

CURRICULUM VITAE

Name: **Peter L. Pedersen** Date of this version: **Jan. 21, 2014**

Signature: 

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments (All at JHUSOM)

Professor Biological Chemistry and Oncology
Departments Biological Chemistry and Oncology
Member Sidney Kimmel Cancer Center
Member Center for Obesity Research and Metabolism

Personal Data/Business Address/Phone/Fax/E. Mail

Department of Biological Chemistry
Johns Hopkins University, School of Medicine
725 North Wolfe Street
Baltimore, MD 21205-2185
Phone: 410-955-3827 (Office); 410-955-3167 (Laboratory)
Fax: 410-955-5759 (Departmental)
E. Mail: ppederse@jhmi.edu

Education and Training

1957 High School Diploma, Catoosa Indian (Cherokee) School, Catoosa, Oklahoma in the Cherokee Nation; (Mother of Cherokee Indian heritage); School Salutatorian, Letters in baseball (First Base), basketball (Center), football (End); First chemistry course including laboratory experiments; Class Salutatorian awarded upon graduation. (Declined athletic scholarships to focus on a career related to Chemistry/ Biochemistry especially as it related to physiology and medicine); Mother had trained in chemistry and her brother, my uncle, was a biochemist for the U.S. government, i.e., Chief Chemist and Head of the Biochemistry Branch of the U.S. Office of Naval Research from 1952-1955). Both were from Arkansas, the state in which I would complete my Ph.D. work as noted below.

1961 B.S. in Chemistry (Engineering School), University of Tulsa, Tulsa, Oklahoma

1964 Ph.D. in Chemistry, (Biochemistry Major), University of Arkansas, Fayetteville, Arkansas; (Ph.D. Thesis on the Biochemistry of Muscle Contraction and the Mechanism of Insulin Action; Research Advisor, Jacob Sacks (M.D., PhD)

1964-1967 Postdoctoral Fellow, Department of Physiological Chemistry, The Johns Hopkins University School of Medicine, Baltimore, Maryland (Research Advisor: A. L. Lehninger, Ph.D., Department Chair) (**The Department's name is now "Biological Chemistry"**.) Postdoctoral work was focused on isolating the enzyme (ATP synthase) from liver mitochondria that couples the energy derived from

respiration (electron transport to oxygen) to the synthesis of the “high energy” compound “adenosine triphosphate” (ATP) from “adenosine diphosphate” (ADP) and P_i (inorganic phosphate). The enzyme actually isolated at the time by co-Postdoctoral Fellow Andre Goffeau and myself was not the ATP synthase *per se*. In fact, it proved to be the enzyme **nucleoside diphosphokinase** that catalyzes the reaction ($N_aTP + N_bDP > N_aDP + N_bTP$) where N can be adenine, guanine, cytosine, or inosine. (Later in his career, and very recently, Andre Goffeau in Belgium would go on to lead the team that sequenced the yeast genome.)

The ATP synthase from liver mitochondria would not be isolated for the first time until after I had joined the faculty of the Physiological Chemistry Department (Now Biological Chemistry). William A. Catterall, my first graduate student, would isolate the F_1 catalytic unit and later Maureen McEnergy, another graduate student, would isolate the complete ATP synthase complex (F_0F_1). F_1 is the catalytic unit that makes ATP from ADP and P_i whereas F_0F_1 is the complete complex (more than 12 subunit types) that couples the proton gradient to drive the synthesis of ATP on the F_1 catalytic unit of ATP synthase.

Professional Experience (Following Postdoctoral Work)

1967 Instructor, Department of Physiological Chemistry, The Johns Hopkins University School of Medicine

1968 Assistant Professor, Department of Physiological Chemistry, The Johns Hopkins University School of Medicine

1972 Associate Professor, Department of Physiological Chemistry, The Johns Hopkins University School of Medicine

1975 Professor, Department of Biological Chemistry*, The Johns Hopkins University School of Medicine (*Department name changed)

1992-1993 Fogarty Scholar in Residence, NIH(NCI), Bethesda, MD. (Sponsor, Claude Klee; interacted with laboratories of C. Klee, M. Gottesman and I. Pastan at the NCI)

2011 Professor Joint Appointment in the Department of Oncology and **Member** Sidney Kimmel Comprehensive Cancer Center

2011 -2014 Professor, Department of Biological Chemistry, Center for Cell Metabolism and Obesity Research, and Department of Oncology, The Johns Hopkins University, School of Medicine & **Member** Sidney Kimmel Comprehensive Cancer Center

RESEARCH ACTIVITIES

Total Publications: 248 (Excluding Abstracts)

A. Peer Reviewed Original Science Research (1965-2014) Total = 163 Reviews (1965-2014) Total= 85

1. Pedersen, P.L., and Sacks, J. (1965) Formation of Fructose-Diphosphate in Muscular Contraction. Arch. Biochem. Biophys. 109, 197-199.

2. **Pedersen, P.L.**, and Sacks, J. (1965) Hexosephosphate Formation and the Regulation of Glycolysis in Muscle. **Arch. Biochem. Biophys.** 112, 548-553.
3. Goffeau, A.G., **Pedersen, P.L.**, and Lehninger, A.L. (1967) The Kinetics and Inhibition of the Adenosine Diphosphate-Adenosine Triphosphate Exchange Catalyzed by a Purified Mitochondrial Nucleoside Diphosphokinase. **J. Biol. Chem.** 242, 1845-1853.
4. Erwin, V.G., and **Pedersen, P.L.** (1968) A Sensitive Gel Filtration Method for Determination of Protein Sulfhydryl Groups with ¹⁴C-Chloromercuribenzoate. **Anal. Biochem.** 25, 477-485.
5. Goffeau, A.G., **Pedersen, P.L.**, and Lehninger, A.L. (1968) Reactivity of Thiol Groups in Active and Inactive Forms of a Mitochondrial Nucleoside Diphosphokinase. **J. Biol. Chem.** 243, 1685-1691.
6. Goffeau, A.G., **Pedersen, P.L.**, and Lehninger, A.L. (1968) Regulation de l'activite d'une nucleoside diphosphokinase mitochondriale. **Arch. Intern. de Physiol. et de Biochim.** 76, 179-181.
7. **Pedersen, P.L.** (1968) Molecular Weight, Sulfhydryl Content, and Phosphorylation of a Homogeneous Mitochondrial Nucleoside Diphosphokinase. **J. Biol. Chem.** 243, 4305-4311.
8. Schnaitman, C.A., and **Pedersen, P.L.** (1968) Localization of Oligomycin-sensitive ADP-ATP Exchange Activity in Rat Liver Mitochondria. **Biochem. Biophys. Res. Commun.** 30, 428-433.
9. Goffeau, A.G., and **Pedersen, P.L.** (1969) Inactivations et Protections d'une Nucleoside Diphosphokinase Mitochondriale Purifiee. **Arch. Intern. de Physiol. et de Biochim.** 77, 550-552.
10. **Pedersen, P.L.**, and Schnaitman, C.A. (1969) The Oligomycin-sensitive Adenosine Diphosphate-Adenosine Triphosphate Exchange in an Inner Membrane Matrix Fraction of Rat Liver Mitochondria. **J. Biol. Chem.** 244, 5065-5073.
11. Catterall, W.A., and **Pedersen, P.L.** (1970) Effects of Phosphotungstic Acid and Silicotungstic Acid on Respiration and Integrity of Rat Liver Mitochondria. **Biochem. Biophys. Res. Commun.** 38, 400-405.
12. Chan, T.L., Greenawalt, J.W., and **Pedersen, P.L.** (1970) Biochemical and Ultrastructural Properties of a Mitochondrial Inner Membrane Fraction Deficient in Outer Membrane and Matrix Activities. **J. Cell Biol.** 45, 291-305.
13. **Pedersen, P.L.**, Greenawalt, J.W., Chan, T.L., and Morris, H.P. (1970) A Comparison of Some Ultrastructural and Biochemical Properties of Mitochondria from Morris Hepatomas 9618A, 7800 and 3924A. **Cancer Res.** 30, 2620-2626.
14. Schreiber, J.R., Balcavage, W.X., Morris, H.P., and **Pedersen, P.L.** (1970) Enzymatic and Spectral Analysis of Cytochrome Oxidase in Adult and Fetal Rat Liver and Morris Hepatoma 3924A. **Cancer Res.** 30, 2497-2501.
15. Catterall, W.A., and **Pedersen, P.L.** (1971) Adenosine Triphosphatase from Rat Liver Mitochondria. I. Purification, Homogeneity, and Physical Properties. **J. Biol. Chem.** 246, 4987-4994.
16. **Pedersen, P.L.**, and Catterall, W.A. (1971) Contribution of ATP Synthesis from Endogenous Substrates to the Oligomycin-sensitive ADP-ATP Exchange Activity of Rat Liver Mitoplasts. **Biochem. Biophys. Res. Commun.** 45, 809-815.

