

CURRICULUM VITAE

NAME: Linda L. Pearce
BUSINESS ADDRESS: 130 De Soto St.
Parran Hall. Rm 4115
Phone:
Fax:
E-mail: lip10@pitt.edu

EDUCATION AND TRAINING

Undergraduate

4	University of South Florida	BS, 1977	Clinical Chemistry
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Graduate

5	Iowa State University	PhD., 1986	Inorganic Chemistry
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Post-Graduate

1986-1987	University of British Columbia	Post doc	Biochemistry, Mike Smith and Grant Mauk
1987-1989	University of Minnesota	Post doc	Chemistry, Larry Que and E. P. Day
1990-1994	University of Alabama at Birmingham	Post doc	Biophysics, Stephen C. Harvey
1996-2000	University of Pittsburgh	Post doc	Pulmonary Fellow, Bruce Pitt

APPOINTMENTS AND POSITIONS

Academic

1992-1994	Assistant Professor of Research	Department of Biochemistry, University of Alabama at Birmingham, Birmingham, AL
1994-1996	Assistant Professor	Environmental Science Department, Judson College, Marion, AL
2004-2015	Assistant Professor of Research	Environmental and Occupational Health, GSPH, University of Pittsburgh, Pittsburgh, PA
2013-2014	Visiting Assistant Professor of Research	Dept. of Chemistry Carnegie Mellon University Pittsburgh, PA

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

1983 - present	American Chemical Society
1990 -1996	Biophysical Society
1997- present	Society for Free Radical Biology & Medicine
1997- present	Nitric Oxide Society

HONORS

1995	Thompson Award for Excellence in Teaching, Judson College
1996	Holling Award for Excellence in Classroom Teaching, Judson College

PROFESSIONAL ACTIVITIES

1. Teaching

Courses Taught

Years Taught	Course Number: Title	Hours of Lecture, credits Average Enrollment	Primary Instructor?
1992-1996	Physical Chemistry, Biochemistry, Molecular Biology, Immunology, Microbiology, Water Chemistry, Environmental Chemistry, Physiology, Human Genetics, Hazardous Materials, Environmental Law	30 hrs each, 3 credits each, ~10 students per class	Yes
2007	EOH 2313 Bioinorganic Toxicology	15 hrs, 3 credits, 3 students	No
2008	EOH 2309 Bioorganic Toxicology	6 hrs, 3 credits, 6 students	No
2009	EOH 2313 Bioinorganic Toxicology	24 hrs, 3 credits, 2 students	Yes
2009	EOH 2309 Bioorganic Toxicology	24 hrs, 3 credits, 8 students	No
2010	EOH 2313 Bioinorganic Toxicology	24 hrs, 3 credits, 1 student	Yes
2011-14	EOH 2309 Environmental Health Chemistry	30 hrs, 3 credits, 12 students	Yes

d. Service on Masters or Doctoral Committees

Dates Served	Name of Student	Degree Awarded	Title of Dissertation/Essay
12/09-5/11	Elisenda Lopez	Ph.D.	Peroxynitrite and Mitochondrial Cytochromes
12/10-11/13	Oscar S Benz	Ph.D.	Cobalt Macrocycles as Possible Cyanide Antidotes
2014-2015	Leah K Cambal	DrPH	An Appraisal of NO _x Passive Sampling

2. Research and Training

Principal Investigator/Project Leader*

Years Inclusive	Grant and/or Contract Number and Title	Source	Annual Direct Costs	% Effort
1995-1996	Monitoring Water Quality on the Cahaba River	Alabama Power Company	\$5,000	5
2005-2010	U19-AI068021, "Center for Molecular Countermeasures Against Radiation: Project 3*: Development of New Small Molecule Targets for Radiation Protection Through Elaboration of the Mechanism of Irradiation Damage to the Mitochondrial Electron Transport Chain."	NIH/NIAID	\$191,982	50
2010-	U19-AI068021, "Center for Molecular Countermeasures Against Radiation: Project 4*: Development of New Small Molecule Targets for Radiation Protection Through Elaboration of the Mechanism of Irradiation Damage to the Mitochondrial Electron Transport Chain."	NIH/NIAID	\$56,790	20
2013-2015	Nitrites as Antidotes for Hydrogen Sulfide	NIH/NINDS	\$250,000	50
2014-2016	Cyanide Decorporation by Co(III) Schiff Base Macrocycles	NIH/NINDS	\$250,000	50
2016-2018	New Chelating (Decorporating) Agents for Azide	NIH/NINDS	\$125,000	50
2017-2019	An Approach Towards Antidotes for Phosphine	NIH/NINDS	\$125,000	50

