue complex with inosine monophosphate dehydrogenase." **Biochemistry**. 42, 857-863 (2003).

211. Beebe, J.A., Arabshahi, A., Clifton, J.G., Ringe, D., Petsko, G.A., and Frey, P.A. "Galactose mutarotase: pH dependence of enzymatic mutarotation." **Biochemistry**. 42, 4414-4420 (2003).

212. Ringe, D., and Petsko, G.A. "The 'glass transition' in protein dynamics: what it is, why it occurs, and how to exploit it." **Biophys. Chem.** 105, 667-680 (2003).

213. Holyoak, T., Fenn, T. D., Wilson, M.A., Moulin, A. G., Ringe, D., Petsko, G. A., "Malonate:versatile cryoprotectant and stabilizing solution for salt-grown macromolecular crystals", **Acta Crystallogr. D Biol. Crystallogr.**. 59, 2356-2358 (2003).

214. Fenn, T.D., Ringe, D., Petsko, G.A., "POVScript +: A Program for Model and Data Visualization Using Persistence of Vision Raytracing", **J. Appl. Crystallogr**. 36, 944-947 (2003).

215. Fenn, T.D., Ringe, D. and Petsko, G.A. "Xylose isomerase in substrate and inhibitor michaelis states: atomic resolution studies of a metal-mediated hydride shift." **Biochemistry.** 43, 6464-6474 [2004].

216. Vogan, E. M., Liu, H., Ringe, D., and Petsko, G., "Crystal structure at 1.8 Ångstrom resolution of CDP-D-glucose 4,6-dehydratase from *Yersinia pseudotubercylosis*", **Biochemistry** 43. 3057-3067 [2004].

217. Canet-Aviles RM, Wilson MA, Miller DW, Ahmad R, McLendon C, Bandyopadhyay S, Baptista MJ, Ringe D, Petsko GA, and Cookson MR. "The Parkinson's disease protein DJ-1 is neuroprotective due to cysteine-sulfinic acid-driven mitochondrial localization." **Proc Natl Acad Sci U S A**. 101, 9103-9108 [2004].

218. Gray, J.V., Petsko, G.A., Johnston, G.C., Ringe, D., Singer, R., Werner-Washburne, M., "Sleeping Beauty: Quiescence in *Saccharomyces cerevisiae* ", **Microbiol. Mol. Bio. Rev.** 68, 187-206 (2004).

219. Pozharski, E., Wilson, M.A., Hewagama, A., Shanafelt, A.B., Petsko, G.A., Ringe, D., "Anchoring A Cationic Ligand: The Structure of the Fab Fragment of the Anti-Morphine Antibody 9B1 and its Complex with Morphine", **J. Mol. Biol.**, 337, 691-697 (2004).

220. Yang, J., Wang, Y., Woolridge, E.M., Petsko, G.A., Kozarich, J.W., Ringe, D. "Crystal Structure of 3-Carboxy-*cis*, *cis*-Muconate Lactonizing Enzyme from *Psuedomonas putida,* a Fumarase Class II Type Cycloisomerase: Enzyme Evolution in Parallel Pathways", **Biochemistry** 43, 10424-10434 (2004).

221. Wilson, M.A., St. Amour, C.V., Collins, J. L., Ringe, D., Petsko, G.A., "The 1.8 Å Crystal Structure of YDR533p from *Saccharomyces cerevisiae*; a member of the DJ-1/ThiJ/PfpI superfamily", **Proc. Natl. Acad. Sci**. **U.S.A.** 101, 1531-1536 (2004).

222. Holyoak, T., Kettner, C.A., Petsko, G.A., Fuller, R.S., and Ringe, D. "Structural Basis for Differences in Substrate Selectivity in Kex2 and Furin Protein Convertases". **Biochemistry**. 43, 2412-2421 (2004).

223. Stamper CC, Bienvenue DL, Bennett B, Ringe D, Petsko GA, Holz RC. "Spectroscopic and X-ray crystallographic characterization of bestatin bound to the aminopeptidase from *Aeromonas (Vibrio) proteolytica.*" **Biochemistry**. 43, 9620-9628 (2004).

224. Beilina A, Van Der Brug M, Ahmad R, Kesavapany S, Miller DW, Petsko GA, Cookson MR. "Mutations in PTEN-induced putative kinase 1 associated with recessive parkinsonism have differential effects on protein stability." **Proc Natl Acad Sci U S A.** 102, 5703-5308 (2005).

225. Wilson MA, Ringe D, Petsko GA. "The atomic resolution crystal structure of the YajL (ThiJ) protein from Escherichia coli: a close prokaryotic homologue of the Parkinsonism-associated protein DJ-1." **J Mol Biol.** 353(3):678-691 (2005).

226. Liu D, Lepore BW, Petsko GA, Thomas PW, Stone EM, Fast W, Ringe D. "Three-dimensional structure of the quorum-quenching N-acyl homoserine lactone hydrolase from *Bacillus thuringiensis*." **Proc Natl Acad Sci U S A.** 102(33):11882-11887 (2005).

227. Pozharski E, Moulin A, Hewagama A, Shanafelt AB, Petsko GA, Ringe D . "Diversity in hapten recognition: structural study of an anti-cocaine antibody M82G2." **J Mol Biol**. 349(3):570-582 (2005).