17. **Pedersen, P.L.**, Eska, T., Morris, H.P., and Catterall, W.A. (1971) Deficiency of Uncoupler-stimulated Adenosine Triphosphatase Activity in Tightly Coupled Hepatoma Mitochondria. **Proc. Natl. Acad. Sci. (U.S.A.)** 68, 1079-1082.
18. Catterall, W.A., and **Pedersen, P.L.** (1972) Adenosine Triphosphatase from Rat Liver Mitochondria. II. Interaction with Adenosine Diphosphate. **J. Biol. Chem.** 247, 7969-7976.
19. **Pedersen, P.L.**, and Coty, W.A. (1972) Energy-dependent Accumulation of Calcium and Phosphate by Purified Inner Membrane Vesicles of Rat Liver Mitochondria. **J. Biol. Chem.** 247, 3107-3113.
20. Bustamante, E., and **Pedersen, P.L.** (1973) Tetradifon: An Oligomycin-like Inhibitor of Energy-linked Activities of Rat Liver Mitochondria. **Biochem. Biophys. Res. Commun.** 51, 292-298.
21. Catterall, W.A., Coty, W.A., and **Pedersen, P.L.** (1973) Adenosine Triphosphatase from Rat Liver Mitochondria. III. Subunit Composition. **J. Biol. Chem.** 248, 7427-7431.
22. **Pedersen, P.L.** (1973) Coupling of Adenosine Triphosphate Formation in Mitochondria to the Formation of Nucleoside Triphosphates. Involvement of Nucleoside Diphosphokinase. **J. Biol. Chem.** 248, 3956-3962.
23. Coty, W.A., and **Pedersen, P.L.** (1974) Phosphate Transport in Rat Liver Mitochondria, Kinetics and Energy Requirements. **J. Biol. Chem.** 249, 2593-2598.
24. **Pedersen, P.L.**, and Morris, H.P. (1974) Uncoupler-stimulated Adenosine Triphosphatase Activity. Deficiency in Intact Mitochondria from Morris Hepatomas and Ascites Tumor Cells. **J. Biol. Chem.** 249, 3327-3334.
25. Coty, W.A., and **Pedersen, P.L.** (1975) Phosphate Transport in Rat Liver Mitochondria - Membrane Components Labeled by N-ethylmaleimide During Inhibition of Transport. **J. Biol. Chem.** 250, 3515-3521.
26. **Pedersen, P.L.** (1975) Interaction of Homogeneous Mitochondrial ATPase from Rat Liver with Adenine Nucleotides and Inorganic Phosphate. **J. Supramolec. Struc.** 3, 222-230.
27. **Pedersen, P.L.** (1975) Adenosine Triphosphatase from Rat Liver Mitochondria: Separate Sites Involved in ATP Hydrolysis and in the Reversible, High Affinity Binding of ADP. **Biochem. Biophys. Res. Commun.** 64, 610-616.
28. **Pedersen, P.L.** (1976) Adenosine Triphosphatase from Rat Liver Mitochondria-Evidence for a Mercurial-sensitive Site for the Activating Anion Bicarbonate. **Biochem. Biophys. Res. Commun.** 71, 1182-1188.
29. **Pedersen, P.L.** (1976) ATP-dependent Reactions Catalyzed by Inner Membrane Vesicles of Rat Liver Mitochondria - Kinetics, Substrate Specificity, and Bicarbonate Sensitivity. **J. Biol. Chem.** 251, 934-940.
30. Soper, J.W., and **Pedersen, P.L.** (1976) Adenosine Triphosphatase of Rat Liver Mitochondria: Detergent Solubilization of an Oligomycin- and Dicyclohexylcarbodiimide-sensitive Form of the Enzyme. **Biochemistry** 15, 2682-2690.
31. Bustamante, E., and **Pedersen, P.L.** (1977) High Aerobic Glycolysis of Rat Hepatoma Cells in Culture: Role of Mitochondrial Hexokinase. **Proc. Natl. Acad. Sci. (U.S.A.)** 74, 3735-3739.

32. Bustamante, E., Soper, J.W., and **Pedersen, P.L.** (1977) A High-yield Preparative Method for Isolation of Rat Liver Mitochondria. **Anal. Biochem.** 80, 401-408.
33. Woods, T.A., Decker, G.L., and **Pedersen, P.L.** (1977) Anti-hyperlipidemic Drugs - In vitro Effect on the Function and Structure of Rat Liver Mitochondria. **J. Molec. and Cell. Card.** 9, 807-822.
34. Amzel, L.M., and **Pedersen, P.L.** (1978) Adenosine Triphosphatase from Rat Liver Mitochondria – Crystallization and X-ray Diffraction Studies of the F₁-component of the Enzyme. **J. Biol. Chem.** 253, 2067-2069.
35. **Pedersen, P.L.**, and Hullihen, J. (1978) Adenosine Triphosphatase of Rat Liver Mitochondria - Capacity of the Homogeneous F₁ Component of the Enzyme to Restore ATP Synthesis in Urea-treated Membranes. **J. Biol. Chem.** 253, 2176-2183.
36. Wehrle, J.P., Cintron, N.M., and **Pedersen, P.L.** (1978) Phosphate Transport in Rat Liver Mitochondria: Energy-dependent Accumulation of Phosphate by Inverted Inner Membrane Vesicles. **J. Biol. Chem.** 253, 8598-8603.
37. Amzel, L.M., and **Pedersen, P.L.** (1979) Crystallization of F₁-ATPase from Rat Liver Mitochondria. **Methods in Enz.** 55, 333-337.
38. Catterall, W.A., **Pedersen, P.L.**, Lambeth, D.O., and Lardy, H.A. (1979) Purification of F₁-ATPase from Rat Liver Mitochondria. **Methods in Enz.** 55, 320-328.
39. Cintron, N.M., and **Pedersen, P.L.** (1979) A Protein Inhibitor of the Mitochondrial Adenosine Triphosphatase Complex of Rat Liver. Purification and Characterization. **J. Biol. Chem.** 254, 3439-3443.
40. Cintron, N.M., and **Pedersen, P.L.** (1979) Purification of an ATPase Inhibitor Peptide Fraction from Rat Liver Mitochondria. **Methods in Enz.** 55, 408-414.
41. Coty, W.A., Wehrle, J.P., and **Pedersen, P.L.** (1979) Measurement of Phosphate Transport in Mitochondria and in Inverted Membrane Vesicles of Rat Liver. **Methods in Enz.** 56, 353-359.
42. Kaschnitz, R.M., **Pedersen, P.L.**, Morris, H.P., and Hatefi, Y. (1979) Isolation of Mitochondria from Morris Hepatomas. **Methods in Enz.** 55, 79-88.
43. **Pedersen, P.L.** (1979) The Use of Thin Layer Chromatography on Poly-(ethyleneimine)-Cellulose to Facilitate Assays of ATP-ADP Exchange, Adenylate Kinase, and Nucleoside Diphosphokinase Activity. **Methods in Enz.**, 55, 283-289.
44. **Pedersen, P.L.**, and Hullihen, J. (1979) Resolution and Reconstitution of ATP Synthesis and ATP-dependent Functions of Liver Mitochondria. **Methods in Enz.** 55, 736-741.
45. Soper, J.W., Decker, G.L., and **Pedersen, P.L.** (1979) Mitochondrial ATPase Complex - A Dispersed, Cytochrome-deficient, Oligomycin-sensitive Preparation from Rat Liver Containing Molecules with a Tripartite Structural Arrangement. **J. Biol. Chem.** 254, 11170-11176.
46. Soper, J.W., and **Pedersen, P.L.** (1979) Isolation of an Oligomycin-sensitive ATPase Complex from Rat Liver Mitochondria. **Methods in Enz.** 55, 328-333.

47. Wehrle, J.P., and **Pedersen, P.L.** (1979) Phosphate Transport in Rat Liver Mitochondria - Properties of a Ca^{2+} -activated Uptake Process in Inverted Inner Membrane Vesicles. **J. Biol. Chem.** 254, 7269-7275.
48. Bustamante, E., and **Pedersen, P.L.** (1980) Mitochondrial Hexokinase of Rat Hepatoma Cells in Culture: Solubilization and Kinetic Properties. **Biochemistry** 19, 4972-4977.
49. Bustamante, E., Morris, H.P., and **Pedersen, P.L.** (1981) Energy Metabolism of Tumor Cells - Requirement for a Form of Hexokinase with a Propensity for Mitochondrial Binding. **J. Biol. Chem.** 256, 8699-8704.
50. Geller Lipsky, N., and **Pedersen, P.L.** (1981) Mitochondrial Turnover in Animal Cells - Half-lives of Mitochondria and Mitochondrial Subfractions of Rat Liver Based on [^{14}C]-Bicarbonate Incorporation. **J. Biol. Chem.** 256, 8652-8657.
51. **Pedersen, P.L.**, Hullihen, J., and Wehrle, J.P. (1981) Proton Adenosine Triphosphatase Complex of Rat Liver - The Effect of Trypsin on the F_1 and F_0 Moieties of the Enzyme. **J. Biol. Chem.** 256, 1362-1369.
52. Schwerzmann, K., and **Pedersen, P.L.** (1981) Proton-Adenosine Triphosphatase Complex of Rat Liver Mitochondria: Effect of Energy State on Its Interaction with the Adenosine Triphosphatase Inhibitory Peptide. **Biochemistry** 20, 6305-6311.
53. Wehrle, J.P., and **Pedersen, P.L.** (1981) Phosphate Transport in Rat Liver Mitochondria - Location of Sulfhydryl Groups Essential for Transport Activities. **J. Bioenerg. Biomemb.** 13, 285-294.
54. Cintron, N.M., Hullihen, J., Schwerzmann, K., and **Pedersen, P.L.** (1982) Proton-Adenosine Triphosphatase Complex of Rat Liver Mitochondria: Effect of Its Inhibitory Peptide on Adenosine 5'-Triphosphate Hydrolytic and Functional Activities of the Enzyme. **Biochemistry** 21, 1878-1885.
55. Geller Lipsky, N., and **Pedersen, P.L.** (1982) Perturbation by Clofibrate of Mitochondrial Levels in Animal Cells - Implications for a Model of Mitochondrial Genesis. **J. Biol. Chem.** 257, 1473-1481.
56. Wehrle, J.P., and **Pedersen, P.L.** (1982) Characteristics of Phosphate Uptake by Ehrlich Ascites Tumor Cells. **J. Biol. Chem.** 257, 9698-9703.
57. Schwerzmann, K., Hullihen, J., and **Pedersen, P.L.** (1982) Proton Adenosine Triphosphatase Complex of Rat Liver Mitochondria - Interaction with the ATPase Inhibitor Peptide Covalently Labelled with N-Hydroxysuccinimidyl-p-Azidobenzoate. **J. Biol. Chem.** 257, 9555-9560.
58. Amzel, L.M., McKinney, M., Narayanan, P., and **Pedersen, P.L.** (1982) Structure of the Mitochondrial F_1 ATPase to 9Å Resolution. **Proc. Natl. Acad. Sci. (U.S.A.)** 79, 5852-5856.
59. Kaplan, R.S., and **Pedersen, P.L.** (1983) Characterization of Phosphate Efflux Pathways in Rat Liver Mitochondria. **Biochem. J.** 212, 279-288.
60. Wehrle, J.P., and **Pedersen, P.L.** (1983) Isolation and Reconstitution of an N-Ethylmaleimide-sensitive Phosphate Transport Protein from Rat Liver Mitochondria. **Arch. Biochem. Biophys.** 223, 477-483.
61. Parry, D.M., and **Pedersen, P.L.** (1983) Intracellular Localization and Properties of Particulate Hexokinase in the Novikoff Ascites Tumor - Evidence for an Outer Mitochondrial Membrane Location. **J. Biol. Chem.** 258, 10904-10912.