Co-Principal Investigator

Years Inclusive	Grant and/or Contract Number and Title	Source	Annual Direct Costs	% Effort
2000-2004	HL61411, "Mitochondria and Pulmonary Endothelial Cell Death."	NIH/NLBI	\$150,000	100
2004-2008	HL61411, "Mitochondria and Pulmonary Endothelial Cell Death."	NIH/NHLB	\$175,000	100
2008-2011	U01- NS063732-01, "Acute Cyanide Toxicity, Complex IV, NO, & Nitrite"	NIH/NINDS	\$322,911	50
2011-2017	SwRI Subcontract No. E9910MEC, "Spectroscopic Studies of Candidate Antidotes for Acute cyanide Intoxication."	BARDA	\$28,739	33

PUBLICATIONS

1. Refereed Articles

"¹H NMR Probes of the Binuclear Iron Cluster in Hemerythrin." Maroney, M. J.; Kurtz, D. M., Jr.; Nocek, J. M.; Pearce, L. L.; Que, L., Jr. *J. Am. Chem. Soc.* **1986**, *108*, 6871.

"Reduction of the Binuclear Iron Site in Octameric Methemerythrins. Characterization of Intermediates and a Unifying Reaction Scheme." Pearce, L. L.; Kurtz, D. M., Jr.; Xia, Y.-M.; Debrunner, P. *J. Am. Chem. Soc.* **1987**, *109*, 7286.

"Comparison of Redox Kinetics of Methemerythrin and μ -Sulfidomethemerythrin. Implications for Interactions with Cytochrome *b*₅." Pearce, L. L.; Utecht, R. E.; Kurtz, D. M., Jr. *Biochem.*, **1987**, *26*, 8709.

"Mutation-Induced Perturbation of the Alkaline Isomerization of Cytochromes *c*." Pearce, L. L.; Gärtner, A. L.; Smith, M.; Mauk, A. G., *Biochem.*, **1989**, *28*, 3152-3156.

"Electrochemical, Kinetic and CD Consequences of Mutations at Phenylalanine-82 of Yeast Iso-1-Cytochrome *c*." Rafferty, S. P.; Pearce, L. L.; Barker, P. D.; Guillemete, Kay, C. M.; Smith, M.; Mauk, A. G. *Biochem.*, **1990**, *29*, 9365-9369.

"A (μ -oxo)(*m*-carboxylate) diiron(III) Complex with Distinct Iron Sites." Yan, S.; Cox, D. D.; Pearce, L. L.; Que, T., Jr.; Zhang, J. H.; O'Connor, C. J. *Inorg. Chem.* **1989**, *28*, 2507-2509.

"EXAFS of Catechol Dioxygenases. Active Site Changes Induced by Substrate Binding." True, A. E.; Pearce, L. L.; Orville, A.; Lipscomb, J.; Que, L., Jr., *Biochem.*, **1990**, *29*, 10847-10854.

"Multifield Saturation Magnetization and Multifrequency EPR of Azide Deoxyhemerythrin. A Unified Picture." Hendrich, M.; Pearce, L. L.; Que, L.; Chasteen, D.; Day, E. P., *J. Am. Chem. Soc.* **1991**, *113*, 3039-3044.

"Dioxygen Binding to Diferrous Centers. Models for Diiron-Oxo Proteins." Dong, Y.; Menage, S.; Brennan, B. A.; Elgren, T. E.; Jang, H. G.; Pearce, L. L.; Que, L. Jr. *J. Am. Chem. Soc.*, **1993**, *115*, 1851-1859.

