CURRICULUM VITAE

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Department of Ophthalmology
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EDUCATION

1974 – 1977	Pre-doctoral:	B.S., Zoology University of Texas, Austin, TX *Summa cum laude*
1977 – 1981	Doctoral:	Ph.D., Human Biological Chemistry and Genetics University of Texas Medical Branch, Galveston, TX Advisor: Satish K. Srivastava, Ph.D.
1981 – 1984	Post-doctoral:	Research Fellow, Department of Biochemistry New York University, New York, NY Advisor: John Chen, Ph.D.

ACADEMIC APPOINTMENTS

1984 – 1988	Research Assistant Professor, Department of Ophthalmology, Emory University School of Medicine, Atlanta, GA
1988 – 1993	Assistant Professor, Department of Ophthalmology & Visual Sciences, Department of Genetics, Washington University School of Medicine, St. Louis, MO
1993 – 2000	Associate Professor, Department of Ophthalmology & Visual Sciences, Department of Genetics, Washington University School of Medicine, St. Louis, MO
2000 – 2008	Professor, Department of Ophthalmology and Visual Sciences, Department of Genetics, Washington University School of Medicine, St. Louis, MO
2008 –	Professor, Department of Ophthalmology, University of Colorado School of Medicine, Aurora, CO

2009 – Professor, Department of Pharmaceutical Sciences, Skaggs School of Pharmacy and Pharmaceutical Sciences, University of Colorado, Aurora, CO

HONORS, AWARDS & RECOGNITION

1980 Excellence in Research in Birth Defects, National Foundation for Infantile Paralysis (March of Dimes)

1988 Robert E. McCormick Scholar Award, Research to Prevent Blindness

1997 Lew R. Wasserman Merit Award, Research to Prevent Blindness

2000 Outstanding Faculty Mentor Award, Graduate Student Senate of Arts & Sciences, Washington University in St. Louis

2012 Distinguished Service Award, Association for Research in Vision & Ophthalmology

2019 Honoree, ARVO Foundation for Eye Research

PROFESSIONAL SOCIETY MEMBERSHIP

1982 – American Association for Advancement of Sciences

1980 – Association for Research in Vision and Ophthalmology

MAJOR ADMINISTRATIVE, COMMITTEE AND SERVICE RESPONSIBILITIES

Department of Ophthalmology, University of Colorado School of Medicine

2008 –2023 Vice Chair for Research, Department of Ophthalmology, University of Colorado School of Medicine

2014 – Executive Committee, Department of Ophthalmology, University of Colorado School of Medicine

University of Colorado

2008 – Research Track Steering Committee, University of Colorado | Anschutz Medical Campus

2016 –2020 Strategic Infrastructure for Research Committee (SIRC), Chair 2018-2019; University of Colorado School of Medicine

2018 –2023 Associate Director, Charles C. Gates Center for Regenerative Medicine, University of Colorado, Aurora, CO

2023- Assistant Director of Faculty & Community Relations, Gates Institute, University of Colorado, Aurora, CO

2021- Vice Chancellors Advisory Committee

Association for Research in Vision and Ophthalmology

2006 – 2012 Board of Trustees, Association for Research in Vision and Ophthalmology

2010 – 2011 President, Association for Research in Vision and Ophthalmology

2013 –2019 Board of Governors, ARVO Foundation for Eye Research

2015 –2018 Board of Governors Chair, ARVO Foundation for Eye Research
2018 – 2021 Chair, ARVO Foundation Awards Committee
2022 ARVO Executive Vice President

