

Robert O. Poyton, PhD

***Department of Molecular, Cellular, and Developmental Biology, University of Colorado at Boulder
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EDUCATION:

- B.A.: Biology (Magna Cum Laude, Highest Honors), Brown University, 1966
- PhD: Molecular Biology/Microbiology, University of California, Berkeley, 1971
- Postdoctoral Training: Biochemistry, Cornell University, Ithaca, N.Y.

ACADEMIC POSITIONS:

- 1973-1977: Assistant Professor, Department of Microbiology, University of Connecticut Health Center, Farmington, CT
- 1977-1980: Associate Professor, Department of Microbiology, University of Connecticut Health Center, Farmington, CT
- 1980-1981: Professor, Department of Microbiology, University of Connecticut Health Center, Farmington, CT
- 1979-1981: Visiting Professor, Department of Cell Biology, Yale University School of Medicine.
- 1980-present: Professor, Department of Molecular, Cellular, and Developmental Biology, University of Colorado at Boulder

AWARDS, FELLOWSHIPS, AND HONORS:

- *Sigma Xi*, 1965. Brown University
- *Phi Beta Kappa*, 1966. Brown University
- *A.B. Degree awarded Magna Cum Laude and with Highest Honors in Biology*, Brown University, 1966
- *James Manning Scholar*, Brown University, 1966
- *Pre-doctoral Fellowship*, National Aeronautics and Space Administration (NASA) Pre-doctoral Fellowship, 1966-1969. University of California, Berkeley
- *Pre-doctoral Fellowship*, National Institutes of Health, 1969-1971, University of California, Berkeley
- *Post-doctoral Fellowship*, National Institutes of Health, 1971-1973
- *Flow Lecturer*, British Society of Cell Biology, 1974
- *Elected Member*, New York Academy of Sciences, 1979
- *Established Investigator*, American Heart Association, 1978-1983
- *Career Development Award*, National institutes of Health, 1978-1983 (*declined*)
- *Creative Research Award*, University of Colorado, 1986-1987
- *EMBO Lecturer*, European Molecular Biology Organization, Heidelberg, Germany, 1988
- *Mortar Board Award for Teaching*, University of Colorado, Boulder, 1993
- *Golden Key Honor Society Inductee for Teaching*, 1994

RESEARCH INTERESTS/EXPERTISE

- Genetic and Biochemical Basis of Aging
- Biology of Hypoxia: Oxygen Sensing in Gene expression and Disease
- Molecular Biology of Membrane Structure, Function, and Assembly
- Bioenergetics and Energy Metabolism
- Mitochondria Structure/Function

PROFESSIONAL ADMINISTRATIVE/COMMITTEE EXPERIENCE (selected)

- *Member, Physiological Chemistry Study Section* American Heart Association, , 1978-81
- *Chair, Physiological Chemistry Study Section*, American Heart Association, 1989
- *Member, Physiological Chemistry Study Section*, American Heart Association, 1986-89
- *Member, Biochemistry Panel* , National Science Foundation, 1989-1990
- *Member, Cell Biology Study Section*, American Cancer Society , 1992
- *Member, Program Project Study Section*, National Institutes of Health, 1993
- *Member, Panel on Mitochondrial Dysfunction and Degenerative disease*; National Institutes of Child Health and Development, 1992
- *Member, Panel on Mitochondrial Dysfunction and Aging*, National Institute of Aging, 1993
- *Co-Founder*, Rocky Mountain Yeast Forum, 1993
- *Chair, Diversity Council*, Department of Molecular, Cellular, and Developmental Biology, University of Colorado, 1995
- *Chair, Faculty Evaluation Committee*, Department of Molecular, Cellular, and Developmental Biology, 1994-1995
- *Co-Author, Diversity Plan*, Department of Molecular, Cellular, and Developmental Biology , University of Colorado, Boulder, 1995
- *Departmental Representative for Faculty Governance*, College of Arts and Sciences Council for Faculty Governance, University of Colorado, Boulder, 1995-1998.
- *Member, College of Arts and Sciences Curriculum Committee*, University of Colorado, Boulder 1995-1998
- *Member, Physiological Chemistry Study Section*, National Institutes of Health, 1995-1999
- *Chair, College of Arts and Sciences Curriculum Committee*, University of Colorado, Boulder 1997-1998
- *Member, Executive Committee of the College of Arts and Sciences Council for Faculty Governance*, University of Colorado, Boulder, 1997-1998.
- *Co-Chair, College of Arts and Sciences Core Task Force*, University of Colorado, Boulder, 1997-1998
- *Member, Search Committee for Vice Chancellor for Academic Affairs*, University of Colorado, Boulder, 1997-1998