62. McEnery, M., Buhle, Jr., E.L., Aebi, U., and **Pedersen, P.L.** (1984) Proton ATPase of Rat Liver Mitochondria. Preparation and Visualization of a Functional Complex Using the Novel Zwitterionic Detergent 3-[(3-cholamidopropyl) dimethylammonio]-1-propanesulfonate. **J. Biol. Chem.** 259, 4642-4651.
63. Williams, N., Hullihen, J.M., and **Pedersen, P.L.** (1984) The Proton Adenosine Triphosphatase Complex of Rat Liver Mitochondria. Temperature-Dependent Dissociation-Reassociation of the F₁-ATPase Subunits. **Biochemistry** 23, 780-785.
64. Parry, D.M., and **Pedersen, P.L.** (1984) Intracellular Localization of Rat Kidney Hexokinase - Evidence for an Association with Low Density Mitochondria. **J. Biol. Chem.** 259, 8917-8923.
65. Williams, N., Amzel, L.M., and **Pedersen, P.L.** (1984) Proton ATPase of Rat Liver Mitochondria: A Rapid Procedure for Purification of a Stable, Reconstitutively Active F₁ Preparation Using a Modified Chloroform Method. **Anal. Biochem.** 140, 581-588.
66. Nakashima, R.A., Paggi, M.G., and **Pedersen, P.L.** (1984) The Relative Contributions of Glycolysis and Oxidative Phosphorylation to ATP Production in the AS-30D Hepatoma Cell Line. **Cancer Res.** 44, 5702-5706.
67. **Pedersen, P.L.**, and Hullihen, J. (1984) Inhibitor Peptide of Mitochondrial Proton Adenosine Triphosphatase. Neutralization of Its Inhibitory Action by Calmodulin. **J. Biol. Chem.** 259, 15148-15153.
68. McEnery, M.W., and **Pedersen, P.L.** (1986) Purification of the H⁺-ATPase Complex from Rat Liver Mitochondria Using the Zwitterionic Detergent CHAPS. **Methods in Enz.** 126, 470-477.
69. Schwerzmann, K., and **Pedersen, P.L.** (1986) Synthesis and Use of an Azido-Labeled Form of the ATPase Inhibitor Peptide of Rat Liver Mitochondria. **Methods in Enz.** 126, 660-666.
70. Williams, N., and **Pedersen, P.L.** (1986) Purification of alpha and beta Subunits and Subunit Pairs from Rat Liver Mitochondrial F₁-ATPase. **Methods in Enz.** 126, 484-489.
71. Williams, N., and **Pedersen, P.L.** (1986) Rapid Purification of F₁-ATPase from Rat Liver Mitochondria Using a Modified Chloroform Extraction Procedure Coupled to HPLC Chromatography. **Methods in Enz.** 126, 477-484.
72. Houstek, J., and **Pedersen, P.L.** (1985) Adenine Nucleotide and Phosphate Transport Systems of Mitochondria: Relative Localization of Sulfhydryl Groups Based on the Use of the Novel Fluorescent Probe Eosin-5-Maleimide. **J. Biol. Chem.** 260, 6288-6295.
73. Anholt, R.H., **Pedersen, P.L.**, DeSoeuz, E.B., and Snyder, S.H. (1986) The Peripheral-Type Benzodiazepine Receptor - Localization to the Mitochondrial Outer Membrane. **J. Biol. Chem.** 261, 576-583.
74. Kaplan, R.S., and **Pedersen, P.L.** (1985) Isolation and Reconstitution of the n-Butylmalonate-sensitive Dicarboxylate Transporter from Rat Liver Mitochondria. **J. Biol. Chem.** 260, 10293-10298.
75. Kaplan, R.S., and **Pedersen, P.L.** (1985) Determination of Microgram Quantities of Protein in the Presence of Milligram Levels of Lipid with Amido Black 10B. **Anal. Biochem.** 150, 97-104.
76. Hoffman-McEnery, M., and **Pedersen, P.L.** (1986) Diethylstilbestrol: A Novel F₀-Directed Probe of the Mitochondrial Proton ATPase. **J. Biol. Chem.** 261, 1745-1752.

77. Nakashima, R.A., Mangan, P.S., Colombini, M., and **Pedersen, P.L.** (1986) Hexokinase Receptor Complex in Hepatoma Mitochondria: Evidence from N, N'-Dicyclohexylcarbodiimide-Labeling Studies for the Involvement of the Pore-Forming Protein "VDAC". **Biochemistry** 25, 1015-1021.
78. Kaplan, R.S., Pratt, R.D., and **Pedersen, P.L.** (1986) Purification and Characterization of the Reconstitutively Active Phosphate Transporter from Rat Liver Mitochondria. **J. Biol. Chem.** 61, 12767-12773.
79. Anholt, R.R., Aebi, U., **Pedersen, P.L.**, and Snyder, S. (1986) Solubilization and Reassembly of the Mitochondrial Benzodiazepine Receptor. **Biochemistry** 25, 2120-2125.
80. Baker, J.K., Hullihen, J.M., and **Pedersen, P.L.** (1986) Selective Toxicity of the Antimalarial Primaquine - Evidence for Both Uncoupling and Inhibitory Effects of a Metabolite on the Energetics of Mitochondria and Its ATP Synthase Complex. **Pharm. Res.** 3, 290-293.
81. Williams, N., Hullihen, J.M., and **Pedersen, P.L.** (1987) Ligand Binding Studies of the F₁ Moiety of Rat Liver ATP Synthase - Implications About Its Structure, Active Sites, and Mechanism of Action. **Biochemistry** 26, 162-169.
82. Petrone, G., Garboczi, D.N., and **Pedersen, P.L.** (1987) Mitochondrial ATP Synthase Complex - Interaction of Its F₁-ATPase Moiety With the Heavy Atom Iodine. **Biochemistry** 26, 4016-4021.
83. **Pedersen, P.L.**, Williams, N., and Hullihen, J. (1987) Mitochondrial ATP Synthase: Dramatic Mg⁺⁺ - Induced Alterations In the Structure and Function of the F₁-ATPase Moiety. **Biochemistry** 26, 8631-8637.
84. Garboczi, D.N., Shenbagamurthi, P., Hullihen, J., and **Pedersen, P.L.** (1987) Mitochondrial ATP Synthase: Interaction of A Synthetic Fifty Amino Acid, Beta Subunit Peptide With ATP. **J. Biol. Chem.** 263, 812-816.
85. Garboczi, D., Gerring, S., Fox, A., and **Pedersen, P.L.** (1988) Beta Subunit of Rat Liver Mitochondrial ATP Synthase-cDNA Cloning, Amino Acid Sequence, Expression in *E. coli* and Structural Relationship to Adenylate Kinase. **Biochemistry** 27, 553-560.
86. Nakashima, R.A., Paggi, M.G., Scott, L.J., and **Pedersen, P.L.** (1988) Purification and Characterization of a Bindable Form of Mitochondrial Bound Hexokinase From the Highly Glycolytic AS-30D Rat Hepatoma Cell Line. **Cancer Res.** 48, 913-919.
87. Garboczi, D.N., Hullihen, J.H., and **Pedersen, P.L.** (1988) Mitochondrial ATP Synthase: Overexpression in *E. coli* of A Rat Liver β Subunit Peptide and Its Interaction With Adenine Nucleotides. **J. Biol. Chem.** 263, 15694-15698.
88. Arora, K., and **Pedersen, P.L.** (1988) Functional Significance of Mitochondrial-Bound Hexokinase In Tumor Cell Metabolism: Evidence for Preferential Phosphorylation of Glucose by Intramitochondrially Generated ATP. **J. Biol. Chem.** 263, 17422-17428.
89. Barnard, J.P., and **Pedersen, P.L.** (1988) Purification in A Single Step and Kinetic Characterization of the Pyruvate Kinase of *Trypanosoma Brucei*. **Mol. and Biochem. Parasitology** 31, 141-148.
90. Pratt, R.D., and **Pedersen, P.L.** (1989) Inhibition of Na⁺ Dependent Phosphate Transport by Group Specific Covalent Reagents in Rat Kidney Brush Border Membrane Vesicles. **Arch. Biochem. Biophys.** 268, 9-19.

91. Hanley-Trawick, S., Carpen, M.E., Dunaway-Mariano, D., **Pedersen, P.L.**, and Hullihen, J. (1989) Investigation of the Substrate Structure and Metal Cofactor Requirements of the Rat Liver Mitochondrial ATP Synthase/ATPase Complex. **Arch. Biochem. Biophys.** 268, 116-123.
92. McEnergy, M.W., Hullihen, J., and **Pedersen, P.L.** (1989) F₀ "Proton Channel" of Rat Liver Mitochondria: Rapid Purification of a Functional Complex and a Study of its Interaction with the Unique Probe Diethylstilbestrol. **J. Biol. Chem.** 264, 12029-12036.
93. Kaplan, R.S., Pratt, R.D., and **Pedersen, P.L.** (1989) Purification and Reconstitution of the Phosphate Transporter from Rat Liver Mitochondria. **Methods in Enz.** 173, 732-745.
94. Kaplan, R.S., and **Pedersen, P.L.** (1989) Sensitive Protein Assay in the Presence of High Lipid. **Methods in Enz.** 172, 393-399.
95. Ferreira, G., Pratt, R., and **Pedersen, P.L.** (1989) Energy Linked Anion Transport: Cloning, Sequencing, and Characterization of a Full Length cDNA Encoding the Rat Liver Mitochondrial Proton/Phosphate Symporter. **J. Biol. Chem.** 264, 15628-15633.
96. Parry, D.M., and **Pedersen, P.L.** (1990) Glucose Catabolism in Brain: Intracellular Location of Hexokinase. **J. Biol. Chem.** 265, 1059-1066.
97. Arora, K.K., Shenbagamurthi, P., Fanciulli, M., and **Pedersen, P.L.** (1990) Glucose Phosphorylation: Interaction of a Fifty Amino Acid Peptide of Yeast Hexokinase with Trinitrophenyl ATP. **J. Biol. Chem.** 265, 5324-5328.
98. Lee, J., Garboczi, D.N., Thomas, P.J., and **Pedersen, P.L.** (1990) Mitochondrial ATP Synthase: cDNA Cloning, Amino Acid Sequence, Overexpression, and Properties of the Rat Liver β Subunit. **J. Biol. Chem.** 265, 4664-4669.
99. Arora, K.K., Fanciulli, M., and **Pedersen, P.L.** (1990) Glucose Phosphorylation in Tumor Cells: Cloning, Sequencing, and Overexpression in Active Form of a Full-Length cDNA Encoding a Mitochondrial Bindable Form of Hexokinase. **J. Biol. Chem.** 265, 6481-6488.
100. Garboczi, D.N., Thomas, P., Hullihen, J., and **Pedersen, P.L.** (1990) ATP Synthase: Effects of Mutations in a Rat Liver β -Subunit Peptide on its Interaction with Nucleotides. **J. Biol. Chem.** 265, 14632-14637.
101. Ferreira, G.C., Pratt, R.D., and **Pedersen, P.L.** (1990) Mitochondrial Proton/Phosphate Transporter: An Antibody Directed Against the C-Terminus and Proteolytic Cleavage Experiments Provide New Insights about its Membrane Topology. **J. Biol. Chem.** 265, 21202-21206.
102. Pratt, R.D., Ferreira, G.C., and **Pedersen, P.L.** (1990) Mitochondrial Phosphate Transport: Import of the H⁺/P_i Symporter and Role of the Presequence. **J. Biol. Chem.** 266, 1276-1280.
103. Thomas, P.J., Shenbagamurthi, P., Ysern, X., and **Pedersen, P.L.** (1991) The Cystic Fibrosis Transmembrane Conductance Regulator: Nucleotide Binding to a Synthetic Peptide. **Science** 251, 555-557.
104. Arora, K., Filburn, C.R., and **Pedersen, P.L.** (1991) Glucose Phosphorylation: Site Directed Mutations which Impair the Catalytic Function of Hexokinase. **J. Biol. Chem.** 266, 5359-5362.