Washington University School of Medicine

1991 – 2008 Director of Research, Department of Ophthalmology and Visual Sciences
1992 – 2008 Ophthalmology Resident Selection Committee, Department of Ophthalmology and Visual Sciences
1996 – 1999 Admissions Committee, Graduate Division of Biology & Biomedical Sciences
1997 – 2007 Biochemistry Program Steering Committee, Graduate Division of Biology & Biomedical Sciences
1998 Local Co-Organizer of V·I·S·I·O·N, an NIH-sponsored traveling exhibit; organized a "scientist at the center" 12-week educational program involving demonstrations by Washington University vision scientists
1999, 2000 Program Organizer, annual retreat of combined programs of Chemistry, Biochemistry, Bioorganic Chemistry and Molecular Biophysics, Graduate Division of Biology & Biomedical Sciences
1999 Chair, university committee to advise on DNA sequencing core facilities, Washington University Medical Center

Other Service

1999-2001 NIH Study Section (Visual Sciences A)
1999-2001 NIH Study Section (NCRR)
2001-2004 NIH Study Section (Anterior Eye Diseases); Chair 2002-2004
2011 – Research Advisory Board, Lions Eye Institute for Transplant and Research
2015-2020 Chair, Research Advisory Board, Lions Eye Institute for Transplant and Research

EDITORIAL SERVICES TO SCHOLARLY PUBLICATIONS

Reviewer

- *Biochemistry*
- *Chemical and Biological Interactions*
- *Current Eye Research*
- *Diabetes*
- *Experimental Eye Research*
- *Investigative Ophthalmology & Visual Sciences*
- *Journal of Biological Chemistry*
- *Molecular Vision*

Editorial Board

- *Molecular Vision*
- *Chemical and Biological Interactions*

INTELLECTUAL PROPERTY

Patents

Provisional patent CU4599H-PPA1: SMAD7 for Treatment and Prevention of Posterior Capsule Opacification; Filed 12/31/2017.

Provisional patent CU4140H-PPA1: Ophthalmic Disinfecting Agent and Methods of Using the Same"; Filed 6/3/2016.

US Application No. 14/008,221: Compositions and Methods for Introduction of Macromolecules into Cells; Filed: 9/27/2013; CU TTO File No. CU2719H-US1

PCT Application No. PCT/US2013/052526: Compounds Reducing the Production of Sorbitol in the Eye and Methods of Using the Same; Filed: 7/29/2013; CU TTO File No. CU2548H-PCT1

RESEARCH INTERESTS

- Lens Biology & Cataract
- Diabetic Eye Disease
- Drug Discovery

RESEARCH ACTIVITIES, SUPPORT AND GRANTS

Active Research Projects, Support and Grants

2018-2024	Biologic for Cataract Inhibition SPARKCU, Principal Investigator, Total Direct Costs: $150,000
2020-2024	Optimization of Dexamethasone as an Effective Therapy for Ocular Injuries by Vesicating Agents U01 PAR16-331 (CounterACT), Co-Investigator, TDC $2,499,785

Completed Research Projects, Support and Grants

1981-1984	"Molecular Studies of Aldose Reductase Gene in Lens Cells" F32 EY05596, National Research Service Award Principal Investigator; Total Direct Costs $50,000
1984-1988	"Molecular Studies of Aldose Reductase and Cataract" R23 EY05639, New Investigator Research Award Principal Investigator; Total Direct Costs: $107,500.
1988-1992	"Molecular Biology of Aldose Reductase and Cataract" R01 EY05856; Principal Investigator; Total Direct Costs: $322,398.
1992-1995	Molecular Biology of Aldose Reductase and Cataract" R01 EY05856; Principal Investigator; Total Direct Costs: $448,359.