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- *Member, College of Arts and Sciences Core Task Force*, University of Colorado, Boulder, 1998-1999
- *Member, Boulder Faculty Assembly*, University of Colorado, Boulder, 2001
- *Advisory Board, Faculty Teaching Excellence Program*, University of Colorado, Boulder, 2001
- *Resource Person : Committee on Faculty Affairs, Boulder Faculty Assembly*, University of Colorado, Boulder, 2004-present
- *Member, Committee on Privilege and Tenure*: University of Colorado, 2004-2008
- *Departmental Representative, College of Arts and Sciences Council*, University of Colorado, Boulder: 2006-2012
- *Member, College of Arts and Sciences Curriculum Committee*, University of Colorado, Boulder, 2006-2009.
- *Member, College of Arts and Sciences Planning Committee*, University of Colorado, Boulder, 2006-2012.

EDITORIAL BOARDS

- *Journal Supramolecular Structure*, 1978-1981
- *Journal Cellular Biochemistry*, 1981-1997
- *Bioenergetics*, 2011-present

PROFESSIONAL SOCIETY MEMBERSHIPS

- American Association for the American Society of Microbiology Advancement of Science
- New York Academy of Science
- American Society of Biological Chemists
- The Protein Society
- American Society for Cell Biology

CONSULTING

- Apex Bioscience – technical consultant
- Narragansett Brewing Co. – technical consultant
- Columbine Venture Funds – investment/technical consultant
- Receptor Laboratories, Inc. – investment/technical consultant
- Coors Brewery – technical consultant
- Strohtech – technical consultant
- Falstaff Brewing Co. – technical consultant
- International Research Group – investment/technical consultant
- University Science, Engineering, and Technology, Inc. – technical consultant
- Jones and Bartlett Publishers – book consultant
- ADS Software Development – software consultant

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- Ingrid DeFranco, Attorney at Law – expert testimony
- Clarimedix – Scientific co-founder and technical consultant (phototherapy)

NON PROFIT BOARDS OF DIRECTORS

Orange Orchard Homeowners Association – President and board member

Heritage Manor Homeowners Association – President and board member

Spring Creek Homeowners Association – President and board member

Hawk Ridge Estates Homeowners Association – President and board member

PEER-REVIEWED PUBLICATIONS:

Full papers

- (1) Fuller, M.S. and R.O. Poyton (1964) A new technique for the isolation of aquatic fungi. *Bioscience* 14:45-46.
- (2) Poyton, R.O. and D. Branton (1970) A multipurpose microperfusion chamber. *Exptl. Cell Res.* 60:109-114.
- (3) Poyton, R.O. (1970) The characterization of *Hyalochlorella marina n.sp., n. gen.*, a new colorless counterpart of *Chlorella*. *J. Gen. Microbiol.* 62:171-188.
- (4) Poyton, R.O. (1970) The isolation and occurrence of *Hyalochlorella marina*. *J. Gen. Microbiol.* 62:189-194.
- (5) Poyton, R.O. and D. Branton (1972) Control of daughter cell number variation in multiple fission: genetic versus environmental determinants in *Prototheca*. *Proc. Natl. Acad. Sci. USA* 69:2346-2350.
- (6) Mason, T., E. Ebner, R.O. Poyton, J. Salzgaber, D.C. Wharton, L. Mennucci and G. Schatz (1972) The participation of mitochondrial and cytoplasmic protein synthesis in mitochondrial formation. In: *Mitochondria: Biogenesis and Bioenergetics* (S.G. van den Bergh, P. Borst and E.C. Slater, eds.), North Holland Publishing Co., Amsterdam, pp. 53-69.
- (7) Poyton, R.O. (1973) Effect of growth rate on the macromolecular composition of *Prototheca zopfii*, a colorless alga which divides by multiple fission. *J. Bacteriol.* 113:203-211.
- (8) Mason, T.L., R.O. Poyton, D.C. Wharton and G. Schatz (1973) Cytochrome *c* oxidase from baker's yeast. I. Isolation and properties. *J. Biol. Chem.* 248:1346-1354.
- (9) Ross, E., E. Ebner, R.O. Poyton, T.L. Mason, B. Ono and G. Schatz (1974) The biosynthesis of mitochondrial cytochromes. In: *The Biogenesis of Mitochondria* (C. Saccone and A.M. Kroon, eds.), Academic Press, pp. 477-490.
- (10) Poyton, R.O. and G. Schatz (1975) Cytochrome *c* oxidase from baker's yeast. III. Physical characterization of isolated subunits and chemical evidence for two different classes of polypeptides. *J. Biol. Chem.* 250:752-761.
- (11) Poyton, R.O. and G. Schatz (1975) Cytochrome *c* oxidase from baker's yeast. IV. Immunological evidence for the participation of a mitochondrially-synthesized subunit in enzymatic activity. *J. Biol. Chem.* 250:762-766.
- (12) Poyton, R.O. and G.S.P. Groot (1975) Biosynthesis of polypeptides of cytochrome *c* oxidase by isolated mitochondria. *Proc. Natl. Acad. Sci. USA* 72:172-176.
- (13) Groot, G.S.P. and R.O. Poyton (1975) Oxygen control of cytochrome *c* oxidase synthesis in isolated mitochondria from *Saccharomyces cerevisiae*. *Nature* 255:238-240.
- (14) Poyton, R.O. and J. Kavanagh (1975) The biosynthesis and assembly *in vitro* of cytochrome *c* oxidase from *Saccharomyces cerevisiae*. In: *Electron Transfer Chains and Oxidative Phosphorylation* (E. Quagliariello *et al.*, eds.), Elsevier Press, pp. 75-80.
- (15) Poyton, R.O. and J. Kavanagh (1976) Regulation of mitochondrial protein synthesis by cytoplasmic proteins. *Proc. Natl. Acad. Sci. USA* 73:3947-3951.

- (16) Poyton, R.O. and E. McKemmie (1976) The assembly of cytochrome *c* oxidase from *Saccharomyces cerevisiae*. In: *The Genetics and Biogenesis of Mitochondria and Chloroplasts* (T. Bucher *et al.*, eds.), Elsevier Press, pp. 207-214.
- (17) Poyton, R.O. (1978) A versatile apparatus for polyacrylamide and agarose gel electrophoresis in plexiglas slab gel molds. *Anal. Biochem.* 90:624-632.
- (18) Poyton, R.O, E.E. McKemmie and C.G. Nascimento (1978) The use of orthacryl two-dimensional electrophoresis to identify and compare the subunit polypeptides of bovine heart and yeast cytochrome *c* oxidases. *J. Biol. Chem.* 253:6303-6306.
- (19) Poyton, R.O and E. McKemmie (1979) Limited proteolysis in the assembly of yeast cytochrome *c* oxidase. In: *The Role of Limited Proteolysis in Microorganisms* (H. Holzer and G.N. Cohen, eds.), DHEW Publication No. 79-1591.
- (20) Poyton, R.O and E. McKemmie (1979) A polyprotein precursor to all four cytoplasmically-translated subunits of cytochrome *c* oxidase from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 254:6763-6771.
- (21) Poyton, R.O and E. McKemmie (1979) Post-translational processing of the polyprotein precursor to subunits IV-VII of yeast cytochrome *c* oxidase takes place in the inner mitochondrial membrane. *J. Biol. Chem.* 254:6772-6780.
- (22) Sevarino, K. and R.O. Poyton (1980) Mitochondrial membrane biogenesis: Identification of a precursor to yeast cytochrome *c* oxidase subunit II, an integral polypeptide. *Proc. Natl. Acad. Sci. USA* 77:142-146.
- (23) Poyton, R.O, K. Sevarino, C. George-Nascimento and S.D. Power (1980) Protein precursors in the assembly of yeast cytochrome *c* oxidase, a transmembranous oligomer of the inner mitochondrial membrane. *Ann. N.Y. Acad. Sci.* 343:275-292.
- (24) Poyton, R.O (1980) Cooperative interaction between mitochondrial and nuclear genomes: Cytochrome *c* oxidase assembly as a model. *Curr. Topics Cell. Regulation* 17:231-295.
- (25) George-Nascimento, C. and R.O. Poyton (1981) Further analysis of the polypeptide subunits of yeast cytochrome *c* oxidase. Isolation and characterization of subunits III, V, and VII. *J. Biol. Chem.* 256:9363-9370.
- (26) McKee, E.E., K.A. Sevarino, G. Bellus and R.O. Poyton (1981) Use of an optimized mitochondrial protein synthetic system to characterize a precursor to subunit II of cytochrome *c* oxidase. In: *Advances in Biotechnology: Proceedings of the 6th International Fermentation Symposium/5th International Symposium on Yeasts* (G.G. Stewart, C. Robinow, B. Johnson, E.R. Tustanoff, M.A. LaChance and J. Russell, eds.), Pergamon Press, Toronto, pp. 357-362.
- (27) Poyton, R.O, G. Bellus and A.K. Kerner (1981) Biosynthesis of mitochondrial membrane proteins. In: *Membranes and Transport*, Vol. 1 (A. Martonosi, ed.), Plenum Press, pp. 237-247.
- (28) Poyton, R.O (1983) Memory and membranes: The expression of genetic and spatial memory in the assembly of organelle macrocompartments. *Modern Cell Biol.* 2:15-72.
- (29) Power, S.D., M.A. Lochrie and R.O. Poyton (1983) Reversed phase high performance liquid chromatographic purification of subunits of oligomeric membrane proteins. The nuclear coded subunits of yeast cytochrome *c* oxidase. *J. Chromatography* 266:585-598.
- (30) Folley, L.S., S.D. Power and R.O. Poyton (1983) Separation of nucleotides by ion-pair reversed phase high performance liquid chromatography. The use of Mg (II) and triethylamine as