228. Das C, Hoang QQ, Kreinbring CA, Luchansky SJ, Meray RK, Ray SS, Lansbury PT, Ringe D, Petsko GA. "Structural basis for conformational plasticity of the Parkinson's disease-associated ubiquitin hydrolase UCH-L1." **Proc Natl Acad Sci U S A**. 103(12):4675-4680 (2006).

229. Zhou W, Zhu M, Wilson MA, Petsko GA, Fink AL. "The oxidation state of DJ-1 regulates its chaperone activity toward alpha-synuclein**."** **J Mol Biol**. 356(4):1036-1048 (2006).

230. Mattos C, Bellamacina CR, Peisach E, Pereira A, Vitkup D, Petsko GA, Ringe D. "Multiple solvent crystal structures: probing binding sites, plasticity and hydration**."** **J Mol Biol.** 357(5):1471-1482 (2006).

231. Desmarais W, Bienvenue DL, Bzymek KP, Petsko GA, Ringe D, Holz RC. " The high-resolution structures of the neutral and the low pH crystals of aminopeptidase from *Aeromonas proteolytica*. **J Biol Inorg Chem.** 11(4):398-408 (2006).

232. Kraut DA, Sigala PA, Pybus B, Liu CW, Ringe D, Petsko GA, Herschlag D. "Testing electrostatic complementarity in enzyme catalysis: hydrogen bonding in the ketosteroid isomerase oxyanion hole." **PLoS Biol.** 4(4):e99, 501-519 (2006).

233. Ding X, Rasmussen BF, Petsko GA, Ringe D. "Direct crystallographic observation of an acyl-enzyme intermediate in the elastase-catalyzed hydrolysis of a peptidyl ester substrate: Exploiting the "glass transition" in protein dynamics." **Bioorg Chem.** 34(6):410-423 (2006).

234. Halak S, Lehtiö L, Basta T, Bürger S, Contzen M, Stolz A, Goldman A. "Structure and function of the 3-carboxy-cis,cis-muconate lactonizing enzyme from the protocatechuate degradative pathway of *Agrobacterium radiobacter* S2." **FEBS J**. 273(22):5169-82 (2006).

235. Lieberman RL, Wustman BA, Huertas P, Powe AC Jr, Pine CW, Khanna R, Schlossmacher MG, Ringe D, Petsko GA. "Structure of acid beta-glucosidase with pharmacological chaperone provides insight into Gaucher disease." **Nature Chem Biol.** 3(2):101-107 (2007).

236. Munih P, Moulin A, Stamper CC, Bennett B, Ringe D, Petsko GA, Holz RC. "X-ray crystallographic characterization of the Co(II)-substituted Tris-bound form of the aminopeptidase from *Aeromonas proteolytica*. **J Inorg Biochem**. 101(8):1099-107 (2007).

237. Liu D, Pozharski E, Lepore BW, Fu M, Silverman RB, Petsko GA, Ringe D. "Inactivation of *Escherichia coli* L-aspartate aminotransferase by (S)-4-amino-4,5-dihydro-2-thiophenecarboxylic acid reveals "a tale of two mechanisms". **Biochemistry**. 46(37):10517-27 (2007).

238. Liu D, Thomas PW, Momb J, Hoang QQ, Petsko GA, Ringe D, Fast W. "Structure and specificity of a quorum-quenching lactonase (AiiB) from *Agrobacterium tumefaciens*." **Biochemistry**. 46(42):11789-99 (2007).

239. Henzler-Wildman KA, Thai V, Lei M, Ott M, Wolf-Watz M, Fenn T, Pozharski E, Wilson MA, Petsko GA, Karplus M, Hübner CG, Kern D. "Intrinsic motions along an enzymatic reaction trajectory." **Nature**. 450(7171):838-44 (2007).

240. Sigala PA, Kraut DA, Caaveiro JM, Pybus B, Ruben EA, Ringe D, Petsko GA, Herschlag D. "Testing geometrical discrimination within an enzyme active site: constrained hydrogen bonding in the ketosteroid isomerase oxyanion hole. **J Am Chem Soc.** 130(41):13696-13708 (2008).

241. Momb J, Wang C, Liu D, Thomas PW, Petsko GA, Guo H, Ringe D, Fast W. "Mechanism of the quorum-quenching lactonase (AiiA) from *Bacillus thuringiensis*. 2. Substrate modeling and active site mutations." **Biochemistry.** 47(29):7715-7725 (2008).

242. Liu D, Momb J, Thomas PW, Moulin A, Petsko GA, Fast W, Ringe D "Mechanism of the quorum-quenching lactonase (AiiA) from *Bacillus thuringiensis*. 1. Product-bound structures". **Biochemistry**. 47(29):7706-7714 (2008).

243. Ataie NJ, Hoang QQ, Zahniser MP, Tu Y, Milne A, Petsko GA, Ringe D. "Zinc coordination geometry and ligand binding affinity: the structural and kinetic analysis of the second-shell serine 228 residue and the methionine 180 residue of the aminopeptidase from *Vibrio proteolyticus"*. **Biochemistry** 47(29):7673-7683 (2008) .