"Langevin Dynamics of Unsaturated Phospholipids in a Membrane Environment." Pearce, L. L.; Harvey, S. C., *Biophys. J.* **1993**, *65*, 1084-1092.

"Spectroscopic and Electrochemical Properties of (μ -oxo)diiron(III) Complexes Related to Diiron-Oxo Proteins." Holtz, R. C.; Elgren, T. E.; Pearce, L. L.; Zhang, J. H.; O'Connor, C. J.; Que, L. Jr., *Inorg. Chem.* **1993**, *32*, 5844-5850.

"Langevin Dynamics of the Choline Head Group in a Membrane Environment." Konstant, P. H.; Pearce, L. L.; Harvey, S. C., *Biophys. J.* **1994**, *67*, 713-719.

"Measurement of the Spin Concentration of Metalloprotein Samples from Saturation Magnetization Data with Particular Reference to Cytochrome *c* Oxidase" Peterson, J., Day, E. P., Pearce, L. L., Wilson, M. T., *Biochem. J.* **1995**, *305*, 871-878.

"Manganese and 'Pinnaglobin' in *Pinna nobilis*" Mathew, S., Peterson, J., de Gaulejac, B., Vicente, N., Denis, M., Bonaventura, J., Pearce, L. L., *Comp. Biochem. Physiol.*, **1996**, *113B*, 525-532.

"A Carbon Monoxide Irreducible Form of Cytochrome *c* Oxidase and other Unusual Properties of the 'Monomeric' Shark Enzyme" Holm, D. E., Godette, G., Bonaventura, C., Bonaventura, J., Boatright, M. D., Pearce, L. L., Peterson, J., *Comp. Biochem. Physiol.*, **1996**, *114B*, 345-352.

"The Alkaline Transition of Bis(N-acetylated) Heme Undecapeptide." Carraway, A. D.; Miller, G. T.; Pearce, L. L.; Peterson, J. *Inorg. Chem.* **1998**, *37*, 4654-4661.

"Visible Region Magnetic Linear Dichroism Spectra of Ferrocycytochrome *c* and Deoxymyoglobin: Demonstration of a new Tool for the Study of Metalloproteins." J. Peterson, J.; Pearce, L.L.; Bominaar, E. L. *J. Am. Chem. Soc.* **1999**, *121*, 5972-5980.

"Bifunctional Anti/prooxidant Potential of Metallothionein: Redox Signaling of Copper Binding and Release." Fabisiak, J. P.; Pearce, L. L.; Borisenko, G. G.; Tyhurina, Y. Y.; Tyurin, V. A.; Razzack, J.; Lazo, J. S.; Pitt, B. R. Kagan, V. E. *Antioxid. Redox. Signal.*, **1999**, *1(3)*, 349-64.

"The Peroxynitrite Reductase Activity of Cytochrome *c* Oxidase Involves a Two-Electron Redox Reaction at the Heme a_3 -Cu_B site." Pearce, L. L.; Pitt, B. R.; Peterson, J., *J. Biol. Chem.*, **1999**, *274*, 35763-7.

"Role of Metallothionein in Nitric Oxide Signaling as Revealed by a Green Fluorescent Fusion Protein." Pearce, L. L.; Gandley, R. E.; Han, W.; Wasserloos, K.; Stitt, M.; Kanai, A.J.; McLaughlin, M. K.; Pitt, B. R.; Levitan, E.S. *Proc. Natl. Acad. Sci. U. S. A.*, **2000**, *97*, 477-82.

"Metallothionein, Nitric Oxide and Zinc Homeostasis in Vascular Endothelial Cells." Pearce, L. L.; Wasserloos, K.; St. Croix, C. M.; Gandley, R. E.; Levitan, E.S.; Pitt, B. R. *J. Nutr.*, **2000**, *130(5S Suppl)*, 1467S-70S.