1995-2000	Molecular Biology of Aldose Reductase and Diabetic Eye Disease R01 EY05856, Principal Investigator, Total Direct Costs: $1,100,435
1995-2000	Core Grant for Vision Research P30 EY02687, Principal Investigator, Total Direct Costs: $1,471,547
1996-2000	Control of Protein Aggregation in the Lens R01 EY11694; Subcontractor; Total Direct Costs of subcontract: $117,996
2000-2005	Aldose Reductase and Diabetic Eye Disease R01 EY05856, Principal Investigator, Total Direct Costs: $1,489,045
2000-2002	Aldose Reductase and Diabetic Eye Disease (request for supplement to support DNA microarray studies) R01 EY05856, Principal Investigator, Total Costs: $350,000
2000-2005	Core Grant for Vision Research P30EY02687, Principal Investigator, Total Direct Costs: $1,374,998
2002-2007	Molecular Interactions of Crystallins in the Eye R01 EY13897, Principal Investigator, Total Direct Costs: $900,000
2005-2010	Core Grant for Vision Research P30EY02687, Principal Investigator, Total Direct Costs: $2,474,114
2005-2010	Aldose Reductase and Diabetic Eye Disease R01 EY05856, Principal Investigator, Total Direct Costs: $1,788,641
2009-2011	Development of Small Heat Shock Proteins as Therapeutic Agents in the Eye 1 RC1 EY020361-01; Principal Investigator, Total Direct Costs: $992,398
2010-2017	Aldose Reductase and Diabetic Eye Disease 1R01 EY05856, Principal Investigator, Total Direct Costs: $2,437,901
2011-2016	Vision Training Program 1T35 EY021455-01, Principal Investigator, Total Direct Costs: $91,370
2011-2017	Novel Therapeutics Against Diabetic Eye Disease 1R01 EY02148, Principal Investigator, Total Direct Costs: $1,879,390
2012-2017	Effective Therapeutics for Ocular Injuries by Vesicating Agents U01 EY023143, Co-investigator (5%), Rajesh Agarwal, PI; Total Costs: $3,730,021
2017-2022	Molecular Signaling in Cataracts 1R01 EY028147, Principal Investigator, Total Costs: $1,943,750

TEACHING AND MENTORING ACTIVITIES

1988 – 2008 Graduate Faculty, Division of Biology and Biomedical Sciences, Washington University, St. Louis

1990 Coursemaster, Molecular Aspects of Vision, Bio 5503

1992 – 2008 Discussion Leader, Nucleic Acids and Protein Synthesis, Bio 548

2008 – Graduate Faculty, Toxicology Program, Skaggs School of Pharmacy and Pharmaceutical Sciences, University of Colorado

2008 – Research Advisor, Department of Ophthalmology, University of Colorado School of Medicine

Post-doctoral Fellows

1985-1988 Regina E. Hay, Ph.D.

1994-1995 Shashank Mathur, Ph.D.

1994-1996 Takayuki Nakano, Ph.D.

1998-1999 Murthy Bulusu, Ph.D.

2000-2006 Qing Chang, MD, Ph.D.

2001-2005 Cheng-Da Hsu, Ph.D.

2003-2006 Shun-Ping Huang, MD, Ph.D.

2008-2011 Palla Suryanarayana, Ph.D.

2010-2012 Brian Laffin, Ph.D.

2010-2012 Anna Enzsöly, MD, Ph.D.

2010-2017 Niklaus Mueller, Ph.D.

2012-2014 Pupalla Muthenna, Ph.D.

2014-2016 Artatrana Pal, Ph.D.

2016-2018 Kun-Che Chang, Ph.D.

Graduate Students

1989 – 1994 Ivan Tarle, M.D. Ph.D.

1996 – 2001 Brian Cobb, Ph.D.

2001 – 2008 Kelly Barton, Ph.D.

2012 – 2016 Kun-Che Chang, Ph.D.

Medical Residents, Fellows and Students

2009 – 2012 Gregory Zablocki, MD

2010 – 2013 Karen Christopher, MD

2011 – 2014 Charles Johnson, MD

2012 – 2015 Anson Snow, MD

2013 – 2016 Jose Diego, MD

2013 – 2014 Luke Bidikov, MD
2014 – 2018 Leonid Zukin, MD
2016 – 2020 Matthew Hupy, MD
2020 – 2022 - Justin Fichtner
2018 – 2024 Binhan Pham
2020 – 2024 Sarah Seiwald