244. Brandt GS, Nemeria N, Chakraborty S, McLeish MJ, Yep A, Kenyon GL, Petsko GA, Jordan F, Ringe D. "Probing the active center of benzaldehyde lyase with substitutions and the pseudosubstrate analogue benzoylphosphonic acid methyl ester." **Biochemistry**. 47(29):7734-7743 (2008).

245. Ringe D, Petsko GA. "How enzymes work." **Science**. 320(5882):1428-1429 (2008).

246. Chakraborty S, Nemeria NS, Balakrishnan A, Brandt GS, Kneen MM, Yep A, McLeish MJ, Kenyon GL, Petsko GA, Ringe D, Jordan F. "Detection and time course of formation of major thiamin diphosphate-bound covalent intermediates derived from a chromophoric substrate analogue on benzoylformate decarboxylase." **Biochemistry**. 48(5):981-994 (2009).

247. Novak WR, Moulin AG, Blakeley MP, Schlichting I, Petsko GA, Ringe D. "A preliminary neutron diffraction study of gamma-chymotrypsin." **Acta Crystallogr Sect F Struct Biol Cryst Commun.** 65(Pt 3):317-320 (2009).

248. Brandt GS, Kneen MM, Chakraborty S, Baykal AT, Nemeria N, Yep A, Ruby DI, Petsko GA, Kenyon GL, McLeish MJ, Jordan F, Ringe D. "Snapshot of a reaction intermediate: analysis of benzoylformate decarboxylase in complex with a benzoylphosphonate inhibitor." **Biochemistry**. 48(15):3247-3257 (2009).

249. Lieberman RL, D'aquino JA, Ringe D, Petsko GA. "Effects of pH and iminosugar pharmacological chaperones on lysosomal glycosidase structure and stability." **Biochemistry**. 48(22):4816-4827 (2009).

250. Sigala PA, Caaveiro JM, Ringe D, Petsko GA, Herschlag D. "Hydrogen Bond Coupling in the Ketosteroid Isomerase Active Site." **Biochemistry**. 48[29):6932-6939 (2009).

251. Landon MR, Lieberman RL, Hoang QQ, Ju S, Caaveiro JM, Orwig SD, Kozakov D, Brenke R, Chuang GY, Beglov D, Vajda S, Petsko GA, Ringe D. "Detection of ligand binding hot spots on protein surfaces via fragment-based methods: application to DJ-1 and glucocerebrosidase." **J Comput Aided Mol Des.** 23[8]:491-500 (2009).

242. Ringe D, Petsko GA. "What are pharmacological chaperones and why are they interesting?" **J Biol**. (now **BMC Biology**) 8(9):80-83 (2009).

253. Brandt GS, Kneen MM, Petsko GA, Ringe D, McLeish MJ. "Active-site engineering of benzaldehyde lyase shows that a point mutation can confer both new reactivity and susceptibility to mechanism-based inhibition." **J Am Chem Soc**. 132(2):438-449 (2010).

254. Lewandowski NM, Ju S, Verbitsky M, Ross B, Geddie ML, Rockenstein E, Adame A, Muhammad A, Vonsattel JP, Ringe D, Cote L, Lindquist S, Masliah E, Petsko GA, Marder K, Clark LN, Small SA. "Polyamine pathway contributes to the pathogenesis of Parkinson disease." **Proc Natl Acad Sci U S A**. 107(39):16970-16975 (2010).

255. Auclair JR, Boggio KJ, Petsko GA, Ringe D, Agar JN "Strategies for stabilizing superoxide dismutase (SOD1), the protein destabilized in the most common form of familial amyotrophic lateral sclerosis." **Proc Natl Acad Sci U S A**. 107(50):21394-21399 (2011).

256. Ju S, Tardiff DF, Han H, Divya K, Zhong Q, Maquat LE, Bosco DA, Hayward LJ, Brown, RH, Jr, Lindquist S., Ringe D, and Petsko GA "A Yeast model of FUS/TLS–dependent cytotoxicity." **PLoS Biology** Apr;9(4):e1001052. (2011).

257. Brodkin HR, Novak WR, Milne AC, D'Aquino JA, Karabacak NM, Goldberg IG, Agar JN, Payne MS, Petsko GA, Ondrechen MJ, and Ringe D. "Evidence of the participation of remote residues in the catalytic activity of Co-type nitrile hydratase from *Pseudomonas putida*." **Biochemistry.** 50(22):4923-35 (2011).

258. Lazar LM, Fisher SZ, Moulin AG, Kovalevsky A, Novak WR, Langan P, Petsko GA, Ringe D. "Time-of-flight neutron diffraction study of bovine γ-chymotrypsin at the Protein Crystallography Station." **Acta Crystallogr Sect F Struct Biol Cryst Commun.** 67(Pt 5):587-590 (2011).

259. Bosco DA, LaVoie MJ, Petsko GA, Ringe D. "Proteostasis and movement disorders: Parkinson's disease and amyotrophic lateral sclerosis." **Cold Spring Harb Perspect Biol**. 3(10):a007500 (2011).

260. Wang W, Perovic I, Chittuluru J, Kaganovich A, Nguyen LT, Liao J, Auclair JR, Johnson D, Landeru A, Simorellis AK, Ju S, Cookson MR, Asturias FJ, Agar JN, Webb BN, Kang C, Ringe D, Petsko GA, Pochapsky TC, Hoang QQ. "A soluble α-synuclein construct forms a dynamic tetramer." **Proc Natl Acad Sci U S A.** 108(43):17797-11802 (2011).