- Pearce, L. L.; Epperly, M. W.; Greenberger, J. S.; Pitt, B. R.; Peterson, “Identification of Respiratory Complexes I and III as Mitochondrial Sites of Damage Following Exposure to Ionizing Radiation and Nitric Oxide.” *J. Nitric Oxide*, **2001**, *5*, 128-36.
- J. Kanai, L.L. Pearce, P.R. Clemens, L.A. Birder, M.M. VanBibber, S.-Y. Choi, W.C. deGroat, J. Peterson: “Identification of a Neuronal Nitric Oxide Synthase in Isolated Cardiac Mitochondria Using Electrochemical Detection”; *Proc. Natl. Acad. Sci. USA*, **2001**, *98*, 14126-14131.
- L.L. Pearce, A.J. Kanai, L.A. Birder, B.R. Pitt, J. Peterson: “The Catabolic Fate of Nitric Oxide: The Nitric Oxide Oxidase and Peroxynitrite Reductase Activities of Cytochrome Oxidase”; *J. Biol. Chem.*, **2002**, *277*, 13556-13562.
- L.L. Pearce*, E.L. Bominaar, J. Peterson*: “Visible Region MCD and MLD Spectra of Nitrosylferrohemoglobin and Oxyhemoglobin”; *Biochem. Biophys. Res. Comm.*, **2002**, *297*, 220-223.
- A. Fago, A.L. Crumbliss, J. Peterson, L.L. Pearce, C. Bonaventura*: “The Case of the Missing NO-hemoglobin: Spectral Changes Suggestive of Heme Redox Reactions Reflect Changes in NO-heme Geometry”; *Proc. Natl. Acad. Sci. USA* **2003**, *100*, 12087-12092.
- L.L. Pearce*, E.L. Bominaar, B.C. Hill, J. Peterson*: “Reversal of Cyanide Inhibition of Cytochrome *c* Oxidase by the Auxiliary Substrate Nitric Oxide: An Endogenous Antidote to Cyanide Poisoning?”; *J. Biol. Chem.* **2003**, *278*, 52139-52145.
- A. Kanai*, M. Epperly, L. Pearce, L. Birder, M. Zeidel, S. Meyers, J. Greenberger, W. de Groat, G. Apodaca, J. Peterson: “Differing Roles of Mitochondrial Nitric Oxide Synthase in Cardiomyocytes and Urothelial Cells”; *Am. J. Physiol. Heart Circ. Physiol.* **2004**, *286*, H13-H21.
- J. Peterson*, A.J. Kanai, L.L. Pearce: “A Mitochondrial Role for Catabolism of Nitric Oxide in Cardiomyocytes not Involving Oxymyoglobin”; *Am. J. Physiol. Heart Circ. Physiol.* **2004**, *286*, H55-H58.
- T. Chen, L.L. Pearce, J. Peterson, D. Stoyanovsky, T.R. Billiar*: “Glutathione Depletion Renders Rat Hepatocytes Sensitive to Nitric Oxide-donor Mediated Toxicity”; *Hepatology* **2005**, *42*, 598-607.
- Pearce, L.L.; Kanai, A.J.; Epperly, M.W.; Peterson, J., “Nitrosative Stress Results in Irreversible Inhibition of Purified Mitochondrial Complexes I and II without Modification of Cofactors,” *Nitric Oxide* **2005** *13*, 254-263.
- L. L. Pearce, E. L. Manzano, S. Martinez-Bosch and J. Peterson: “Antagonism of Nitric Oxide Toward the Inhibition of Cytochrome *c* oxidase by Carbon Monoxide and Cyanide”; *Chem. Res. Toxicol.* **21(11)**, 23073-2081, **2008**.
- L. L. Pearce, S. Martinez-Bosch, E. L. Manzano, D. E. Winnica, M. W. Epperly and J. Peterson: “The Resistance of Electron Transport Chain Fe-S Clusters to Oxidative Damage during the Reaction of Peroxynitrite with Mitochondrial Complex II and Rat Heart Pericardium”; *Nitric Oxide* **20 (2009)**135-142, doi: 10.1016/j.niox.2008.12.001.
- M. W. Epperly, J. A. Melendez, X. Zhang, S. Nie, L. L. Pearce, J. Peterson, D. Franicola, T. Dixon, B. A. Greenberger, P. Komanduri, H. Wong and J. S. Greenberger: “Mitochondrial Targeting of a Catalase Transgene Product by Plasmid Liposomes Increases Radioresistance In Vitro and In Vivo”; *Radiation Research* **(2009)** 171, 588-595.