BIBLIOGRAPHY

Peer Reviewed Publications

1. Srivastava SK, **Petrash JM**, Sadana IJ, Ansari NH, Partridge CA. Susceptibility of aldehyde and aldose reductases of human tissues to aldose reductase inhibitors. Curr Eye Res. 1982-1983;2(6):407-10. PubMed PMID: 6820339.
2. Srivastava SK, Ansari NH, Brown JH, **Petrash JM**. Formation of sorbitol 6-phosphate by bovine and human lens aldose reductase, sorbitol dehydrogenase and sorbitol kinase. Biochim Biophys Acta. 1982 Aug 6;717(2):210-4. PubMed PMID: 6288113.
3. **Petrash JM**, Srivastava SK. Purification and properties of human liver aldehyde reductases. Biochim Biophys Acta. 1982 Sep 22;707(1):105-14. PubMed PMID: 6753936.
4. Srivastava SK, Das B, Hair GA, Gracy RW, Awasthi S, et al. Interrelationships among human aldo-keto reductases: immunochemical, kinetic and structural properties. Biochim Biophys Acta. 1985 Jul 5;840(3):334-43. PubMed PMID: 3924115.
5. Kaye NW, Church RL, Piatigorsky J, **Petrash JM**, Lalley PA. Assignment of the mouse alpha A-crystallin structural gene to chromosome 17. Curr Eye Res. 1985 Dec;4(12):1263-8. PubMed PMID: 4085253.
6. Hay RE, Woods WD, Church RL, **Petrash JM**. cDNA clones encoding bovine gamma-crystallins. Biochem Biophys Res Commun. 1987 Jul 15;146(1):332-8. PubMed PMID: 3606621.
7. Hay RE, **Petrash JM**. Nucleotide sequence of a bovine lens alpha A-crystallin cDNA. Biochem Biophys Res Commun. 1987 Oct 14;148(1):31-7. PubMed PMID: 3675580.
8. Adkison LR, Skow LC, Thomas TL, Petrash M, Womack JE. Somatic cell mapping and restriction fragment analysis of bovine genes for fibronectin and gamma crystallin. Cytogenet Cell Genet. 1988;47(3):155-9. PubMed PMID: 2897897.
9. **Petrash JM**, Favello AD. Isolation and characterization of cDNA clones encoding aldose reductase. Curr Eye Res. 1989 Oct;8(10):1021-7. PubMed PMID: 2515032.
10. Kaye NW, Lalley PA, **Petrash JM**, Church RL. Regional assignment of the mouse alpha A2-crystallin gene (Crya-1) to chromosome 17A3----B by in situ hybridization. Cytogenet Cell Genet. 1990;53(2-3):95-6. PubMed PMID: 2369847.
11. **Petrash JM**, DeLucas LJ, Bowling E, Egen N. Resolving isoforms of aldose reductase by preparative isoelectric focusing in the Rotofor. Electrophoresis. 1991 Jan;12(1):84-90. PubMed PMID: 1904814.

12. el-Kabbani O, Narayana SV, Babu YS, Moore KM, Flynn TG, et al. Purification, crystallization and preliminary crystallographic analysis of porcine aldose reductase. J Mol Biol. 1991 Apr 20;218(4):695-8. PubMed PMID: 1902521.

13. **Petrash JM**. Applications of molecular biological techniques to the understanding of visual system disorders. Am J Ophthalmol. 1992 May 15;113(5):573-82. PubMed PMID: 1575233.

14. **Petrash JM**, Flath M, Sens D, Bylander J. Effects of osmotic stress and hyperglycemia on aldose reductase gene expression in human renal proximal tubule cells. Biochem Biophys Res Commun. 1992 Aug 31;187(1):201-8. PubMed PMID: 1520300.

15. Abghari SZ, Stulting RD, **Petrash JM**. Detection of herpes simplex virus type 1 latency-associated transcripts in corneal cells of inbred mice by in situ hybridization. Cornea. 1992 Sep;11(5):433-8. PubMed PMID: 1330438.