- 105.** Bianchet, M., Ysern, X., Hüllihen, J., **Pedersen, P.L.**, and Amzel, L.M. (1991) Mitochondrial ATP synthase: Quaternary structure of the F₁ Moiety at 3.6 Å determined by x-ray diffraction analysis. **J. Biol. Chem.** 266, 21197-21201.
- 106.** Ferreira, G.C., and **Pedersen, P.L.** (1992) Overexpression of Eukaryotic Membrane Proteins in Bacteria – Novel Insights Obtained with the Liver Mitochondrial Proton/Phosphate Symporter. **J. Biol. Chem.**, 267, 5460-5466.
- 107.** Thomas, P.J., Shenbagamurthi, P., Hüllihen, J. and **Pedersen, P.L.** (1992) The Cystic Fibrosis Transmembrane Conductance Regulator-Effects of the Most Common Cystic Fibrosis-Causing Mutation on the Secondary Structure and Stability of A Synthetic Peptide. **J. Biol. Chem.**, 267, 5727-5730.
- 108.** Chuang, W-J., Abeygunawardana, C., **Pedersen, P.L.**, and Mildvan, A.S. (1992) Two-Dimensional NMR, Circular Dichroism, and Fluorescence Studies of PP-50, a Synthetic ATP-Binding Peptide From the β -Subunit of Mitochondrial ATP Synthase. **Biochem.** 31, 7915-7921.
- 109.** Thomas, P.J., Garboczi, D.N. and **Pedersen, P.L.** (1992) Mutational Analysis of the Consensus Nucleotide Binding Sequences in the Rat Liver Mitochondrial ATP Synthase β -subunit. **J. Biol. Chem.** 267, 20331-20338.
- 110.** Thomas, P.J., Ko, Y.H., and **Pedersen, P.L.** (1992) Altered Protein Folding May be the Molecular Basis of Most Cases of Cystic Fibrosis, **FEBS Lett.**, 312, 7-9.
- 111.** Barnard, J., and **Pedersen, P.L.** (1993) Glucose Catabolism in African Trypanosomes: Evidence that the Terminal Step is Catalyzed by a Pyruvate Transporter Capable of Facilitating Uptake of Toxic Analogs. **J. Biol. Chem.**, 268, 3654-3661.
- 112.** Lebowitz, M.S. and **Pedersen, P.L.** (1993) Regulation of the Mitochondrial ATP Synthase/ATPase Complex: cDNA Cloning, Sequence, Overexpression and Secondary Structural Characterization of a Functional Protein Inhibitor, **Arch. Biochem. Biophys.** 301, 64-70.
- 113.** Arora, K., Filburn, C.R., and **Pedersen, P.L.** (1993) Structure/Function Relationships in Hexokinase-Site Directed Mutational Analysis Implicates Different Functions for the N- and C- Terminal Halves of the Enzyme. **J. Biol. Chem.** 268, 18259-18266.
- 114.** Arora, K. and **Pedersen, P.L.** (1993) Glucose Utilization by Tumor Cells: The Enzyme Hexokinase Autophosphorylates Both It's N- and C-Terminal Halves. **Arch. Biochem. Biophys.** 304, 515-518.
- 115.** Ko, Y.H., Thomas, P.J., Delannoy, M.R., and **Pedersen, P.L.** (1993) The Cystic Fibrosis Transmembrane Conductance Regulator. Overexpression, Purification, and Characterization of Wild Type and Δ F508 Mutant Forms of the First Nucleotide Binding Fold in Fusion with the Maltose Binding Protein. **J. Biol. Chem.** 268, 24330-24338.
- 116.** Jabs, M., Thomas, P.J., Ferreira, G.C., and **Pedersen, P.L.** (1994) Chromosomal Location of Genes Required for the Terminal Steps of Oxidative Metabolism: The α and β Subunits of the ATP Synthase and the Phosphate Carrier. **Human Genetics** 93, 600-602.
- 117.** Ko, Y.H., Thomas, P.J., and **Pedersen, P.L.** (1994) The Cystic Fibrosis Transmembrane Conductance Regulator: Nucleotide Binding to a Synthetic Peptide Segment From the Second Nucleotide Binding Fold. **J. Biol. Chem.**, 269, 14584-14688.

- 118.** Barnard, J.P. and **Pedersen, P.L.** (1994) Alteration of Pyruvate Metabolism in African Trypanosomes During Differentiation From Bloodstream Into Insect Forms. **Arch. Biochem. Biophys.** 313, 77-82.
- 119.** **Pedersen, P.L.** and Hulihan, J., Bianchet, M., Amzel, L.M., and Lebowitz, M.S. (1995) Rat Liver ATP Synthase: Relationship of the Unique Substructure of the F₁ Moiety to Its Nucleotide Binding Properties Enzymatic States, and Crystalline Form. **J. Biol. Chem.**, 270, 1775-1784.
- 120.** Arora, K. K. and **Pedersen P.L.** (1995) Glucokinase of E. coli: Induction in Response to the Stress of Overexpressing Foreign Proteins **Arch. Biochem. Biophysics** 319, 574-578.
- 121.** Mathupala, Rempel, A., and **Pedersen, P.L.** (1995) Glucose Catabolism in Cancer Cells: Isolation, Sequence, and Activity of the Promoter for Type II Hexokinase **J. Biol. Chem** 270, 16918-16925.
- 122.** Chuang, W.-J., Abeygunawardana, C., Gittis, A.G., **Pedersen P.L.**, and Mildvan, A.S. (1995) Solution Structure and Function in Trifluoroethanol of PP-50, an ATP-Binding Peptide From F₁-ATPase. **Arch. Biochem. Biophys.** 319, 110-122.
- 123.** Ko, Y.H. and **Pedersen, P.L.** (1995) The First Nucleotide Binding Fold of the Cystic Fibrosis Transmembrane Conductance Regulator Can Function as an Active ATPase. **J. Biol. Chem.** 270, 22093-22096.
- 124.** Lebowitz, M.S. and **Pedersen, P.L.** (1996) Protein Inhibitor of Mitochondrial ATP Synthase: Relationship of Inhibitor Structure to pH Dependent Regulation. **Arch. Biochem. Biophys.**, 230, 342-354.
- 125.** Rempel, A., Mathupala, S.P., and **Pedersen, P.L.** (1996) Glucose Catabolism in Cancer Cells: Regulation of the Type II Hexokinase Promoter by Glucose and Cyclic AMP. **FEBS Letts.**, 385, 223-237.
- 126.** Rempel, A., Mathupala, S.P., Griffin, C.G., Hawkins, A.L., and **Pedersen, P.L.** (1996) Glucose Catabolism in Cancer Cells: Amplification of the Gene Encoding Type II Hexokinase. **Cancer Research**, 56, 2468-2471.
- 127.** Reynafarje, B.D. and **Pedersen, P.L.**, (1996) ATP Synthase: Conditions Under Which All Catalytic Sites of the F₁ Moiety are Kinetically Equivalent in Hydrolyzing ATP. **J. Biol. Chem.**, 271, 32546-32550.
- 128.** Ko, Y.H., Delannoy, M., and **Pedersen, P.L.** (1997) Cystic Fibrosis Transmembrane Conductance Regulator: The First Nucleotide Binding Fold when Expressed in E. coli Targets the Membrane with Retention of Its ATP Binding Function. **Biochemistry**, 36, 5053-5064.
- 129.** Ko, Y.H., Delannoy, M., and **Pedersen, P.L.** (1997) Cystic Fibrosis, Lung Infections, and A Human Tracheal Antimicrobial Peptide (hTAP). **FEBS Letts.**, 405, 200-208.
- 130.** Ko, Y.H., Bianchet, M., Amzel, L.M., and **Pedersen, P.L.** (1997) Novel Insights into the Chemical Mechanism of ATP Synthase: Evidence that in the Transition State the γ -Phosphate of ATP is near the Conserved Alanine within the P-loop of the β -subunit. **J. Biol. Chem.** 272, 18875-18881.
- 131.** Mathupala, S., Heese, C., and **Pedersen, P.L.** (1997) Glucose Catabolism in Cancer Cells: The Type II Hexokinase Contains Functionally Active Response Elements for the Tumor Suppressor p53. **J. Biol. Chem.** 272, 22776-22780.
- 132.** Bianchet, Mario, A., Ko, Y.H., Amzel, L.M. and **Pedersen, P.L.** (1997) Modeling of Nucleotide Binding Domains of ABC Transporter Proteins Based on a F₁-ATPase/recA Topology: Structural Model of the

Nucleotide Binding Domains of the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR). **J. Bioenerg. Biomemb.** 29, 503-524.

133. Ko, Y.H. and **Pedersen, P.L.** (1998) Overexpression, Purification and Function of the First Nucleotide Binding Fold of CFTR. **Methods in Enz.** 292, 675-686.

134. Pan, W., Ko, Y.H., and **Pedersen, P.L.** (1998) The Delta Subunit of Rat Liver Mitochondrial ATP Synthase: Molecular Description and Novel Insights into the Nature of Its Association with the F₁-Moiety. **Biochemistry**, 37, 6911-6923.