- competing hetaerons in the separation of adenine and guanine nucleotides. *J. Chromatography* 281:199-207.
- (31) Cumsky, M.G., J.E. McEwen, C. Ko and R.O. Poyton (1983) Nuclear genes for mitochondrial proteins: Identification and isolation of a structural gene for subunit V of yeast cytochrome *c* oxidase. *J. Biol. Chem.* 258:13418-13421.
- (32) McKee, E.E. and R.O. Poyton (1984) Mitochondrial gene expression in *Saccharomyces cerevisiae*. I. Optimal conditions for protein synthesis in isolated mitochondria. *J. Biol. Chem.* 259:9320-9331.
- (33) McKee, E.E., J.E. McEwen and R.O. Poyton (1984) Mitochondrial gene expression in *Saccharomyces cerevisiae*. II. Fidelity of translation in isolated mitochondria from wild-type and respiratory-deficient mutant cells. *J. Biol. Chem.* 259:9332-9338.
- (34) Power, S.D., M.A. Lochrie, K.A. Sevarino, T.E. Patterson and R.O. Poyton (1984) The nuclear-coded subunits of yeast cytochrome *c* oxidase. I. Fractionation of the holoenzyme into chemically pure polypeptides and the identification of two new subunits using solvent extraction and reversed phase high performance liquid chromatography. *J. Biol. Chem.* 259:6564-6570.
- (35) Power, S.D., M.A. Lochrie, T.E. Patterson and R.O. Poyton (1984) The nuclear-coded subunits of yeast cytochrome *c* oxidase. II. The amino acid sequence of subunit VIII and a model for its disposition in the inner mitochondrial membrane. *J. Biol. Chem.* 259:6571-6574.
- (36) Power, S.D., M.A. Lochrie and R.O. Poyton (1984) The nuclear-coded subunits of yeast cytochrome *c* oxidase. III. Identification of homologous subunits in yeast, bovine, and *Neurospora crassa* cytochrome *c* oxidases. *J. Biol. Chem.* 259:6575-6578.
- (37) McEwen, J.E., M.G. Cumsky, C. Ko, S.D. Power and R.O. Poyton (1984) Mitochondrial membrane biogenesis: Characterization and use of pet mutants to clone the nuclear gene coding for subunit V of yeast cytochrome *c* oxidase. *J. Cell Biochem.* 24:229-242.
- (38) Wright, R.M., C. Ko, M.G. Cumsky and R.O. Poyton (1984) Isolation and sequence of the structural gene for cytochrome *c* oxidase subunit VI from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 259:15401-15407.
- (39) McEwen, J.E., V.C. Cameron and R.O. Poyton (1985) Rapid method for isolation and screening of cytochrome *c* oxidase deficient mutants of *Saccharomyces cerevisiae*. *J. Bacteriol.* 161:831-835.
- (40) Cumsky, M.G., C. Ko, C.E. Trueblood and R.O. Poyton (1985) Two non-identical forms of subunit V are functional in yeast cytochrome *c* oxidase. *Proc. Natl. Acad. Sci. USA* 82:2235-2239.
- (41) Lee, S.Y., F.B. Knudsen and R.O. Poyton (1985) Differentiation of brewery yeast strains by restriction endonuclease analysis of their mitochondrial DNA. *J. Institute of Brewing* 91:169-173.
- (42) Power, S.D., M.A. Lochrie and R.O. Poyton (1986) The nuclear-coded subunits of yeast cytochrome *c* oxidase. IV. The amino acid sequences of subunits VII and VIIa, structural similarities between the three smallest polypeptides of the holoenzyme, and implications for biogenesis. *J. Biol. Chem.* 261:9206-9209.
- (43) McEwen, J.E., C. Ko, B. Kloeckener-Gruissem and R.O. Poyton (1986) Nuclear functions required for cytochrome *c* oxidase biogenesis in *Saccharomyces cerevisiae*. Characterization of mutants in 34 complementation groups. *J. Biol. Chem.* 261:11872-11879.
- (44) Wright, R.W., L.K. Dircks and R.O. Poyton (1986) Characterization of COX9, the nuclear gene encoding the yeast mitochondrial protein cytochrome *c* oxidase subunit VIIa. Subunit VIIa lacks a