16. Bhatnagar A, Liu SQ, **Petrash JM**, Srivastava SK. Mechanism of inhibition of aldose reductase by menadione (vitamin K3). Mol Pharmacol. 1992 Nov;42(5):917-21. PubMed PMID: 1435755.

17. **Petrash JM**, Harter TM, Devine CS, Olins PO, Bhatnagar A, et al. Involvement of cysteine residues in catalysis and inhibition of human aldose reductase Site-directed mutagenesis of Cys-80, -298, and -303. J Biol Chem. 1992 Dec 5;267(34):24833-40. PubMed PMID: 1332968.

18. Borhani DW, Harter TM, **Petrash JM**. The crystal structure of the aldose reductaseNADPH binary complex. J Biol Chem. 1992 Dec 5;267(34):24841-7. PubMed PMID: 1447221.

19. **Petrash JM**, Harter T, Tarle I, Borhani D. Kinetic alteration of human aldose reductase by mutagenesis of cysteine residues. Adv Exp Med Biol. 1993;328:289-300. PubMed PMID: 8493906.

20. Tilton RG, Chang K, Hasan KS, Smith SR, **Petrash JM**, et al. Prevention of diabetic vascular dysfunction by guanidines Inhibition of nitric oxide synthase versus advanced glycation end-product formation. Diabetes. 1993 Feb;42(2):221-32. PubMed PMID: 7678825.

21. Wilson DK, Tarle I, **Petrash JM**, Quiocho FA. Refined 18 A structure of human aldose reductase complexed with the potent inhibitor zopolrestat. Proc Natl Acad Sci U S A. 1993 Nov 1;90(21):9847-51. PubMed PMID: 8234324; PubMed Central PMCID: PMC47669.

22. Tarle I, Borhani DW, Wilson DK, Quiocho FA, **Petrash JM**. Probing the active site of human aldose reductase Site-directed mutagenesis of Asp-43, Tyr-48, Lys-77, and His-110. J Biol Chem. 1993 Dec 5;268(34):25687-93. PubMed PMID: 8245005.

23. Hay RE, Andley UP, **Petrash JM**. Expression of recombinant bovine gamma B-, gamma C- and gamma D-crystallins and correlation with native proteins. Exp Eye Res. 1994 May;58(5):573-84. PubMed PMID: 7925695.

24. **Petrash JM**, Tarle I, Wilson DK, Quiocho FA. Aldose reductase catalysis and crystallography Insights from recent advances in enzyme structure and function. Diabetes. 1994 Aug;43(8):955-9. PubMed PMID: 8039602.

25. Cook PN, Ward WH, **Petrash JM**, Mirrlees DJ, Sennitt CM, et al. Kinetic characteristics of ZENECA ZD5522, a potent inhibitor of human and bovine lens aldose reductase. Biochem Pharmacol. 1995 Apr 18;49(8):1043-9. PubMed PMID: 7748183.

26. Wilson DK, Nakano T, **Petrash JM**, Quiocho FA. 17 A structure of FR-1, a fibroblast growth factor-induced member of the aldo-keto reductase family, complexed with coenzyme and inhibitor. Biochemistry. 1995 Nov 7;34(44):14323-30. PubMed PMID: 7578036.

27. Das KP, **Petrash JM**, Surewicz WK. Conformational properties of substrate proteins bound to a molecular chaperone alpha-crystallin. J Biol Chem. 1996 May 3;271(18):10449-52. PubMed PMID: 8631839.

28. Nakano T, **Petrash JM**. Kinetic and spectroscopic evidence for active site inhibition of human aldose reductase. Biochemistry. 1996 Aug 27;35(34):11196-202. PubMed PMID: 8780524.

29. Andley UP, Mathur S, Griest TA, **Petrash JM**. Cloning, expression, and chaperone-like activity of human alphaA-crystallin. J Biol Chem. 1996 Dec 13;271(50):31973-80. PubMed PMID: 8943244.