135. Bianchet, M., Amzel, L.M., Hüllihen, J., and **Pedersen, P.L.** (1998) Structure of Rat Liver F₁-ATPase: Configuration of a Critical Intermediate in ATP Synthase/Hydrolysis. **Proc. Natl. Acad. Sci. (U.S.A.)** 95, 11065-11070.

136. Golden, T.R. and **Pedersen, P.L.** (1998) The Oligomycin Sensitivity Conferring Protein of Rat Liver Mitochondrial ATP Synthase: Arginine 94 is Important for Binding OSCP to F₁, **Biochemistry** 39, 13871-13881.

137. Ko, Y.H., Hong, S. and **Pedersen, P.L.** (1999) Chemical Mechanisms of ATP Synthase: Magnesium Plays a Pivotal Role in Formation of the Transition state where ATP is Synthesized from ADP and Inorganic Phosphate. **J. Biol. Chem.** 274, 28853-28856.

138. Massiah, M.A., Ko, Y.H., **Pedersen, P.L.** and Mildvan, A.S. (1999) Cystic Fibrosis Transmembrane Conductance Regulator: Solution Structures of Peptides Based on the phe 508 Region, the Most Common Site of Disease-Causing Δ F508 Mutation. **Biochemistry** 38, 7453-7461.

139. Lu, N.T. and **Pedersen, P.L.** (2000) Cystic Fibrosis Transmembrane Conductase Regulator: The Purified NBF1+R Protein Interacts with the Purified NBF2 Domain to Form a Stable NBF1+R/NBF2 Complex while Inducing a Conformational Change Transmitted to the C-Terminal Region. **Arch. Biochem. Biophys.** 375, 7-20.

140. Ko, Y.H., Hüllihen, J., Hong, S. and **Pedersen, P.L.** (2000) Mitochondrial F₀F₁ ATP Synthase. Subunit Regions on the F₁ Motor Shielded by F₀, Functional Significance and Evidence for an Involvement of the Unique F₀ Subunit F₆. **J. Biol. Chem.** 275, 32931-32939.

141. Hong, S., Ko, Y.H., and **Pedersen, P.L.** (2001) Rotary Catalysis within ATP Synthases: A Bioinformatic Approach Provides Novel Insights into How Large pH-Dependent Movements of the C-Terminal Helix of Subunit c May Be Accommodated. **Arch. Biochem. Biophys.** 394, 275-279.

142. Ko, Y. H., **Pedersen, P.L.**, and Geschwind, J.F. (2001) Glucose Catabolism in the Rabbit VX2 Tumor Model for Liver Cancer: Characterization and Targeting Hexokinase. **Cancer Lett.** 173, 83-91.

143. Blum, D.J., Ko, Y. H., Rini, D.A., and **Pedersen, P.L.** (2001) ATP Synthase Motor Components: Proposal and Animation of Two Dynamic Models for Stator Function. **Biochem. Biophys. Res. Commun.** 287, 801-807.

144. Mathupala, S. P., Rempel, A., and **Pedersen, P.L.** (2001) Glucose Catabolism in Cancer Cells: Identification and Characterization of a Marked Activation Response of the Type II hexokinase Gene to Hypoxic Conditions. **J. Biol. Chem.** 276, 43407-43412.

- 145.** Ko, Y.H., Pan, W., Inoue, C., and **Pedersen, P.L.** (2002) Signal Transduction to Mitochondrial ATP Synthase: Evidence that PDGF-Dependent Phosphorylation of the δ -Subunit Occurs in Several Cell Lines, Involves Tyrosine, and Is Modulated by Lysophosphatidic Acid. **Mitochondrion**, 1, 339-348.
- 146.** Geschwind, J.F., Ko, Y.H., Torbenson, M.S., Magee, C., and **Pedersen, P.L.** (2002) Novel Therapy for Liver Cancer: Direct Intraarterial Injection of a Potent Inhibitor of ATP Production, **Cancer Res.**, 62, 3909-3913.
- 147.** Hong, S., and **Pedersen, P.L.** (2003) ATP Synthase of Yeast: Structural Insight into the Different Inhibitory Potencies of Two Regulatory Peptides and Identification of a New Potential Regulator. **Arch. Biochem. Biophys.**, 405, 38-43.
- 148.** Hong, S. and **Pedersen, P.L.** (2003) Subunit E of Mitochondrial ATP Synthase: A Bioinformatic Analyses Reveals a Phosphopeptide Binding Motif Supporting a Multifunctional Regulatory Role and Identifies a Related Human Brain Protein with the Same Motif. **Proteins: Structure, Function, Genetics**, 51, 155-161.
- 149.** Annereau, J.P., Ko, Y.H., and **Pedersen, P.L.** (2003) Cystic Fibrosis Transmembrane Conductance Regulator: The NBF1+R Segment Acting Alone Catalyzes a $\text{Co}^{2+}/\text{Mn}^{2+}/\text{Mg}^{2+}$ ATPase Activity Inhibited Both by Cd^{+2} and the Transition State Analog Orthovanadate. **Biochem. J.**, 371, 451-462.
- 150.** Ko, Y.H., Delannoy, M., Hullihen, J., Chiu, W., and **Pedersen, P.L.** (2003) Mitochondrial ATP Synthasome: Cristae Enriched Membranes and A Multiwell Detergent Screening Assay Yield Dispersed Single Complexes Containing the ATP Synthase and Carriers for P_i and ADP/ATP. **J. Biol. Chem.** 278, 12305-12309.
- 151.** Goel, A., Lee, M G., Mathupala, S.P., and **Pedersen, P.L.** (2003) Glucose Metabolism in Cancer: Evidence that Demethylation Events Play a Role in Activating Type II Hexokinase Gene Expression. **J. Biol. Chem.** 278, 15333-15340.
- 152.** Lee, M.G., and **Pedersen, P.L.** (2003) Glucose Metabolism in Cancer: Importance of Transcription Factor-DNA Interactions within a Short Segment of the Proximal Region of Type II Hexokinase Promoter. **J. Biol. Chem.** 278, 41047-41058.
- 153.** Chen, C., Ko, Y.H., Delannoy, M., Ludtke, S.J., Chiu, W., and **Pedersen, P.L.** (2004) Mitochondrial ATP Synthasome: Three Dimensional Structure by Electron Microscopy of the ATP Synthase in Complex Formation with Carriers for P_i and ADP/ATP. **J. Biol. Chem.** 279, 31761-31768.
- 154.** Hong, S.J. and **Pedersen, P.L.** (2004) A Bioinformatic Approach Reveals New Insights About the Roles of Supernumerary Subunits g and A6L **J. Bioenerg. and Biomemb.** 36, 515-524.
- 155.** Ko, Y.H., Smith, B.L., Wang, Y., Pomper, M.G., Rini, D.A., Torbenson, M.S., Hullihen, J., and **Peter L. Pedersen** (2004) Advanced Cancers: Eradication in All Cases Treated using 3-Bromopyruvate Therapy to Deplete ATP. **Biochem. Biophys. Res. Commun.** 324, 269-275.
- 156.** Arrell, D. K., Elliott, S.T., Guo, Y., Kane, L.A., Ko, Y. H., **Pedersen, P. L.**, Robinson, J., Murata, M., Murphy, A. M., Marban, E., and Van Eyk, J. F. (2006) Proteomic Analysis of Pharmacological Preconditioning: Novel Protein Targets Converge to Mitochondrial Metabolism Pathways. **Circ. Res.** 29, 706-714.
- 157.** Chen, C., Saxena, A.J., Simcoke, W. N., Garboczi, D. N., **Pedersen, P.L.**, and Ko, Y.H. (2006) Mitochondrial ATP Synthase: Crystal Structure of the Catalytic Unit in a Vanadate-Induced Transition-Like State and Implications for Mechanism, **J. Biol. Chem.**, 281, 13777-13783.

- 158.** Lis P, Zarzycki M, Ko YH, Casal M, **Pedersen PL**, Goffeau A, Ułaszewski S. (2012) Transport and cytotoxicity of the anticancer drug 3-bromopyruvate in the yeast *Saccharomyces cerevisiae*. **J Bioenerg Biomembr.** 44, 155-61.
- 159.** Queirós O, Preto A, Pacheco A, Pinheiro C, Azevedo-Silva J, Moreira R, Pedro M, Ko YH, **Pedersen PL**, Baltazar F, Casal M.(2012) Butyrate activates the monocarboxylate transporter MCT4 expression in breast cancer cells and enhances the antitumor activity of 3-bromopyruvate. **J Bioenerg Biomembr.** 44:141-53.
- 160.** Ko YH, Verhoeven HA, Lee MJ, Corbin DJ, Vogl TJ, **Pedersen PL** (2012) A translational study "case report" on the small molecule "energy blocker" 3-bromopyruvate (3BP) as a potent anticancer agent: from bench side to bedside. **J Bioenerg Biomembr.** 44: 163-70.
- 161.** Blum DJ, Ko YH, **Pedersen PL** (2012) Mitochondrial ATP synthase catalytic mechanism: a novel visual comparative structural approach emphasizes pivotal roles for Mg²⁺ and P-loop residues in making ATP. **Biochemistry** 51:1532-46.
- 162.** Darpolor MM, Kaplan DE, **Pedersen PL**, Glickson JD (2012) Human hepatocellular carcinoma metabolism: Imaging by Hyperpolarized Magnetic Resonance Spectroscopy. **J Liver Disease Transplant.** 1:1-14.
- 163.** Majkowska-Skrobek G, Augustyniak D, Lis P, Bartkowiak A, Gonchar M, Ko YH, **Pedersen PL**, Goffeau A, Ułaszewski S (2013) Inhibition of multiple-myeloma cancer cells by the small molecule alkylating agent 3-bromopyruvate: Implications for Therapy. **Anti-Cancer Drugs In Press**
- 164-168.** Original Manuscripts in various stages of completion. (Not included)

B. Reviews/Book Chapters (Total = 85)

- 1. Pedersen, P.L.**, and Schnaitman, C.A. (1971) The Oligomycin-sensitive ADP-ATP Exchange Catalyzed by a Mitoplast Fraction of Rat-Liver Mitochondria. **In: Energy Transduction in Respiration and Photosynthesis. (Quagliariello, E., Papa, S., and Rossi, C.S., eds.), Adriatic Editrice, Bari, Italy, 831-838.**
- 2. Pedersen, P.L.** (1972) Enzymology, Ultrastructure, and Energetics of Mitochondria from Three Morris Hepatomas of Widely Different Growth Rate. In: *Isozymes and Enzyme Regulation in Cancer.* (Weinhouse, S., and Ohno, T., eds.), **GANN Monograph on Cancer Research** 13, 251-265.
- 3. Catterall, W.A.**, and **Pedersen, P.L.** (1974) Structural and Catalytic Properties of Mitochondrial Adenosine Triphosphatase. In: **Membrane ATPases and Transport Processes. (Bronk, R.J., ed.), Biochem. Soc. Spec. Publ.** 4, 63-88, London.
- 4. Pedersen, P.L.**, LeVine III, H., and Cintron, N. (1974) Activation and Inhibition of Mitochondrial ATPase of Rat Liver Mitochondria. In: **Membrane Proteins in Transport and Phosphorylation. (Azzone, G.F., Klingenberg, M.E., Quagliariello, E., and Siliprandi, N., eds.), American Elsevier Publ. Co., New York, 43-54.**
- 5. Coty, W.A.**, and **Pedersen, P.L.** (1975) Phosphate Transport in Rat Liver Mitochondria--Kinetics, Inhibitor Sensitivity, Energy Requirements, and Labelled Components. **Mol. & Cell. Biochem.** 9, 109-124.
- 6. Pedersen, P.L.** (1975) Mitochondrial Adenosine Triphosphatase. **Bioenergetics** 6, 243-275.