261. Bharadwaj PR, Verdile G, Barr RK, Gupta V, Steele JW, Lachenmayer ML, Yue Z, Ehrlich ME, Petsko G, Ju S, Ringe D, Sankovich SE, Caine JM, Macreadie IG, Gandy S, Martins RN. "Latrepirdine (Dimebon™) Enhances Autophagy and Reduces Intracellular GFP-Aβ42 Levels in Yeast." **J Alzheimers Dis.** 32(4): 949-967 (2012).

262. Steele JW, Ju S, Lachenmayer ML, Liken J, Stock A, Kim SH, Delgado LM, Alfaro IE, Bernales S, Verdile G, Bharadwaj P, Gupta V, Barr R, Friss A, Dolios G, Wang R, Ringe D, Protter AA, Martins RN, Ehrlich ME, Yue Z, Petsko GA, Gandy S. "Latrepirdine stimulates autophagy and reduces accumulation of α-synuclein in cells and in mouse brain." **Mol Psychiatry**. Aug 7. doi: 10.1038/mp.2012.115 (2012).

263. Steele JW, Lachenmayer ML, Ju S, Stock A, Liken J, Kim SH, Delgado LM, Alfaro IE, Bernales S, Verdile G, Bharadwaj P, Gupta V, Barr R, Friss A, Dolios G, Wang R, Ringe D, Fraser P, Westaway D, St George-Hyslop PH, Szabo P, Relkin NR, Buxbaum JD, Glabe CG, Protter AA, Martins RN, Ehrlich ME, Petsko GA, Yue Z, Gandy S. "Latrepirdine improves cognition and arrests progression of neuropathology in an Alzheimer's mouse model**."** **Mol Psychiatry.** Jul 31. doi: 10.1038/mp.2012.106 (2012).

264. Auclair JR, Somasundaran M, Green KM, Evans JE, Schiffer CA, Ringe D, Petsko GA, Agar JN. "Mass spectrometry tools for analysis of intermolecular interactions." **Methods Mol Biol.** 896:387-98 (2012).

265. Davies CW, Chaney J, Korbel G, Ringe D, Petsko GA, Ploegh H, Das C. "The co-crystal structure of ubiquitin carboxy-terminal hydrolase L1 (UCHL1) with a tripeptide fluoromethyl ketone (Z-VAE(OMe)-FMK)." **Bioorg Med Chem Lett.** Jun 15;22(12):3900-4 (2012).

266. Liu CF, Liu D, Momb J, Thomas PW, Lajoie A, Petsko GA, Fast W, Ringe D. "A Phenylalanine Clamp Controls Substrate Specificity in the Quorum-Quenching Metallo-γ-lactonase from *Bacillus thuringiensis*." **Biochemistry**. Mar 5;52(9):1603-10 (2013).

267. Sigala PA, Fafarman AT, Schwans JP, Fried SD, Fenn TD, Caaveiro JM, Pybus B, Ringe D, Petsko GA, Boxer SG, Herschlag D. "Quantitative dissection of hydrogen bond-mediated proton transfer in the ketosteroid isomerase active site." **Proc Natl Acad Sci U S A.** Jul 9;110(28): 2552-61 (2013).

268. Shim JH, Greenblatt MB, Zou W, Huang Z, Wein MN, Brady N, Hu D, Charron J, Brodkin HR, Petsko GA, Zaller D, Zhai B, Gygi S, Glimcher LH, Jones DC. "Schnurri-3 regulates ERK downstream of WNT signaling in osteoblasts." **J Clin Invest.** Sept3;123(9):4010-4022 (2013).

269. Auclair JR, Johnson JL, Liu Q, Salisbury JP, Rotunno M, Petsko GA, Ringe D, Brown Jr RH, Bosco DA, Agar JN. "Post-Translational Modification by Cysteine Protects Cu/Zn-Superoxide Dismutase From Oxidative Damage." **Biochemistry**. Sept 10;52(36):6137-6144 (2013).

270. Auclair JR, Brodkin HR, D'Aquino JA, Petsko GA, Ringe D, Agar JN. "Structural Consequences of Cysteinylation of Cu/Zn-Superoxide Dismutase." **Biochemistry**. Sept 10;52(36):6145-6150 (2013).

271. Edayathumangalam R, Wu R, Garcia R, Wang Y, Wang W, Kreinbring CA, Bach A, Liao J, Stone TA, Terwilliger TC, Hoang QQ, Belitsky BR, Petsko GA, Ringe D, Liu D. "Crystal structure of *Bacillus subtilis* GabR, an autorepressor and transcriptional activator of gabT. **Proc Natl Acad Sci U S A.** Oct 29;110(44):17820-17825 (2013).

272. Petsko, GA. "Open questions: Zombie projects, translational research, and the real secret of the inside of the cell." **BMC Biol.** Sep 2;11:97. doi: 10.1186/1741-7007-11-97 (2013).

273. Kreinbring CA, Remillard SP, Hubbard P, Brodkin HR, Leeper FJ, Hawksley D, Lai EY, Fulton C, Petsko GA, Ringe D. "Structure of a eukaryotic thiaminase I." **Proc Natl Acad Sci U S A.** Jan 7;111(1):137-142 (2014).