30. Cappiello M, Voltarelli M, Cecconi I, Vilardo PG, Dal Monte M, et al. Specifically targeted modification of human aldose reductase by physiological disulfides. J Biol Chem. 1996 Dec 27;271(52):33539-44. PubMed PMID: 8969219.

31. Wilson DK, Nakano T, **Petrash JM**, Quiocho FA. Structural studies of aldo-keto reductase inhibition. Adv Exp Med Biol. 1997;414:435-42. PubMed PMID: 9059648.

32. **Petrash JM**, Harter TM, Murdock GL. A potential role for aldose reductase in steroid metabolism. Adv Exp Med Biol. 1997;414:465-73. PubMed PMID: 9059652.

33. Chandra A, Srivastava S, **Petrash JM**, Bhatnagar A, Srivastava SK. Active site modification of aldose reductase by nitric oxide donors. Biochim Biophys Acta. 1997 Sep 5;1341(2):217-22. PubMed PMID: 9357961.

34. Chandra A, Srivastava S, **Petrash JM**, Bhatnagar A, Srivastava SK. Modification of aldose reductase by S-nitrosoglutathione. Biochemistry. 1997 Dec 16;36(50):15801-9. PubMed PMID: 9398310.

35. Srivastava S, Harter TM, Chandra A, Bhatnagar A, Srivastava SK, et al. Kinetic studies of FR-1, a growth factor-inducible aldo-keto reductase. Biochemistry. 1998 Sep 15;37(37):12909-17. PubMed PMID: 9737870.

36. El-Kabbani O, Wilson DK, Petrash M, Quiocho FA. Structural features of the aldose reductase and aldehyde reductase inhibitor-binding sites. Mol Vis. 1998 Sep 29;4:19. PubMed PMID: 9756955.

37. Cecconi I, Moroni M, Vilardo PG, Dal Monte M, Borella P, et al. Oxidative modification of aldose reductase induced by copper ion Factors and conditions affecting the process. Biochemistry. 1998 Oct 6;37(40):14167-74. PubMed PMID: 9760253.

38. **Petrash JM**, Harter TM, Srivastava S, Chandra A, Bhatnagar A, et al. Structure-function studies of FR-1 A growth factor-inducible aldo-keto reductase. Adv Exp Med Biol. 1999;463:435-43. PubMed PMID: 10352716.

39. Srivastava SK, Chandra A, Srivastava S, **Petrash JM**, Bhatnagar A. Regulation of aldose reductase by aldehydes and nitric oxide. Adv Exp Med Biol. 1999;463:501-7. PubMed PMID: 10352725.

40. Srivastava S, Watowich SJ, **Petrash JM**, Srivastava SK, Bhatnagar A. Structural and kinetic determinants of aldehyde reduction by aldose reductase. Biochemistry. 1999 Jan 5;38(1):42-54. PubMed PMID: 9890881.

41. Das KP, Choo-Smith LP, **Petrash JM**, Surewicz WK. Insight into the secondary structure of non-native proteins bound to a molecular chaperone alpha-crystallin An isotope-edited infrared spectroscopic study. J Biol Chem. 1999 Nov 19;274(47):33209-12. PubMed PMID: 10559193.

42. Reddy GB, Das KP, **Petrash JM**, Surewicz WK. Temperature-dependent chaperone activity and structural properties of human alphaA- and alphaB-crystallins. J Biol Chem. 2000 Feb 18;275(7):4565-70. PubMed PMID: 10671481.

43. Cobb BA, **Petrash JM**. Characterization of alpha-crystallin-plasma membrane binding. J Biol Chem. 2000 Mar 3;275(9):6664-72. PubMed PMID: 10692476; NIHMSID: NIHMS210861; PubMed Central PMCID: PMC2902967.