7. Bustamante, E., and **Pedersen, P.L.** (1978) Hexokinase - The Direct Link Between Mitochondrial and Glycolytic Reactions in Rapidly Growing Cancer Cells. In: **Advances in Exp. Med. and Biol. Morris Hepatomas - Mechanism of Regulation.** (Morris, H.P., and Criss, W.E., eds.), Plenum Publishing Corp. 92, 363-380.
8. **Pedersen, P.L.** (1978) Tumor Mitochondria and the Bioenergetics of Cancer Cells. **Progress in Experimental Tumor Research**, 22, 190-274.
9. **Pedersen, P.L.**, Amzel, L.M., Soper, J.W., Cintron, N., and Hullihen, J. (1978) **Structure, Function, and Regulation of the Mitochondrial Adenosine Triphosphatase Complex of Rat Liver - A Progress Report.** In: **Energy Conservation in Biological Membranes.** (Schafer, G., and Klingenberg, M., eds.), 29 Colloquium - Mosbach, Germany, Springer-Verlag, Berlin, Heidelberg, New York, 159-194.
10. **Pedersen, P.L.**, Greenawalt, J.W., Reynafarje, B., Hullihen, J., Decker, G.L., Soper, J.W., and Bustamante, E. (1978) Preparation and Characterization of Mitochondria and Submitochondrial Particles of Rat Liver and Liver-derived Tissues. **Methods in Cell Biol.** 20, 411-481.
11. Amzel, L.M., Narayanan, P., **Pedersen, P.L.**, and Hullihen, J. (1980) **Structure of F₁-ATPases.** **First Europ. Bioenergs. Conf., Urbino, Italy, Short Reports, Patron Editore, Bologna, #SII**, 117.
12. **Pedersen, P.L.**, Amzel, L.M., Cintron, N., Soper, J.W., Hullihen, J., and Wehrle, J. (1980) The ATP Synthesizing System of Liver Mitochondria. **Adv. Exp. Biol. Med.** 132, 317-344.
13. **Pedersen, P.L.**, Hullihen, J., Wehrle, J., Schwerzmann, K., and Cintron, N. (1980) H⁺-ATPase of Rat Liver Mitochondria - Progress in Understanding How It Functions and How It May Be Regulated. **First Europ. Bioenergs. Conf., Urbino, Italy, Short Reports, Patron Editore, Bologna, #CII**, 153-155.
14. **Pedersen, P.L.**, and Bustamante, E. (1980) Hexokinase and the Abnormal Metabolism of Hepatoma Cells. In: **Heart Creatine Kinase - The Integration of Isozymes for Energy Distribution.** (Jacobus, W.E. and Ingwall, J.S., eds.), **Williams and Wilkins, Baltimore & London**, 147-154.
15. **Pedersen, P.L.**, Schwerzmann, K., and Cintron, N.M. (1981) Regulation of the Synthesis and Hydrolysis of ATP in Biological Systems: Role of Peptide Inhibitors of H⁺-ATPases. In: **Current Topics in Bioenergetics.** (Sanadi, D.R., ed.), **Academic Press** 11, 149-199.
16. Wehrle, J.P., and **Pedersen, P.L.** (1981) Isolation and Characterization of Mitochondria from Malignant Cells. In: **Methodological Surveys in Biochemistry.** (Reid, E., Cook, G.M.W. and Morre', D.J., eds.), **Ellis Horwood, Ltd., Chichester, England** 11, 215-225.
17. Amzel, L.M., Narayanan, P., **Pedersen, P.L.**, and Sygusch, J. (1982) The Three-dimensional Structure of F₁-ATPases. **Annals N.Y. Acad. Sci.** 402, 21-27.
18. **Pedersen, P.L.** (1982) H⁺-ATPases in Biological Systems: An Overview of Their Function, Structure, Mechanism, and Regulatory Properties. **Annals N.Y. Acad. Sci.** 402, 1-20.
19. **Pedersen, P.L.**, Hullihen, J., and Wehrle, J.P. (1982) Mechanism of Proton ATPases - Apparent Separation of Coupling and Catalytic Events. **Second Europ. Bioenergs. Conf., Lyon, France, EBEC Reports, L.B.T.M.-C.N.R.S. Edition, Villeurbanne, France, #OPI**, 25-26.

- 20. Pedersen, P.L.,** and Wehrle, J.P. (1982) Phosphate Transport Processes of Animal Cells. In: **Membranes and Transport.** (Martonosi, A.N., ed.), Plenum Press, N.Y. & London 1, 645-663.
- 21. Amzel, L.M.,** and **Pedersen, P.L.** (1983) Proton ATPases: Structure and Mechanism. **Ann. Rev. Biochem.** 52, 801-824.
- 22. Amzel, L.M.,** Narayanan, P., and **Pedersen, P.L.** (1984) Quaternary Structure of F₁-ATPases. In: **H⁺-ATPase (ATP Synthase): Structure, Function, Biogenesis. The F₀F₁ Complex of Coupling Membranes.** (Papa, S., Altendorf, K., Ernster, L., and Packer, L., eds.), Adriatica Editrice, Bari, Italy, 125-134.
- 23. Kaplan, R.S.,** Williams, N., Hullihen, J., McEnery, M., Nakashima, R.A., Paggi, M.G., and **Pedersen, P.L.** (1984) Anion Transport, ATP Synthesis, and ATP Export in Liver Mitochondria - Recent Progress on Molecular Components Catalyzing These Processes. In: **3rd EBEC Meeting Short Reports.** (Schafer, G., ed.), Hannover, Germany, p. 345.
- 24. Houstek, J.,** and **Pedersen, P.L.** (1984) The Use of Eosine-5-Maleimide to Establish the Locations of SH Groups of Phosphate and Adenine Nucleotide Carriers of Mitochondria. In: **3rd EBEC Meeting Short Reports.** (Schafer, G., ed.), Hannover, Germany, p. 435.
- 25. Nakashima, R.A.,** and **Pedersen, P.L.** (1985) The Role of the Outer Mitochondrial Membrane in Tumor Glycolysis. In: **Cell Membranes and Cancer.** (Galeotto, T., et al., ed.), Elsevier Science Publishers, 183-192.
- 26. Pedersen, P.L.,** and Amzel, L.M. (1985) Structure of ATPases of the F₀F₁ Type: Chemical Asymmetry and Implications for Mechanism. In: **International Symposium on Achievements and Perspectives of Mitochondrial Research.** (Quagliariello, E., et al., eds.), Elsevier Science Publishers B.V. (Biomedical Division), Vol. I: Bioenergetics, pp. 169-189.
- 27. Schwerzmann, K.,** and **Pedersen, P.L.** (1986) Regulation of the Mitochondrial ATP Synthase/ATPase Complex. **Arch. Biochem. Biophys.** 250, 1-18.
- 28. Pedersen, P.L.,** Williams, N., and Hullihen, J. (1986) Relationship of Ligand Binding Properties of ATP Synthase (F₁) of Rat Liver to the Enzyme's Structure and Mechanism. In: **4th EBEC Meeting Short Reports.** Prague, Czechoslovakia, p. 418.
- 29. Nakashima, R.A.,** and **Pedersen, P.L.** (1986) Binding of Hexokinase to Its Mitochondrial Receptor in Tumor Cells: Inhibition By N,N'-Dicyclohexylcarbodiimide (DCCD). In: **4th EBEC Meeting Short Reports.** Prague, Czechoslovakia, p. 405.
- 30. Kaplan, R.S.,** Pratt, R.D., and **Pedersen, P.L.** (1986) Rat Liver Mitochondrial Phosphate Carrier: Purification and Reconstitution. In: **4th EBEC Meeting Short Reports.** Prague, Czechoslovakia, p. 298.
- 31. Nakashima, R.A.,** Scott, L.J., and **Pedersen, P.L.** (1987) The Role of Mitochondrial Hexokinase Binding In the Abnormal Energy Metabolism of Tumor Cell Lines. **Annals N.Y. Acad. Sci.** 488, 438-450.
- 32. Pedersen, P.L.,** and Carafoli, E. (1987) Ion Motive ATPases. I. Ubiquity, Properties and Significance to Cell Function. **Trends in Biochem. Sci.** 12, 146-150.
- 33. Pedersen, P.L.,** and Carafoli, E. (1987) Ion Motive ATPases. II. Energy Coupling and Work Output. **Trends in Biochem. Sci.** 12, 186-189.