- leader peptide and is an essential component of the holoenzyme. *J. Biol. Chem.* 261:17183-17191.
- (45) Patterson, T.E. and R.O. Poyton (1986) COX8, the structural gene for yeast cytochrome *c* oxidase subunit VIII. DNA sequence and gene disruption indicates that subunit VIII is required for maximal levels of cellular respiration and is derived from a precursor which is extended at both its NH₂- and COOH-termini. *J. Biol. Chem.* 261:17192-17197.
- (46) Kloeckener-Gruissem, B., J.E. McEwen and R.O. Poyton (1987) Nuclear functions required for cytochrome *c* oxidase biogenesis in *Saccharomyces cerevisiae*: Multiple trans-acting nuclear genes exert specific effects on expression of each of the cytochrome *c* oxidase subunits encoded on mitochondrial DNA. *Current Genetics* 12:311-322.
- (47) Wright, R.M., J.D. Trawick, C.E. Trueblood, T.E. Patterson and R.O. Poyton (1987) Organization and expression of nuclear genes for cytochrome *c* oxidase. In: *Cytochrome Systems: Molecular Biology and Bioenergetics* (S. Papa, ed.), Plenum Press, pp. 49-56.
- (48) Patterson, T.E., C.E. Trueblood, R.M. Wright and R.O. Poyton (1987) Polypeptide subunits encoded by nuclear genes are essential components of cytochrome *c* oxidase. In: *Cytochrome Systems: Molecular Biology and Bioenergetics* (S. Papa, ed.), Plenum Press, pp. 253-260.
- (49) Cumsky, M.G., C.E. Trueblood, C. Ko and R.O. Poyton (1987) Structural analysis of two genes encoding divergent forms of yeast cytochrome *c* oxidase subunit V. *Mol. Cell Biol.* 7:3511-3519.
- (50) Trueblood, C.E. and R.O. Poyton (1987) Differential effectiveness of yeast cytochrome *c* oxidase subunit V genes results from differences in expression not function. *Mol. Cell Biol.* 7:3520-3526.
- (51) Glaser, S.M., C.E. Trueblood, L.K. Dircks, R.O. Poyton and M.G. Cumsky (1988) Functional analysis of mitochondrial protein import in yeast. *J. Cell Biochem.* 36:275-287.
- (52) Kloeckener-Gruissem, B., J.E. McEwen and R.O. Poyton (1988) Identification of a third nuclear protein-coding gene required specifically for post-transcriptional expression of the mitochondrial *COX3* gene in *Saccharomyces cerevisiae*. *J. Bacteriol.* 170:1399-1402.
- (53) Trueblood, C.E., R.M. Wright and R.O. Poyton (1988) Differential regulation of the two genes for yeast cytochrome *c* oxidase subunit V by heme and the *HAP2* and *REO1* genes. *Mol. Cell Biol.* 8:4537-4540.
- (54) Trueblood, C.E. and R.O. Poyton (1988) Identification of *REO1*, a gene involved in negative regulation of *COX5b* and *ANB1* in aerobically-grown *Saccharomyces cerevisiae*. *Genetics* 120:671-680.
- (55) Poyton, R.O., C.E. Trueblood, R.M. Wright and L.E. Farrell (1988) Expression and function of cytochrome *c* oxidase subunit isologs -- modulators of cellular energy production? *Ann. N.Y. Acad. Sci.* 550:289-307.
- (56) Chance, B., R.A. Waterland, A. Tanaka and R.O. Poyton (1988) Mitochondrial function in normal and genetically altered cells and tissues. *Ann. N.Y. Acad. Sci.* 550:360- 373.
- (57) Chance, B., L. Powers, R.O. Poyton and R. Waterland (1988) Subunit control of cytochrome oxidase structure and activity. *Biophysical J.* 53:373-75
- (58) Waterland, R., L. Powers, B. Chance and R.O. Poyton (1988) Effects of subunits Va and Vb on yeast cytochrome oxidase. *FASEB J.* 2:774