274. Mecozzi VJ, Berman DE, Simoes S, Vetanovetz C, Awal MR, Patel VM, Schneider RT, Petsko GA, Ringe D, Small SA. "Pharmacological chaperones stabilize retromer to limit APP processing." **Nature Chem Biol.** 10(6):443-449 (2014).

275. Auclair JR, Salisbury JP, Johnson JL, Petsko GA, Ringe D, Bosco DA, Agar NY, Santagata S, Durham HD, Agar JN. "Artifacts to avoid while taking advantage of top-down mass spectrometry based detection of protein S-thiolation." **Proteomics.** 14(10): (2014).

276. Naffin-Olivos JL, Georgieva M, Goldfarb N, Madan-Lala R, Dong L, Bizzell E, Valinetz E, Brandt GS, Yu S, Shabashvili DE, Ringe D, Dunn BM, Petsko GA, Rengarajan J. "Mycobacterium tuberculosis Hip1 Modulates Macrophage Responses through Proteolysis of GroEL2." **PLoS Pathogens.** Published: May 15, 2014DOI: 10.1371/journal.ppat.1004132 (2014).

277. Keedy DA, van den Bedem H, Sivak DA, Petsko GA, Ringe D, Wilson MA, Fraser JS. "Crystal Cryocooling Distorts Conformational Heterogeneity in a Model Michaelis Complex of DHFR." **Structure**. 22(6):899-910 (2014).

278. Choi MS, Nakamura T, Cho SJ, Han X, Holland EA, Qu J, Petsko GA, Yates JR 3rd, Liddington RC, Lipton SA. "Transnitrosylation from DJ-1 to PTEN Attenuates Neuronal Cell Death in Parkinson's Disease Models." **J Neurosci.** 34(45):15123-15131 (2014).

279. Huang YH, Zhu C, Kondo Y, Anderson AC, Gandhi A, Russell A, Dougan SK, Petersen BS, Melum E, Pertel T, Clayton KL, Raab M, Chen Q, Beauchemin N, Yazaki PJ, Pyzik M, Ostrowski MA, Glickman JN, Rudd CE, Ploegh HL, Franke A, Petsko GA, Kuchroo VK, Blumberg RS. "CEACAM1 regulates TIM-3-mediated tolerance and exhaustion." **Nature.** 517(7534):386-390 (2014).

280. Berman DE, Ringe D, Petsko GA, Small SA. "Use of Pharmacological Retromer Chaperones in Alzheimer's Disease and other Endosomal-related Disorders." **Neurotherapeutics**. 12(1):12-18 (2015).

281. Small SA, Petsko GA. "Retromer in Alzheimer disease, Parkinson disease and other neurological disorders." **Nature Rev Neurosci.** 16(3):126-132 (2015).

282. Jackson KL, Dayton RD, Orchard EA, Ju S, Ringe D, Petsko GA, Maquat LE, Klein RL. "Preservation of forelimb function by UPF1 gene therapy in a rat model of TDP-43-induced motor paralysis." **Gene Therapy.** 22(1):20-28 (2015).

283. Barmada SJ, Ju S, Arjun A, Batarse A, Archbold HC, Peisach D, Li X, Zhang Y, Tank E, Qiu H, Huang E, Ringe D, Petsko GA, and Finkbeiner S. "Amelioration of toxicity in neuronal models of amyotrophic lateral sclerosis by hUPF1." **Proc Natl Acad Sci USA**. 112(25):7821-7826. (2015).

284. Kim C-H, Baek-Soo Han B-S1, Moon J1, Kim D-J, Shin J, Rajan S, Nguyen QT, Sohn M, Kim W-G, Han M, Jeong I, Kim K-S, Lee E-H, Tu Y, Naffin-Olivos JL, Park C-H, Ringe D, Yoon HS, Petsko GA and Kim K-S. "Agonists for nuclear receptor Nurr1 enhance its dual functions and improve behavioral deficits in an animal model of Parkinson's disease." **Proc Natl Acad Sci USA**. 112(28):8756-8761 (2015).

285. Dehay, B., Bourdenx, M., Gorry, P., Przedborski, S., Vila, M., Hunot, S., Singleton, A. , Olanow, C.W., Merchant, K.W., Bezard, E., Petsko, G.A., and Meissner, W.G. "Targeting α-synuclein for treatment of Parkinson's disease: mechanistic and therapeutic considerations." **Lancet Neurol.** 4(8):855-866 (2015).

286. Deshpande, A., Wagenpfeil, K., Pochapsky, T, Petsko, G.A. and Ringe, D. "Metal-dependent function of a mammalian acireductone dioxygenase." **Biochemistry** 55(9):1398-1407 (2016).

287. Huang YH, Zhu C, Kondo Y, Anderson AC, Gandhi A, Russell A, Dougan SK, Petersen BS, Melum E, Pertel T, Clayton KL, Raab M, Chen Q, Beauchemin N, Yazaki PJ, Pyzik M, Ostrowski MA, Glickman JN, Rudd CE, Ploegh HL, Franke A, Petsko GA, Kuchroo VK and Blumberg RS. "Corrigendum: CEACAM1 regulates TIM-3-mediated tolerance and exhaustion." **Nature**. Mar 16. doi: 10.1038/nature17421 (2016).