- 34. Pedersen, P.L.,** Hullihen, J., Ysern, X., and Amzel, L.M. (1986) Structure and Ligand Binding Domains of Rat Liver F₁-ATPase. In: **Microbial Energy Transduction: Genetics, Structure and Function of Membrane Proteins.** (Youvan, D.C. and Daldal, F., eds.), Cold Springs Harbor Conf., N.Y., N.Y., p. 121-122.
- 35. Garboczi, D.N.,** Shenbagamurthi, P., Kirk, W., Hullihen, J., and **Pedersen, P.L.** (1988) Nucleotide Binding Domains Within Rat Liver F₁ Based on Studies of the β Subunit and Synthetic Peptides. In: **Fifth European Bioenergetics Conference Short Reports**, Vol. 5, p. 258.
- 36. Garboczi, D.N.,** Hullihen, J., and **Pedersen, P.L.** (1988) Overexpression, Processing, and Rapid Purification from *E. coli* of A "Functional", Rat Liver, F₁- β Subunit Fragment. In: **Fifth European Bioenergetics Conference Short Reports**, Vol. 5, p. 274.
- 37. Arora, K.K.,** and **Pedersen, P.L.** (1988) The High Levels of Hexokinase Bound to Tumor Mitochondria Have Preferred Access to Mitochondrially Generated ATP. In: **Fifth European Bioenergetics Conference Short Reports**, Vol. 5, p. 298.
- 38. Ysern, X.,** Amzel, L.M., and **Pedersen, P.L.** (1988) ATP Synthases-Structure of the F₁-Moiety and Its Relationship to Function and Mechanism. **J. Bioenerg. Biomemb.** 20, 423-450.
- 39. Wehrle, J.,** and **Pedersen, P.L.** (1989) Phosphate Transport Processes in Eukaryotic Cells. **J. Memb. Biol.** 111, 199-213.
- 40. Pedersen, P.L.** (1990) ATP Synthesis by Oxidative Phosphorylation in Mitochondria. **Encyclopedia of Human Biology** (Dulbecco, R., ed.), Academic Press, Inc. Vol. 1, 457-565.
- 41. Nakashima, R.A.,** Paggi, M.G., Arora, K.K., and **Pedersen, P.L.** (1990) Integration of Mitochondrial Function With High Aerobic Glycolysis in Tumors: Role of Hexokinase Binding to the Outer Mitochondrial Membrane. In: **Integration of Mitochondrial Function.** Plenum Publishing Company, N.Y., N.Y., (Lemasters, John J., Hackenbrock, Charles R., Thurman, Ronald G., and Westerhoff, Hans V., eds.), pp. 405-411.
- 42. Thomas, P.J.,** Bianchet, M., Garboczi, D.N., Hullihen, J., Amzel, L.M. and **Pedersen, P.L.** (1992) ATP Synthase: Structure-Function Relationships. **Biochim. Biophys. Acta.** 1101, 228-231.
- 43. Arora, K.K.,** Parry, D.M., and **Pedersen, P.L.** (1992) Hexokinase Receptors: Preferential Enzyme Binding in Normal Cells to Nonmitochondrial Sites and In Transformed Cells to Mitochondrial Sites. **J. Bioenerg. Biomemb.** 24, 47-53.
- 44. Thomas, P.J.,** Garboczi, D.N., and **Pedersen, P.L.** (1992) Mitochondrial F-Type ATPases: The Glycine-Rich Loop of the β -subunit is a Pyrophosphate Binding Domain. **Acta. Physiol. Scand.** 146, 23-29.
- 45. Pedersen, P.L.,** Thomas, P.J., Garboczi, D.N., Bianchet, M., and Amzel, L.M. (1992) F-Type ATPases: Are Nucleotide Domains in Adenylate Kinase Appropriate Models For Nucleotide Domains in ATP Synthase/ATPase Complexes? **Ann. N.Y. Acad. Sci.**, 671, 359-365.
- 46. Amzel, L.M.,** Bianchet, M.A., and **Pedersen, P.L.** (1992) Quaternary Structure of ATP Synthases. Symmetry and Asymmetry in the F₁-Moiety. **J. Bioenerg. Biomemb.** 24, 429-433.

- 47. Pedersen, P.L.** (1993) Structure, Reaction Center, Mechanism, and Regulation of One of Nature's Most Unique Machines. **J. Biol. Chem.** 268, 9937-9940.
- 48. Pedersen, P.L.** (1993) An Introduction to the Mitochondrial Anion Carrier Family. **J. Bioenerg. Biomemb.** 25, 431-434.
- 49. Ferreira, G.C. and Pedersen, P.L.** (1993) Phosphate Transport in Mitochondria: Past Accomplishments, Present Problems, and Future Challenges. **J. Bioenerg. Biomemb.** 25, 483-492.
- 50. Amzel, L.M., Bianchet, M.A. and Pedersen, P.L.** (1992) The Structure of F₀F₁ ATPases Determined by Direct and Indirect Methods. In: **Membrane Protein Structure and Experimental Approaches (White, S., Ed.), Oxford University Press**, pp. 164-177.
- 51. Bianchet, M., Medjahed, D., Hullihen, J., Pedersen, P.L., and Amzel, L.M.** (1994) The Three Dimensional Structure of Rat Liver Mitochondrial F₁-ATPase: X-Ray Diffraction Studies. **Biochim. Biophys. Acta.** 1187, 163-164.
- 52. Pedersen, P.L.** (1994) The Machine That Makes ATP. **Curr. Biol.** 4, 1138-1141.
- 53. Thomas, P.J., Ko, Y.H., Shenbagamurthi, P., and Pedersen, P.L.** (1995) Nucleotide Domains in Transport ATPases. Structure-Function and Relationship to Disease. In: **Ion Channels and Genetic Diseases (The Rockefeller University Press)**, 17-28.
- 54. Pedersen, P.L., Bianchet, M., Amzel, L.M., Garboczi, D.N. and Thomas, P.J.** (1994) Mitochondrial ATP Synthase: Progress Toward Understanding The Relationship Between Its Unique Structure and Its Biological Function. In: **Biochemistry of Cell Membranes (Papa, S. and Tager J.H. eds) Birkhauser Verlag A.G. Publishers)**, 179-189.
- 55. Pedersen, P.L.** (1995) Multidrug Resistance: A Fascinating, Clinically Relevant Problem in Bioenergetics. **J. Bioenerg. Biomemb.** 27, 3-5.
- 56. Thomas, P.J., Qu, Bao-He, and Pedersen, P.L.** (1995) Defective Protein Folding as a Basis of Human Disease. **Trends in Biochem. Sci.**, 20, 456-459.
- 57. Pedersen, P.L.** (1996) Frontiers in ATP Synthase Research: Understanding the Relationship Between Subunit Movements and ATP Synthesis. **J. Bioenerg. Biomemb.** 28, 389-395.
- 58. Ko, Y.H. and Pedersen, P.L.** (1997) Frontiers in Research on Cystic Fibrosis: Understanding Its Molecular and Chemical Basis and Relationship to the Pathogenesis of the Disease. **J. Bioenerg. Biomemb.** 29, 417-427.
- 59. Mathupala, S.P., Rempel, A., and Pedersen, P.L.** (1997) Aberrant Glycolytic Metabolism of Cancer Cells: A Remarkable Coordination of Genetic, Transcriptional, Post-translational, and Mutational Events that Lead to a Critical Role for Type II Hexokinase. **J. Bioenerg. Biomemb.** 29, 339-343.
- 60. Pedersen, P.L.** (1997) ATP Synthesis in Mitochondria. In: **Encyclopedia of Human Biology. Second Edition, Academic Press**, Vol. 1, 575-583.
- 61. Rempel, A., Mathupala, S.P., and Pedersen, P.L.** (1998) Glucose catabolism in cancer cells: Role and Regulation of hexokinase Expression. In: **Cell Growth and Oncogenesis (P. Bannash, D. Kanduc, S. Papa, and J.M. Tager (eds), Birkhäuser Verlag Basel/Switzerland**, pages 3-14.

62. Bianchet, M.A., **Pedersen, P.L.**, and Amzel, L.M. (1999) Structure of F₁-ATPase and the Mechanism of ATP Synthesis/Hydrolysis. In: **Frontiers of Cellular Bioenergetics (S. Papa, et al., eds) Plenum Publishers, New York**, pages 361-376.
63. **Pedersen, P.L.** (1999) Mitochondrial Events in the Life and Death of Animal Cells: A Brief Overview. **J. Bioenerg. Biomemb.** 31, 291-304.
64. **Pedersen, P.L.**, Ko, Y.H., and Hong, S. (2000) ATP Synthases in the Year 2000: Defining the Different Levels of Mechanism and Getting a Grip on Each. **J. Bioenerg. Biomemb.** 32, 423-432.
65. **Pedersen, P.L.**, Ko, Y.H., and Hong, S. (2000) ATP Synthases in the Year 2000: Evolving Views About the Structures of These Remarkable Enzyme Complexes. **J. Bioenerg. and Biomemb.** 32, 325-332.
66. Bianchet, M.A., **Pedersen, P.L.**, and Amzel, L.M. (2000) Notes on the Mechanism of ATP Synthesis. **J. Bioenerg. Biomemb.** 32, 517-521.
67. Ko, Y. H., and **Pedersen, P.L.** (2001) Cystic Fibrosis: A Brief Look at Some Highlights of a Decade of Research Focused on Elucidating and Correcting the Molecular Basis of the Disease. **J. Bioenerg. Biomemb.** 33, 513-521.
68. **Pedersen, P.L.**, Mathupala, S., Rempel, A., Geschwind, J.F., and Ko, Y.H. (2002) Mitochondrial Bound Type II Hexokinase: A Key Player in the Growth and Survival of Many Cancers and an Ideal Prospect for Therapeutic Intervention. **Biochem. Biophys. Acta**, 1555 (2002) 14-20.
69. **Pedersen, P.L.** (2002) Transport ATPases in Biological Systems and Relationship to Human Disease: A Brief Overview. **J. Bioenerg. Biomemb.** 34, 327-332.
70. Geschwind, J.F., Georgiades, C.S., Ko, Y. H., and **Pedersen, P.L.** (2004) Recently Elucidated Energy Catabolism Pathways Provide Opportunities for Novel Treatments in Hepatocellular Carcinoma. **Exp.Rev. Anticancer Ther.** 4, 449-457.
71. **Pedersen, P.L.** (2005) Transport ATPases: Structure, Motors, Mechanism and Medicine: A Brief Overview. **J. Bioenerg. Biomemb.** 37, 349-357.
72. Mathupala, S. P., Ko, Y.H., and **Pedersen, P. L.** (2006) Hexokinase II: Cancer's Double-Edged Sword Acting as Both Facilitator and Gatekeeper of Malignancy when Bound to Mitochondria. **Oncogene**, 25, 4777-4786.
73. **Pedersen, P. L.** (2007) The Cancer Cell's "Power Plants" as Promising Therapeutic Targets: An Overview. **J. Bioenerg. Biomemb.**, 39, 1-12.
74. **Pedersen, P.L.** (2007) Warburg, Me and Hexokinase 2: Multiple Discoveries of Key Molecular Events Underlying One of Cancers' Most Common Phenotypes, the "Warburg Effect", i.e., Elevated Glycolysis in the Presence of Oxygen. **J. Bioenerg. Biomemb.** 39, 211-222.
75. **Pedersen, P.L.** (2007) Transport ATPases into the Year 2008: A Brief Overview Related to Types, Structures Functions and Roles in Health and Disease. **J. Bioenerg. Biomemb.** 39, 349-355.