- (59) Wright, R.M., B. Rosenzweig and R.O. Poyton (1989) Organization and expression of the *COX6* genetic locus in *Saccharomyces cerevisiae*: Multiple mRNAs with different 3' termini are transcribed from *COX6* and regulated differentially. *Nucl. Acids Res.* 17:1103-1120.
- (60) Trawick, J.D., R.M. Wright and R.O. Poyton (1989) Transcription of yeast *COX6*, the gene for cytochrome *c* oxidase subunit VI, is dependent on heme and on the HAP2 gene. *J. Biol. Chem.*, 264:7005-7008.
- (61) Clarkson, G.H.D. and R.O. Poyton (1989) A role for membrane potential in the biogenesis of cytochrome *c* oxidase subunit II, a mitochondrial gene product. *J. Biol. Chem.*, 264:10114-10118.
- (62) Cameron, V.L., T.D. Fox, and R.O. Poyton (1989) Isolation and characterization of a yeast strain carrying a mutation in the mitochondrial promoter for *COX2*. *J. Biol. Chem.* 264:13391-13394.
- (63) Trawick, J.D., C. Rogness, and R.O. Poyton (1989) Identification of a UAS and other cis-acting elements required for transcription of *COX6* from *Saccharomyces cerevisiae*. *Mol. Cell Biol.* 9:5350-5358.
- (64) Basu, A., R.W. Waterland, R.O. Poyton, and B. Chance (1989) Influence of nuclear coded subunits on cytochrome *c* oxidase activity. *Biophysical J.* 55:567-69.
- (65) Valencik, M.L., B. Kloeckener-Gruissem, R.O. Poyton, and J.E. McEwen (1989) Disruption of the yeast nuclear *PET54* gene blocks excision of mitochondrial intron aI5b from pre-mRNA for cytochrome *c* oxidase subunit I. *EMBO J.* 8:3899-3904.
- (66) Wright, R.M. and R.O. Poyton (1990) Release of two *Saccharomyces cerevisiae* cytochrome genes, *COX6* and *CYC1*, from glucose repression requires the *SNF1* and *SSN6* gene products. *Mol. Cell Biol.* 10:1297-1300.
- (67) Farrell, L.E., J.D. Trawick, and R.O. Poyton (1990) Mitochondrial-nuclear interactions: transcription of nuclear *COX* genes in yeast is reduced in cells that lack a mitochondrial genome. In: *Structure, Function, and Biogenesis of Energy Transfer Systems* (E. Quagliariello, S. Papa, F. Palmieri, and C. Saccone, eds.), Elsevier Press, 131-134.
- (68) Duhl, D., T. Powell, and R.O. Poyton (1990) Mitochondrial import of cytochrome *c* oxidase in *Saccharomyces cerevisiae*. Identification of sequences required for mitochondrial localization *in vivo*. *J. Biol. Chem.* 265:7273-7277.
- (69) Waterland, R.A., A. Basu, R.O. Poyton, and B. Chance (1990) Enhanced internal electron transfer within the subunit 5B isozyme of yeast cytochrome *c* oxidase. *Biophysical J.* 57:232-34.
- (70) Dircks, L.K. and R.O. Poyton (1990) Overexpression of yeast cytochrome *c* oxidase subunit Va circumvents the requirement for a leader peptide in mitochondrial import. *Mol. Cell Biol.* 10: 4984-4986.
- (71) Bousquet, I., G. Dujardin, R.O. Poyton, and P. Slonimski (1990) Two group I introns, in the *cob-box* and *cox1* genes, require the same PET 157/MRSI nuclear gene product for splicing. *Current Genetics* 18:117-124.
- (72) Black-Schaefer, C.L., J.D. McCourt, R.O. Poyton, and E.E. McKee (1991) Mitochondrial gene expression in *Saccharomyces cerevisiae* III. Proteolysis of nascent chains in isolated yeast mitochondria optimized for protein synthesis. *Biochem, J.* 274:199-205.
- (73) Droste, M. and R.O. Poyton (1991) Is the expression of mitochondrially-coded subunits of cytochrome *c* oxidase limiting assembly and regulated by ATP?. *Biol. Chem. Hoppe-Seyler* 372(8):647.

