BIOGRAPHICAL SKETCH

Give the following information for the key personnel, consultants, and collaborators listed on page 4.
Photocopy this page for each person.

NAME	POSITION TITLE
Dale E. Edmondson	Professor

EDUCATION *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION		DEGREE	YEAR	FIELD OF STUDY
		CONFERRED		
Northern Illinois University	B.S.	1964	Chemistry	
University of Arizona	Ph.D.	1970	Chemistry	
University of Michigan	Postdoc.	1970-72	Enzymology	

RESEARCH AND/OR PROFESSIONAL EXPERIENCE:

Concluding with present position, list in chronological order previous employment, experience, and honors. Key personnel include the principal investigator and any other individuals who participate in the scientific development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the scientific development or execution of the project. Include present membership on any Federal Government Public Advisory Committee. List, in chronological order, the titles and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

PROFESSIONAL POSITIONS:

Assistant Research Biochemist, Univ. Calif., San Francisco	1972-1975
Associate Research Biochemist, Univ. Calif., San Francisco	1975-1980
Associate Professor of Biochemistry, Emory University	1980-1986
Professor of Biochemistry and Adjunct Professor of Chemistry (1995-present), Emory University	1986-present

AWARDS AND OTHER PROFESSIONAL ACTIVITIES:

Editorial Board, J. Biological Chemistry	1996-present
Visiting Professor, University of Milan	1986
Visiting Professor, University of Konstanz	1998
Member NIH Physical Biochemistry Study Section	1980-1984
Member NSF Predoctoral Fellowship Panel	1985,87,88,98,99,00
Oversight Review Panel Molecular Bioscience Div. NSF	1985
Veterans Administration Basic Science Review Panel, Chair. 1989-1990	1987-1990
Ad Hoc Member NIGMS Council	1990
Member (NIH) Cellular and Molecular Basis of Disease Review Committee	1991-1995

RECENT PROJECTS ONGOING OR COMPLETED DURING THE LAST THREE YEARS:

1. Covalent Flavin Coenzymes in Flavoenzyme Catalysis
   Principal Investigator: Dale E. Edmondson, Ph.D.
   Agency: National Institute of General Medical Sciences
   Type R01 (years 15-19) Period: August 1, 1997-July 31, 2001
   The long-term objective of this grant is to elucidate the reaction mechanisms for catalysis by MAO A and MAO B and to determine the roles of the covalent flavin coezymes in the catalytic mechanisms.
2. Mechanism of Ferritin Ferroxidation and Mineralization
   Principal Investigator: Boi H. Huynh, Ph.D., Co-PI: D.E. Edmondson
   Agency: National Institute of General Medical Sciences
   Type R01 (years 1-4) Period September 1, 1998-August 31, 2002
   The long term objective of this grant is to identify and characterize the reaction intermediates in the ferroxidase reaction and mineral core formation in ferritin.

RECENT PUBLICATIONS:

1) J.M. Bollinger, Jr., W.H. Tong, N. Ravi, B.H. Huynh, D.E. Edmondson, J. Stubbe. "Use of Rapid Kinetics Methods to Study the Assembly of the Diferric-Tyrosyl Radical Cofactor of *E. coli* Ribonucleotide Reductase." Methods Enzymology, 258, 278-303, (1995).
2) K.E. Liu, A.M. Valentine, D. Qui, D.E. Edmondson, T.G. Spiro, S.J. Lippard. "Characterization of a Diiron (III) Peroxide Intermediate in the Reaction Cycle of Methane Monooxygenase Hydroxylase from *Methylococcus capsulatis* (Bath). J. Am. Chem. Soc., 117, 4997-4998 (1995).
3) D.E. Edmondson. "The Aminium Cation Radical Mechanism Proposed for Monoamine Oxidase B Catalysis. Are there Alternatives? Xenobiotica, 25, 735-753 (1995).
4) D.E. Edmondson. "Structure Activity Studies of the Substrate Binding Site in Monoamine Oxidase B." Biochimie, 77, 643-650 (1995).
5) T.N. Kekelidze, D.E. Edmondson, D.B. McCormick. "Preparation of Riboflavin Specifically Labeled in the 5' Hydroxymethyl Terminus Using a Vitamin B_2-Aldehyde-Forming Enzyme from *Schizophyllum commune*." J. Labeled Compounds and Radio- pharmaceuticals, 10,953-960 (1995).
6) J.R. Miller, D.E. Edmondson, C.B. Grissom. "Mechanistic Probes of Monoamine Oxidase B Catalysis: Rapid-Scan Stopped-Flow and Magnetic Field Independence of the Reductive Half Reaction" J. Am. Chem. Soc., 117, 7830-7831 (1995).
7) K.E. Liu, A.M. Valentine, D. Wang, B.H. Huynh, D.E. Edmondson, A. Salifoglou, S.J. Lippard. "Kinetics and Spectroscopic Characterization of Intermediates and Component Interactions in Reaction of Methane Monooxygenase from *Methylococcus capsulatus* (Bath)." J. Am. Chem. Soc., 117, 10174-10185 (1995).
8) W.T. Tong, S. Chen, S.G. Lloyd, D.E. Edmondson, B.H. Huynh, J. Stubbe. "Mechanism of Assembly of the Diferric Cluster-Tyrosyl Radical Cofactor of *Escherichia coli* Ribonucleotide Reductase from the Diferrous Form the R_2 Subunit. J. Am. Chem. Soc., 118, 2107-2108 (1996).
9) Q. Xing, D.E. Edmondson. "Purification and Characterization of a Prokaryotic Xanthine Dehydrogenase from *Comamonas acidovorans"* Biochemistry, 35, 5441-5450 (1996).
10) B.E. Sturgeon, D. Burdi, S. Chen, B.H. Huynh, D.E. Edmondson, J. Stubbe, B.H. Hoffman. "Reconsideration of X, the Diiron Intermediate Formed During Cofactor Assembly in *E. coli* Ribonucleotide Reductase. J. Am. Chem. Soc., 118-32, 7551-7557 (1996).
11) A. Willie, D.E. Edmondson, M.S. Jorns. "Sarcosine Oxidase Contains a Novel Covalently Bound FMN" Biochemistry 35, 5292-5299 (1996).
12) D. E. Edmondson, B. H. Huynh`. "Diiron-cluster Intermediates in Biological Oxygen Activation Reactions" Inorg. Chim. Acta 252, 399-404.
13) A.S. Pereira, P. Tavares, S.G. Lloyd, D. Danger, D.E. Edmondson, E. C. Thiel, B.H. Huynh. "Rapid and Parallel Formation of Fe^{+3} Multimers, Including a Trimer, during H-Type Subunit Ferritin Mineralization." Biochemistry, 36-25, 7917-7927.
14) J.M. Bollinger, S. Chen, S.E. Parkin, L.M. Mangravite, B.A. Ley, D.E. Edmondson, B.H. Huynh. "Differential Iron (II) Affinity of the Sites of the Diiron Cluster in Protein R2 of *Escherichia coli* Ribonucleotide Reductase: Tracking the Individual Sites through the O_2 Activation Sequence." J. Am. Chem. Soc., 119, 5976-5977 (1997).
15) D. E. Edmondson. "Structure-Activity Relationships as Probes of the Structure and Mechanism of Monoamine Oxidase B." Flavins and Flavoproteins, 23-34, (1996).
16) J.R. Miller, D.E. Edmondson. "Effect of Flavin Structure on the Enzymatic Activity of Recombinant Human Liver Monoamine Oxidase A." Flavins and Flavoproteins, 71-75, (1996).
17) Q. Xiang, D.E. Edmondson. "Covalent Phosphorus Incorporation into *Comamonas acidovorans* Xanthine Dehydrogenase." Flavins and Flavoproteins, 851-854, (1996).
18) S.E. Parkin, S. Chen, B.A. Ley, L. Mangravite, D.E. Edmondson, B.H. Huynh, J.M. Bollinger, Jr. "Electron Injection through a Specific Pathway Determines the Outcome of Oxygen Activation at the Diiron Cluster in the F208Y Mutant of *Escherichia coli* Robonucleotide Reductase Protein R2." Biochemistry, 37-4, 1124-1130 (1998).
19) J.M. Bollinger, Jr., C. Krebs, A. Vicol, S. Chen, B.A. Ley, D.E. Edmondson, B.H. Huynh. "Engineering the Diiron Site of *Escherichia coli* Ribonucleotide Reductase Protein R2 to Accumulate an Intermediate Simiar to H_{peroxo}, the Putative Peroxodiiron (III) Complex from the Methane Monooxygenase Catalytic Cycle." J. Am. Chem. Soc., 120, 1094-1095 (1998).
20) B.E. Schultz, D.E. Edmondson, S.I. Chan. "Reaction of *Escherichia coli* Cytochrome bo_3 with Substoichiometric Ubiquinol-2: A Freeze-Quench Electron Paramagnetic Resonance Investigation." Biochemistry, 37-12, 4160-4168 (1998).
21) M.A. Vanoni, F. Fischer, S. Ravasio, E. Verzotti, D.E. Edmondson, W.R. Hagen, G. Zanetti, B. Curti. "The Recombinant α Subunit of Glutamate Synthase: Spectroscopic and Catalytic Properties." Biochemistry, 37-7, 1828-1838 (1998).