77. Pedersen, P. L. (2008) Voltage Dependent Anion Channels (VDACs): A Brief Introduction with a Focus on the Outer Mitochondrial Compartment's Role together with Hexokinase-2 in the "Warburg Effect" in Cancer. **J. Bioenerg. Biomembr.** 40, 123-126.

78. Hong S. and Pedersen P.L. (2008) ATP Synthase and the Actions of Inhibitors Utilized to Study Its Roles in Human Health, Disease, and Other Scientific Areas. **Microbiol. Mol. Biol. Rev.** 72, 590-641,

79. Mathupala, S.P., Ko, Y.H., and Pedersen, P.L. (2009) Hexokinase-2 Bound to Mitochondria: Cancer's Stygian Link to the "Warburg Effect". **Semin.Cancer Biol.** 19, 17-34.

80. Pedersen, P. L. (2009) Mitochondrial Matters of the Heart: A Plethora of Regulatory Modes to Maintain Function for a Long Lifetime. **J. Bioenerg. Biomembr.** 41, 95-98.

81. Pedersen, P. L. (2009) Mitochondrial Matters of Brain: Amyloid Formation and Alzheimer's Disease Introduction. **J. Bioenerg. Biomembr.** 41, 403-405.

82. Mathupala, S.P. Ko, Y.H., and Pedersen, P.L. (2010) The Pivotal Roles of Mitochondria in Cancer: Warburg and Beyond and Encouraging Prospects for Effective Therapies. **Biochimica et Biophysica Acta** 1797, 1225-1230

83. Mathupala, S.P. and Pedersen, P.L. (2010) Voltage Dependent Anion Channel-1 (VDAC-1) as an Anti-Cancer Target. **Cancer Biol. Ther.** 9, 1503-1506

84. Pedersen PL (2012) 3-Bromopyruvate (3BP) A Fast Acting, Promising, Powerful, Specific, and Effective "Small Molecule" Anti-Cancer Agent Taken From Lab Side to Bedside: Introduction to a Special Issue. **J. Bioenerg. Biomembr.** 44, 1-6

85. Pedersen, P.L. (2012) Mitochondria in relation to cancer metastasis: introduction to a mini-review series. **J. Bioenerg Biomembr.** 44, 615-7.

Inventions, Patents/Copyright

UNITED STATES PATENT 7,547,673: THERAPEUTICS FOR CANCER USING 3-BROMOPYRUVATE AND OTHER SELECTIVE INHIBITORS OF ATP PRODUCTION

Ko, Young Hee, Geschwind, Jean Francois H., and Pedersen, P.L.

[Dr. Young Ko is really the person who made the discovery. She had previous experience with 3-bromopyruvate (3BP) as a pre-doctoral student at Washington State where she had used it in enzymology. When assigned the task by me to find a novel anticancer agent that would eradicate cancers in animals, 3BP was one of the first she tested. Dr. Ko went on from there to lead the study "hands on" that resulted in 19/19 animals, (100%) bearing advanced hepatomas being completely cured of cancer. (Ref. 155 above)]. I was present during the entire study watching each animal being treated. Once cured all animals were retained until they died a natural death. The tumors never returned.]

Extramural Funding (Current, pending, previous)

Current: None

Pending: At their invitation and on site, I have been in discussion with the NCI as it regards applying for a multiple PI grant. Further discussions will continue. Also, I intend to seek support that does not depend on the government.

Previous: Supported by the NCI for many years via one or both of the following grants that have now ended. If the total dollar amount of these past grants is of interest to the reader, please see if you can obtain it through Natalie Peters who oversees the administrative office of the Department of Biological Chemistry.

5RO1CA080118 (NIH/NCI) Pedersen, P.L., P.I. "Cancer Related Glycolytic Cancer Gene: Regulation and Targeting"

5RO1 CA10951 (NIH/NCI) Pedersen, P.L, P.I."Control of Enzymatic Phosphate Transfer in Mitochondria"

It has recently become very difficult for anyone to obtain NIH/NCI support to continue even the most promising research projects. **Nevertheless, I have not surrendered and have no intention of doing so.** As indicated above, plans are already on the table for seeking future NCI support on a project for which they have indicated an interest.

In addition to the above, I intend to apply also to private foundations and philanthropic organizations as my laboratory as indicated above is the only one that has ever discovered an anti-cancer agent that when properly formulated can in fact repeatedly eradicate (cure) cancers in animals (Ref. 155 above, Page 13). Note: 19 out of 19 animals (100%) were cured and lived out a normal life without cancers return. Perhaps most importantly, and shortly thereafter, the same agent was shown to significantly prolong the life of a teenage boy whose doctors had sent home to die (Ref. 160 above page 14). In fact, after treatment with 3BP this teenage boy came to Johns Hopkins with his parents and told his story in front of the first year JHUSOM medical school class (Ref 160 above).

RESEARCH PROGRAM BUILDING/LEADERSHIP/MENTORING

1. Founded at JHUSOM what has now become the **Sequencing and Synthesis Facility**, now headed by Jody Franklin whom I hired many years ago. This facility which I still help oversee continues to run successfully and serve the peptide synthesis, protein sequencing, and DNA sequencing needs of the entire University. Moreover, it has become self-supporting.

2. Served on the original committee that started the largest and broadest graduate program at the School of Medicine. This has become to be known as the **BCMB (Biochemistry, Cellular, and Molecular Biology) Graduate Program**.

3. Served on numerous committees at the JHUSOM, including the **Professorial Promotions Committee** and the **Educational Policy Committee**.

4. Helped in the past to raise funds from a private donor that went to the Cancer Center.

5. Helped develop the highly successful careers of a number of Graduate Students who carried out their Ph.D. Thesis work in my laboratory. To name only a few, **William A. Catterall, Ph.D.** would go on to isolate the sodium channel and become one of the top neuroscientist in the country winning numerous awards and also becoming a member of the National Academy Sciences. **Nitza Cintron, Ph.D.** would go on to develop the first biochemical laboratory at NASA, and then after obtaining the M.D. degree become the head of Space Medicine. She is now a practicing physician in Houston, Texas. *Also, I helped for 47 years teach almost 5,000 or more Johns Hopkins Medical Students some of whom remained here and became leaders at JHUSOM.*

CLINICAL ACTIVITIES: None, but frequently helped physicians who were interested in research.

EDUCATIONAL ACTIVITIES AT JHUSOM AND EXTRAMURAL: Helped teach medical and graduate students Biochemistry related to metabolism for 47 years (Without Absence) and will continue to

do so when called upon.

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

Served on numerous committees including the Professorial Promotions committee and the Educational Policy Committee, the latter for many years.

Editorial Activities

Served as Editor of the **Journal of Bioenergetics and Biomembranes** for 22 years from 1990 through 2012 during which time it became an internationally recognized journal. The Editorship has now been passed on to another scientist. Currently I am on the editorial board of the Journals “**Mitochondrion**” and “**Archives of Biochemistry and Biophysics**”

Advisory Committees, Review Groups/Study Sections

(1994-1998 served on the Physical Biochemistry Study Section at the NIH with one year as Chair)

Professional Societies

Am or have been a member of many of these. See four below.

Biophysical Society

American Chemical Society

Sigma Xi

American Cancer Society

Conference Organizer, Session Chair

Have organized in the past a Gordon conference on Bioenergetics and a FASEB meeting on Transport ATPases. In addition to playing the lead role in the previously mentioned, I have helped organize a number of other conferences in the U.S. and abroad.

Consultantships

None that I recall (I have stayed away from these because of JHUSOM’s rather unclear policy.)

RECOGNITION

Awards, Honors (date, title, description, sponsor)

Awarded for teaching at least 8 times at JHUSOM (by the School, Students, or both) as summarized as follows:[1974 (**CETA**), 1976 (**CETA**), 1977 (**CETA**), 1981 (**WBWJ**), 1982 (**CETA**), 1984 (**CETA**), 1984 (**PAET**), 1994 (**CETA**) [**CETA** = Certified Excellence in Teaching Award; **WBWJ**=W. Barry Wood Jr.; **PAET**=Professor’ Award for Excellence in Teaching]

Invited Talks, Panels (date, title, venue, sponsor)

I accepted many of these until the turn of this century. Since then I have tried to remain at home (JHUSOM) as much as possible to focus both on our basic and cancer related work as well as grant writing. Other scientists in my field of study, i.e., bioenergetics, energy metabolism, and its relationship to disease are very familiar with past and ongoing work in my laboratory. Moreover, they have ready access to our publications as soon as they are accepted. Therefore, I no longer see the urgent need to travel all over the world to advertise what we accomplish at JHUSOM.

After having worked on understanding the unique metabolic properties of cancer cells for 31 years, I decided at the turn of this new century, it was time to find an agent that would eradicate cancers first in animals

and then in people while leaving normal cells alone. I assigned this task to Dr. Young Hee Ko, a Postdoctoral student in the laboratory who previously had done outstanding research in enzymology as an undergraduate student in Dr. Bruce Mcfadden's laboratory at Washington State University, and shortly thereafter also in my laboratory working as a postdoctoral fellow on the disease Cystic Fibrosis. I indicated to Dr. Ko that what we needed to discover was an agent that would eradicate cancers in animals while leaving normal cells alone, i.e., showing no obvious toxicity. Shortly thereafter Dr. Ko told me that she believed she had found such an agent, i.e., 3-bromopyruvate (3BP). Using this agent she went on to eradicate quite large cancers in 19/19 rats (100%). I witnessed all of this staying up many nights to help in the preparation of solutions, injection of animals, and monitoring each animal. It was an incredible experience. Equally exciting was the subsequent finding that each of the 19 animals that had been cured of cancer with 3BP lived out a normal "rat life" without the return of cancer.

OTHER PROFESSIONAL ACCOMPLISHMENTS

Fruit Farmer From 10 - 20 years of age helped my family make a living by growing strawberries. We fought (in Oklahoma) "the grapes of wrath" i.e., the droughts, dust storms, frost, snakes, spiders (tarantulas and black widows), scorpions, insects, worms, fires, floods, tornadoes, cyclones and cattle farmers (Walton family) but we never had a crop failure. (**Disclaimer:** As I received no salary and was not under contract, this may not qualify as a professional accomplishment but I still know how to grow and harvest large tasty strawberries.)