288. Bassil F, Fernagut PO, Bezard E, Pruvost A, Leste-Lasserre T, Hoang QQ, Ringe D, Petsko GA and Meissner WG. "Reducing C-terminal truncation mitigates synucleinopathy and neurodegeneration in a transgenic model of multiple system atrophy." **Proc Natl Acad Sci USA** 113:9593-9598 (2016).

289. Wang W, Nguyen LT, Burlak C, Chegini F, Guo F, Chataway T, Ju S, Fisher OS, Miller DW, Datta D, Wu F, Wu CX, Landeru A, Wells JA, Cookson MR, Boxer MB, Thomas CJ, Gai WP, Ringe D, Petsko GA and Hoang QQ. "Caspase-1 causes truncation and aggregation of the Parkinson's disease-associated protein α-synuclein." **Proc Natl Acad Sci USA** 113:9587-9592 (2016).

290. Liu CF, Brandt GS, Hoang QQ, Hwang ES, Naumova N, Lazarevic V, Dekker J, Glimcher LH, Ringe D and Petsko. GA "Crystal structure of the DNA binding domain of the transcription factor T-bet suggests simultaneous recognition of distant genome sites." **Proc. Natl. Acad. Sci. USA** 113(43):E6572-E6581 (2016).

291. Deshpande AR, Pochapsky TC, Petsko GA and Ringe D. "Dual chemistry catalyzed by human acireductone dioxygenase." **Protein Eng Des Sel.** 30(3):197-204 (2017).

292. Zahniser MPD, Prasad S, Kneen MM, Kreinbring CA, Petsko GA, Ringe D and McLeish MJ. "Structure and mechanism of benzaldehyde dehydrogenase from *Pseudomonas putida* ATCC 12633, a member of the Class 3 aldehyde dehydrogenase superfamily." **Protein Eng Des Sel.** 30(3):271-278 (2017).

293. Naffin-Olivos JL, Daab A, White A, Goldfarb NE, Milne AC, Liu D, Baikovitz J, Dunn BM, Rengarajan J, Petsko GA and Ringe D. "Structure Determination of *Mycobacterium tuberculosis* Serine Protease Hip1 (Rv2224c)." **Biochemistry**. 56(17):2304-2314 (2017).

294. Wu R, Sanishvili R, Belitsky BR, Juncosa JI, Le HV, Lehrer HJ, Farley M, Silverman RB, Petsko GA, Ringe D and Liu D. "PLP and GABA trigger GabR-mediated transcription regulation in *Bacillus subtilis* via external aldimine formation." **Proc Natl Acad Sci U S A.** 114(15):3891-3896 (2017). PMID: 28348215

295. Small, SA, Simoes-Spassov, S, Mayeux, R and Petsko, GA. "Endosomal Traffic Jams Represent a Pathogenic Hub and Therapeutic Target in Alzheimer's Disease." **Trends in Neuroscience** 40(10):592-602 (2017). PMID: 28962801

296. Campbell, BC, Petsko, GA and Liu CF. “Crystal Structure of Green Fluorescent Protein Clover and Design of Clover-Based Redox Sensors.” **Structure** 26:225-237 (2018). PMID: 29307487

297. Young, JE, Fong, LK, Frankowski, H, Petsko, GA, Small, SA and Goldstein, LSB. “Stabilizing the retromer complex in a human stem cell model of Alzheimer's disease reduces Tau phosphorylation independent of Amyloid Precursor Protein" **Stem Cell Reports** 10:1046-1058 (2018). PMID: 29503090

298. Rosenberg, JB, Kaplitt, MG, De, B, Chen, A, Flagiello, T, Salami, C, Pey, E, Zhao, L, Ricart Arbona, AJ, Monette, S, Dyke, JP, Ballon, DJ, Kaminsky, SM, Sondhi, D, Petsko, GA, Paul, SM and Crystal, RG. “AAVrh.10-mediated APOE2 CNS Gene Therapy for APOE4-associated Alzheimer’s Disease.” **Human Gene Therapy Clin. Dev.** 29(1):24-47 (2018). PMID: 20409358

299. Tu Y, Kreinbring CA, Hill M, Liu C, Petsko GA, McCune CD, Berkowitz DB, Liu D, and Ringe D. “Crystal Structures of Cystathionine β-Synthase from Saccharomyces cerevisiae: One Enzymatic Step at a Time.” **Biochemistry**. 57(22):3134-3145 (2018). PMID: 29630349

300. Intlekofer AM, Shih AH, Wang B, Nazir A, Rustenburg AS, Albanese SK, Patel M, Famulare C, Correa FM, Takemoto N, Durani V, Liu H, Taylor J, Farnoud N, Papaemmanuil E, Cross JR, Tallman MS, Arcila ME, Roshal M, Petsko GA, Wu B, Choe S, Konteatis ZD, Biller SA, Chodera JD, Thompson CB, Levine RL, and Stein EM. “Acquired resistance to IDH inhibition through trans or cis dimer-interface mutations.” **Nature.** 559(7712):125-129. (2018). PMID: 29950729

301. Bose A, Petsko GA, and Eliezer D. “Parkinson's Disease and Melanoma: Co-Occurrence and Mechanisms.” **J Parkinsons Dis.** 8(3): 385-398 (2018). PMID:29991141