22) A.S. Pereira, W. Small, C. Krebs, P. Tavares, D.E. Edmondson, E.C. Theil, B.H. Huynh. "Direct Spectroscopic and Kinetic Evidence for the Involvement of a Peroxodifferic Intermediate during the Ferroxidase Reaction in Fast Ferritin Mineralization." Biochemistry, 37-28, 9871-9876 (1998).
23) J.P. Osborne, S.M. Musser, B.E. Schultz, D.E. Edmondson, S.I. Chan, R.B. Gennis. "Rapid Formation of a Semiquinone Species on Oxidation of Quinol by the Cytochrome bo_3 Oxidase from Escherichia coli." Oxygen Homeostasis and Its Dynamics, Y. Ishimura, H. Shimada, M. Suematsu (Eds.) Springer-Verlag, Tokyo, 33-39. (1998).
24) P. Moënne-Loccoz, C. Krebs, K. Herlihy, D.E. Edmondson, E.C. Theil, B.H. Huynh, T.M. Loehr. "The Ferroxidase Reaction of Ferritin Reveals a Diferric μ-1,2 Bridging Peroxide Intermediate in Common with Other 0_2-Activating Non-Heme Diiron Proteins." Biochemistry, 38-17, 5290-5295 (1999).
25) D.E. Edmondson. "Benzylamine Analog Binding Studies as Probes of the Substrate Sites of Monoamine Oxidases A and B." Drug Metabolism Reviews, 31(1), 235-245 (1999).
26) J.R. Miller, D.E. Edmondson. "Influence of Flavin Analogue Structure on the Catalytic Activities and Flavinylation Reactions of Recombinant Human Liver Monoamine Oxidases A and B." J. Biol. Chem. 274, 23515-23535 (1999).
27) J.R. Miller, D.E. Edmondson. "Structure-Activity Relationships in the Oxidation of *para*-Substituted Benzylamine Analogues by Recombinant Human Liver Monoamine Oxidase A." Biochemistry, 38,13670-13683 (1999).
28) J.R. Miller, N. Guan, F. Hubalek, D.E. Edmondson. "The FAD binding sites of human liver monoamine oxidases A and B: Investigation of the role of flavin ribityl side chain hydroxyl groups in the covalent flavinylation reaction and catalytic activities." Biochim. Biophys. Acta, 1476, 27-32 (2000).
29) Hurshman, C. Krebs, D.E. Edmondson, B.H. Huynh, and M.A. Marletta. "Formation of a Pterin Radical in the Reaction of the Heme Domain of Inducible Nitric Oxide Synthase with Oxygen" Biochemistry 38, 15689-15696 (1999).
30) J. Hwang, C. Krebs, B.H. Huynh, D.E. Edmondson, E.C. Theil, and J. E. Penner-Hahn. "A Short Fe-Fe Distance in Peroxodiferric Ferritin: Control of the Fe Substrate Versus Cofactor Decay?" Science 287, 122-125 (2000).
31) D.E. Edmondson and S. Ghisla (1999) Electronic Effects of 7 and 8 ring Substituents as Predictors of Flavin Oxidation-Reduction Potentials. In *Flavins and Flavoproteins* (S. Ghisla, P. Kroneck, P. Macheroux, and H. Sund, eds.) pp.71-76, Agency for Scientific Publications, Berlin .
32) P. Newton-Vinson and D.E. Edmondson (1999) High-Level Expression, Structural, Kinetic and Redox Characterization of Recombinant Human Liver Monoamine Oxidase B . In *Flavins and Flavoproteins* (S. Ghisla, P. Kroneck, P. Macheroux, and H. Sund, eds.) pp.431-434, Agency for Scientific Publications, Berlin.
33) R.K. Nandigama and D.E. Edmondson (1999) Interaction of FAD Analogues with the C406A Mutant Apoenzyme of Human Liver Monoamine Oxidase A. In *Flavins and Flavoproteins* (S. Ghisla, P. Kroneck, P. Macheroux, and H. Sund, eds.) pp.455-458, Agency for Scientific Publications, Berlin .
34) D.E. Edmondson, A.K. Bhattacharrya, and J. Xu (2000) Evidence for alternative binding modes in the interaction of benzylamine analogues with bovine liver monoamine oxidase B. *Biochim. Biophys. Acta*, 1479, 52-58.
35) R.K. Nandigama and D.E. Edmondson (2000) Influence of FAD Structure on its binding and activity with the C406A mutant of recombinant human liver monoamine oxidase A, *J. Biol. Chem.* 275, 20527-20532.
36) P. Newton-Vinson, F. Hubalek, and D.E. Edmondson (2000) High Level Expression of Human Liver Monoamine Oxidase B in *Pichia pastoris* . *Protein Exp. & Purif.* 20, 334-345.
37) R.K. Nandigama and D.E. Edmondson (2000) Structure-Activity Relations in the Oxidation of Phenethylamine Analogues by Recombinant Human Liver Monoamine Oxidase. *Biochemistry* 39, 15258-15265.