

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-
Chimique,
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

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 Academy**
 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-influentia-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
<i>Science</i> 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 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 company acquired by Merck in 2018, and **New Chemical Entities**, a natural products company that was sold to Albany Molecular Research in 2001. 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 amyotrophic lateral sclerosis (ALS) by UPF1
European Patent #3,657,168 B1: Treatment of Amyotrophic Lateral Sclerosis
Hong Kong Patent #40,030,841 B: Treatment of Amyotrophic 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 Supranuclear Palsy and Frontotemporal 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/bibliography/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 2.5Å 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 K₂PtCl₄: 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., Patridge, 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 from 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).

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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(NH₃)₂<d(GpG)>] Adducts in Two Oligonucleotide Duplexes", **J. Am. Chem. Soc.**, 107, 4079-4081 (1985).
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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).
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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., Lippard, 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).
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