44. Dixit BL, Balendiran GK, Watowich SJ, Srivastava S, Ramana KV, et al. Kinetic and structural characterization of the glutathione-binding site of aldose reductase. J Biol Chem. 2000 Jul 14;275(28):21587-95. PubMed PMID: 10764810.

45. Cobb BA, **Petrash JM**. Structural and functional changes in the alpha A-crystallin R116C mutant in hereditary cataracts. Biochemistry. 2000 Dec 26;39(51):15791-8. PubMed PMID: 11123904; NIHMSID: NIHMS210863; PubMed Central PMCID: PMC2902970.

46. Ramana KV, Dixit BL, Srivastava S, Bhatnagar A, Balendiran GK, et al. Characterization of the glutathione binding site of aldose reductase. Chem Biol Interact. 2001 Jan 30;130-132(1-3):537-48. PubMed PMID: 11306073.

47. **Petrash JM**, Murthy BS, Young M, Morris K, Rikimaru L, et al. Functional genomic studies of aldo-keto reductases. Chem Biol Interact. 2001 Jan 30;130-132(1-3):673-83. PubMed PMID: 11306085.

48. Srivastava S, Dixit BL, Ramana KV, Chandra A, Chandra D, et al. Structural and kinetic modifications of aldose reductase by S-nitrosothiols. Biochem J. 2001 Aug 15;358(Pt 1):111-8. PubMed PMID: 11485558; PubMed Central PMCID: PMC1222038.

49. Costantino L, Del Corso A, Rastelli G, **Petrash JM**, Mura U. 7-Hydroxy-2-substituted-4-H-1-benzopyran-4-one derivatives as aldose reductase inhibitors: a SAR study. Eur J Med Chem. 2001 Sep;36(9):697-703. PubMed PMID: 11672879.

50. Cobb BA, **Petrash JM**. alpha-Crystallin chaperone-like activity and membrane binding in age-related cataracts. Biochemistry. 2002 Jan 15;41(2):483-90. PubMed PMID: 11781086; NIHMSID: NIHMS210864; PubMed Central PMCID: PMC2902969.

51. Cobb BA, **Petrash JM**. Factors influencing alpha-crystallin association with phospholipid vesicles. Mol Vis. 2002 Mar 22;8:85-93. PubMed PMID: 11951084; NIHMSID: NIHMS210866; PubMed Central PMCID: PMC2902965.

52. Wu X, Chen SG, **Petrash JM**, Monnier VM. Alteration of substrate selectivity through mutation of two arginine residues in the binding site of amadoriase II from Aspergillus sp. Biochemistry. 2002 Apr 2;41(13):4453-8. PubMed PMID: 11914093.

53. Rastelli G, Costantino L, Gamberini MC, Del Corso A, Mura U, et al. Binding of 1-benzopyran-4-one derivatives to aldose reductase: a free energy perturbation study. Bioorg Med Chem. 2002 May;10(5):1427-36. PubMed PMID: 11886805.

54. Cecconi I, Scaloni A, Rastelli G, Moroni M, Vilardo PG, et al. Oxidative modification of aldose reductase induced by copper ion Definition of the metal-protein interaction mechanism. J Biol Chem. 2002 Nov 1;277(44):42017-27. PubMed PMID: 12183464.

55. Chang Q, Harter TM, Rikimaru LT, **Petrash JM**. Aldo-keto reductases as modulators of stress response. Chem Biol Interact. 2003 Feb 1;143-144:325-32. PubMed PMID: 12604219.

56. Suryanarayana P, Kumar PA, Saraswat M, **Petrash JM**, Reddy GB. Inhibition of aldose reductase by tannoid principles of Emblica officinalis: implications for the prevention of sugar cataract. Mol Vis. 2004 Mar 12;10:148-54. PubMed PMID: 15031705.

57. **Petrash JM**. All in the family: aldose reductase and closely related aldo-keto reductases. Cell Mol Life Sci. 2004 Apr;61(7-8):737-49. PubMed PMID: 15094999.