302. Singh V, Yang J, Yin J, Cole R, Tse M, Berman DE, Small SA, Petsko GA, and Donowitz M. “Cholera toxin inhibits SNX27-retromer mediated delivery of cargo proteins to the plasma membrane.” **J Cell Sci.** 131(16):1-13 (2018). PMID: 30030371

303. Gandhi AK, Kim WM, Sun Z-YJ, Huang Y-H, Bonsor DA, Sundberg EJ, Kondo Y, Wagner G, Kuchroo VK, Petsko GA, and Blumberg RS. “High-resolution X-ray and NMR structural study of human T-cell immunoglobulin and mucin domain continaing protein-3.” **Scientific Rep.** 8:17512-17525 (2018). PMID: 30504845

304. Schweitzer J, Song B, Herrington T, Park T-Y, Lee N, Ko S, Jeon J, Cha Y, Kim K, Li Q, Henchcliffe C, Kaplitt M, Neff C, Rapalino O, Seo H, Lee I-H, Kim J, Kim T, Petsko G, Ritz J, Cohen B, Kong SW, Leblanc P, Carter B, and Kim K-S. “Personalized iPSC-derived Dopamine Progenitor Cells for Parkinson’s Disease.” **New England Journal of Medicine.** 382:1926-1932 (2020). PMID: 32402162

305. Rajan S, Jang Y, Kim CH, Kim W, Toh HT, Jeon J, Song B, Serra A, Lescar J, Yoo JY, Beldar S, Ye H, Kang C, Liu XW, Feitosa M, Kim Y, Hwang D, Goh G, Lim KL, Park HM, Lee CH, Oh SF, Petsko GA, Yoon HS, and Kim KS. “PGE1 and PGA1 bind to Nurr1 and activate its transcriptional function.” **Nature Chem Biol.** 16(8):876-886 (2020). PMID: 32451509

306. Wong MY, Lewis M, Doherty JJ, Shi Y, Cashikar AG, Amelianchik A, Tymchuk S, Sullivan PM, Qian M, Covey DF, Petsko GA, Holtzman DM, Paul SM, and Luo W. “25-

Hydroxycholesterol amplifies microglial IL-1β production in an apoE isoform-dependent manner." **J. Neuroinflammation.** 17(1):192 (2020). PMID: 32552741

307. Small SA and Petsko GA. "Endosomal recycling reconciles the Alzheimer's disease paradox." **Science Transl Med.** 12, eabb1717 (2020). PMID: 33268506

308. Campbell BC, Nabel EM, Murdock MH, Lao-Peregrin C, Tsoulfas P, Blackmore MG, Lee FS, Liston C, Morishita H and Petsko GA. "mGreenLantern: a bright monomeric fluorescent protein with rapid expression and cell filling properties for neuronal imaging." **Proc Natl Acad Sci U S A**. 117(48):30710-30721 (2020). PMID: 33208539

309. Abramov D, Guiberson NGL, Daab A, Na Y, Petsko GA, Sharma, M and Burre J. "Targeted stabilization of Munc18-1 function via pharmacological chaperones." **EMBO Mol Med.** Dec 17:e12354. doi: 10.15252/emmm.202012354 (2020). PMID: 33332765

310. Gandi AK, Sun Z-YJ, Kim WM, Huang Y-H, Kondo Y, Bonsor DA, Sundberg EJ, Wagner G, Kuchroo VK, Petsko GA and Blumberg RS. "Structural basis of the dynamic human CEACAM1 monomer-dimer equilibrium." **Nature Comm Biol.** 4:360**.** doi: 10.1038/s42003-021-01871-2 (2021)**.** PMID: 33742094

311. Fevga C, Park Y, Lohmann E,, Kievit AJ, Breedveld GJ, Ferraro F, Lde Boer L, van Minkelen R, Wang W, Petsko GA, Hoang Q, Emre M, and Bonifati V. "A new alpha-synuclein missense variant (Thr72Met) in two Turkish families with Parkinson's disease." **Parkinsonism Rel Dis.** 89:63-72 (2021)**.** PMID: 34229155

312. Glimcher LH, and Petsko, "A lily worth gilding." **Cell** (2021), https://doi.org/10.1016/j.cell.2021.08.008

313. Davidov DR, Jung C, Petsko GA, Sligar SG and Kornblatt JA. "A Pathfinder in High-Pressure Bioscience: In Memorial of Gaston Hui Bon Hoa." **Biology** 10:78. doi: 10.3390/biology10080778 (2021).

314. Dai W, Darst SA, Dunham CM, Landick R, Petsko GA and Weixlbaumer A. "Seeing gene expression in cells: the future of structural biology." **Fac Rev.** Nov 15;10:79. doi: 10.12703/r-01-000004 (2021).

315. Huang Y-H, Gandhi A, Hanley T, Yang C, Castrillion C, Kondo, Y, Kim W, Gensollen T, Cheah E, Keating KM, Yuan G-C, Cheung J, Lin V, Glickman J, Hearn A, Holgate R, Carroll M, Gray-Owen S, Drake CG, Petsko GA, Bertagnolli MM, Yoon CH, Beauchemin N and Blumberg RS. "The immune landscape of CEACAM1 activity in reprogramming the human tumor microenvironment." (2022) submitted.