- (74) Waterland, R.A., A. Basu, B. Chance, and R.O. Poyton (1991) The isoforms of yeast cytochrome *c* oxidase subunit V alter the *in vivo* kinetic properties of the holoenzyme. *J. Biol. Chem.* 266:4180-4186.
- (75) Trawick, J. D., N. Kraut, F. R. Simon, and R. O. Poyton (1992) Regulation of yeast *COX6* by the general transcription factor ABF1 and separate HAP2- and heme-responsive elements. *Mol. Cell Biol.* 12:2302-2314.
- (76) Silve, S., P. R. Rhode, J. L. Campbell, and R. O. Poyton (1992) ABF1 is a phosphoprotein and plays a role in carbon source control of *COX6* transcription in *Saccharomyces cerevisiae*. *Mol. Cell Biol.* 12:4197-4208.
- (77) Poyton, R.O. and P.V. Burke (1992) Oxygen regulated transcription of cytochrome *c* and cytochrome *c* oxidase genes in yeast. *Biochimica et Biophysica Acta* 1101:252-256..
- (78) Poyton, R.O., D.M.J. Duhl and G.H.D. Clarkson (1992) Protein export from the mitochondrial matrix. *Trends Cell Biol.* 2:369-375.
- (79) Allen, L.A., X.-J. Zhao, W. Caughey and R.O. Poyton (1995) Isoforms of yeast cytochrome *c* oxidase subunit V affect the binuclear reaction center and alter the kinetics of interaction with the isoforms of yeast cytochrome *c*. *J. Biol. Chem.* 270:110-118.
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- (81) Zhao, X-J., W.S. Caughey and R.O. Poyton (1995) FTIR analysis of carbonyl and nitrosyl complexes of yeast cytochrome *c* oxidase. *Methods Enzymol.* 260:399-406.
- (82) Poyton, R.O., V. Cameron, D. Duhl and K.A. Sevarino (1996) Mitochondrial protein export. *Advances in Molecular and Cell Biology* 17:245-277.
- (83) Poyton, R.O., G. Bellus, E.E. McKee, K.A. Sevarino and B. Goehring (1996) *In organello* mitochondrial protein and RNA synthesis systems from yeast. *Methods Enzymol.* 264:36-42.
- (84) Bunn, H.F. and R.O. Poyton (1996) Oxygen sensing and molecular adaptation to hypoxia. *Physiological Reviews* 76:839-885.
- (85) Poyton, R.O. and J.E. McEwen (1996) Crosstalk between nuclear and mitochondrial genomes. *Annu. Rev. Biochem.* 65:563-607.
- (86) Church, C., C. Chapon and R.O. Poyton (1996) Cloning and characterization of *PET100*, a gene required for the assembly of cytochrome *c* oxidase. *J. Biol. Chem.* 271:18499-18507.
- (87) Zhao, X.-J., D. Raitt, P.V. Burke, A.S. Clewell, K.E. Kwast and R.O. Poyton (1996) Function and expression of flavohemoglobin in *Saccharomyces cerevisiae*: Evidence for a role in the oxidative stress response. *J. Biol. Chem.* 271:25131-25138.
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- (89) Kwast, K.E., P.V. Burke and R.O. Poyton (1997) Oxygen sensing and transcriptional regulation of oxygen-responsive genes in yeast. *J. Exptl. Biol.* 201:1177-1195.
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