58. Hsu CD, Kymes S, **Petrash JM**. A transgenic mouse model for human autosomal dominant cataract. Invest Ophthalmol Vis Sci. 2006 May;47(5):2036-44. PubMed PMID: 16639013; NIHMSID: NIHMS19282; PubMed Central PMCID: PMC1855087.

59. Singh R, White MA, Ramana KV, **Petrash JM**, Watowich SJ, et al. Structure of a glutathione conjugate bound to the active site of aldose reductase. Proteins. 2006 Jul 1;64(1):101-10. PubMed PMID: 16639747.

60. Estey T, Cantore M, Weston PA, Carpenter JF, **Petrash JM**, et al. Mechanisms involved in the protection of UV-induced protein inactivation by the corneal crystallin ALDH3A1. J Biol Chem. 2007 Feb 16;282(7):4382-92. PubMed PMID: 17158879.

61. Chang Q, Griest TA, Harter TM, **Petrash JM**. Functional studies of aldo-keto reductases in Saccharomyces cerevisiae. Biochim Biophys Acta. 2007 Mar;1773(3):321-9. PubMed PMID: 17140678; NIHMSID: NIHMS19011; PubMed Central PMCID: PMC1847606.

62. Barton KA, Shui YB, **Petrash JM**, Beebe DC. Comment on: the Stokes-Einstein equation and the physiological effects of vitreous surgery. Acta Ophthalmol Scand. 2007 May;85(3):339-40. PubMed PMID: 17362364; NIHMSID: NIHMS78044; PubMed Central PMCID: PMC2585384.

63. Spite M, Baba SP, Ahmed Y, Barski OA, Nijhawan K, et al. Substrate specificity and catalytic efficiency of aldo-keto reductases with phospholipid aldehydes. Biochem J. 2007 Jul 1;405(1):95-105. PubMed PMID: 17381426; PubMed Central PMCID: PMC1925154.

64. Suryanarayana P, Saraswat M, **Petrash JM**, Reddy GB. Emblica officinalis and its enriched tannoids delay streptozotocin-induced diabetic cataract in rats. Mol Vis. 2007 Jul 24;13:1291-7. PubMed PMID: 17679931.

65. Saraswat M, Muthenna P, Suryanarayana P, **Petrash JM**, Reddy GB. Dietary sources of aldose reductase inhibitors: prospects for alleviating diabetic complications. Asia Pac J Clin Nutr. 2008;17(4):558-65. PubMed PMID: 19114390.

66. Chang Q, **Petrash JM**. Disruption of aldo-keto reductase genes leads to elevated markers of oxidative stress and inositol auxotrophy in Saccharomyces cerevisiae. Biochim Biophys Acta. 2008 Feb;1783(2):237-45. PubMed PMID: 17919749; NIHMSID: NIHMS39394; PubMed Central PMCID: PMC2254213.

67. Reddy GB, Satyanarayana A, Balakrishna N, Ayyagari R, Padma M, et al. Erythrocyte aldose reductase activity and sorbitol levels in diabetic retinopathy. Mol Vis. 2008 Mar 24;14:593-601. PubMed PMID: 18385795; PubMed Central PMCID: PMC2275210.

68. Tammali R, Reddy AB, Ramana KV, **Petrash JM**, Srivastava SK. Aldose reductase deficiency in mice prevents azoxymethane-induced colonic preneoplastic aberrant crypt foci formation. Carcinogenesis. 2009 May;30(5):799-807. PubMed PMID: 19028703; PubMed Central PMCID: PMC2722145.

69. Barton KA, Hsu CD, **Petrash JM**. Interactions between small heat shock protein alpha-crystallin and galectin-related interfiber protein (GRIFIN) in the ocular lens. Biochemistry. 2009 May 12;48(18):3956-66. PubMed PMID: 19296714; NIHMSID: NIHMS433105; PubMed Central PMCID: PMC3615986.

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