316. Qureshi YH, Berman DE, Marsh SE, Klein RL, Patel VM, Simoes S, Kannan S, Petsko GA, Stevens B and Small SA. "The neuronal retromer can regulate both neuronal and microglial phenotypes of Alzheimer's Disease." **Cell Reports**, Jan 18;38(3):110262. doi: 10.1016/j.celrep.2021.110262 (2022).

317. Ghosh S, Raundhal M, Myers SA, Carr SA, Chen X, Petsko GA and Glimcher LH. "Identification of RIOK2 as a master regulator of human blood cell development." **Nature Immunology**, 23:109-121. doi.org/10.1038/s41590-021-01079-w (2022).

318. Bose A, Petsko GA. And Studer L. “Induced Pluripotent Stem Cells: A Tool for Modeling Parkinson’s Disease. **Trends Neurosci.** 45:608-620. doi: 10.1016/j.tins.2022.05.001 (2022).

319. Wang Z, Romanski A, Mehra V, Wang Y, Brannigan M, Campbell BC, Petsko GA, Tsoulfas P and Blackmore MG. "Brain-wide analysis of the supraspinal connectome reveals anatomical correlates to functional recovery after spinal injury." **eLife** doi:10.7554/elife.76254 (2022).

320. Gandhi AK, Sun Z-YJ, Huang Y-H, Kim WM, Yang Y, Petsko GA, Beauchemin N and Blumberg RS. “Structural analysis of human CEACAM1 oligomerization.” **Nature Comm Biol.** 5:1042 042 | https://doi.org/10.1038/s42003-022-03996-4 (2022).

321. Glimcher LH and Petsko GA. “Before you call the midwife.” **Cell** 185:3849-3853 (2022). doi: 10.1016/j.cell.2022.09.011. PMID: 36174580.

322. Petsko GA and Small SA. “Elucidating the causes of neurodegeneration.” **Science.** 377:31-32. (2022). PMID: 35771902

324. Campbell BC, Paez-Segala MG, Looger LL, Petsko GA and Liu CF. “Chemically stable fluorescent probes for advanced microscopy.” **Nature Methods**. 19:1612-1621 (2022)**.** https://doi.org/10.1038/s41592-022-01660-7

325. Jensen AMG, Kitago Y, Fazeli E., Vaegter CB, Small SA, Petsko GA and Andersen OM. “Dimerization of the Alzheimer's disease pathogenic receptor SORLA regulates its association with retromer.” **Proc Natl Acad Sci USA** 120(No. 4):e2212180120 (2023).

326. Young JE, Holstege H, Andersen OM, Petsko GA and Small, SA. “On the causal role of retromer-dependent endosomal recycling in Alzheimer’s disease.” **Nature Cell Biol.** 25:1394-1397 (2023). https://doi.org/10.1038/s41556-023-01245-2. PMID: 37803174; PMCID: PMC10788784.

327. Hossain MA, Sarin R, Donnelly DP, Miller BC, Weiss A, McAlary L, Antonyuk SV, Salisbury JP, Amin J, Conway JB, Watson SS, Winters JN, Xu Y, Alam N, Brahme RR, Shahbazian H, Sivasankar D, Padmakumar S, Sattarova A, Ponmudiyan AC, Gawde T, Verrill DE, Yang W, Kannapadi S, Plant LD, Auclair JR, Makowski L, Petsko GA, Ringe D, Agar NYR, Greenblatt DJ, Ondrechen MJ, Chen Y, Yerbury JJ, Manetsch R, Hasnain SS, Brown RH Jr, Agar JN. "Evaluating protein cross-linking as a therapeutic strategy to stabilize SOD1 variants in a mouse model of familial ALS." **PLoS Biol.** (2024) Jan 30;22(1):e3002462. doi: 10.1371/journal.pbio.3002462. PMID: 38289969; PMCID: PMC10826971.

328. Jensen AMG, Raska J, Fojtik F, Monti G, Lunding M, Bartova S, Pospisilova V, van der Lee SJ, Van Dongen J, Bossaerts L, Van Broechhoven C, Dols O, Lleo A, Benussi L, Ghidoni R, Hulsman M, Petsko GA, Sleegers K, Bohaciakova D, Holstege H and Andersen OM. "The *SORL1* p.Y1816C variant causes impaired endosomal dimerization and autosomal dominant Alzheimer’s disease." **Proc Natl Acad Sci USA (**2024) Sep 10;121(37):e2408262121. doi: 10.1073/pnas.2408262121. Epub 2024 Sep 3. PMID: 39226352; PMCID: PMC11406263.

329. Ghosh S, Nguyen MT, Choi HE, Stahl M, Kühn AL, Van der Auwera S, Grabe HJ, Völzke H, Homuth G, Myers SA, Hogaboam CM, Noth I, Martinez FJ, Petsko GA and Glimcher LH. "RIOK2 Transcriptionally Regulates TRiC And Dyskerin Complexes To Prevent Telomere Shortening" **Nature Comm**. 15, 7138 (2024). https://doi.org/10.1038/s41467-024-51336-3 PMID: 39164231; PMCID: PMC11335878.

330. Petsko GA. “Recuerdos de Joan.” **SEBBM** (Special issue of the Journal of the Sociedad Espanola de Bioquimica y Biologia Molecular, Homenaje a Joan J. Guinovart). Vol. 224, pp 54-55 (2005).