Molly Stitt-Fischer, Rachel K. Ungerman, Daniel S. Wilen, Lara M. Huyler, Shannon E. Raub, Jim Peterson and Linda L. Pearce. “Manganese Superoxide Dismutase is not Radioprotective in Bovine Pulmonary Artery Endothelial Cells at Systemic Oxygen Levels”: *Radiation Research*, (2010) 174, 679–690.

Mai Otsuka, Sarah A. Marks, Daniel E. Winnica, Andrew A. Amoscato, Linda L. Pearce and Jim Peterson “Covalent Modifications of Hemoglobin by Nitrite Anion: Formation Kinetics and Properties of Nitrihemoglobin”; *Chemical Research in Toxicology*. (2010), 23, 1786–1795.

Leah K. Cambal, Megan R. Swanson, Quan Yuan, Andrew C. Weitz, Hui-Hua Li, Bruce R. Pitt, Linda L. Pearce and Jim Peterson “Acute, Sub-lethal Cyanide Poisoning in Mice is Ameliorated by Nitrite Alone: Complications Arising from Concomitant Administration of Nitrite and Thiosulfate as an Antidotal Combination”; *Chemical Research in Toxicology*, (2011) 24, 1104–1112 published in the July issue as a featured article (cover).

Oscar S. Benz, Quan Yuan, Andrew A. Amoscato, Linda L. Pearce, Jim Peterson “Co(III)TMPyP is an Antidote for Acute Cyanide Toxicity” *Chemical Research in Toxicology*. (2012) 25, 2687–2703.

Sang-Min Lee^{1, 2}, Joseph N. McLaughlin¹, Daniel R. Frederick¹, Lin Zhu¹, Karla Wasserloos², Iris Kaminski², Octavia Peck-Palmer, Linda Pearce², Jim Peterson², CBI Person, Jin; Joseph D. Latoche, Tim D. Oury, Cheryl L. Fattman², Donna Beer-Stolz³, John F. Alcorn⁴, Derek C. Angus¹, Bruce R. Pitt², A. Murat Kaynar¹ “Metallothionein-induced zinc partitioning exacerbates hyperoxic induced lung injury”, *Am J Physiol Lung Cell Mol Physiol* March 1, (2013) 304:L350-L360

Leah K. Cambal Andrew C. Weitz, Hui-Hua Li, Xi Zheng, Linda L. Pearce and Jim Peterson “Alternative Nitrite Therapies for Acute Cyanide Poisoning in Mice: Complications Arising from Anesthetics” *Chemical Research in Toxicology*. (2013) May 20;26(5):828-36. PMID:23536974.

Angela Fago^{‡§}, Alvin L. Crumbliss[¶], Michael P. Hendrich^{||}, Linda L. Pearce^{**}, Jim Peterson^{**}, Robert Hensens[§], and Celia Bonaventura[§] “Oxygen Binding to Partially Nitrosylated Hemoglobin” *Biochimica Biophysica Acta - Proteins and Proteomics Biochimica et Biophysica Acta*. (2013) April 25. PMID:23624264.

Andrea A. Cronican, Kristin L. Frawley, Humza Ahmed, Linda L. Pearce* and Jim Peterson* “Antagonism of Acute Sulfide Poisoning in Mice by Nitrite Anion without Methemoglobinemia” *Chemical Research in Toxicology* (2015) 28(7) 1398-1408.

Oscar S. Benz, Quan Yuan, Andrea A. Cronican, Jim Peterson* and Linda L. Pearce* "Effect of Ascorbate on the Cyanide-Scavenging Capability of Cobalt(III) meso-Tetra(4-N-methylpyridyl)porphine Pentaoidide: Deactivation by Reduction?" *Chemical Research in Toxicology* (2016) 29(3) 270-278.

Elisenda Lopez-Monzano, Andrea A. Cronican, Kristin L. Frawley, Jim Peterson* and Linda L. Pearce* “Cyanide Scavenging by a Cobalt Schiff-base Macrocyclic: A Cost-effective Alternative to Corrinoids” *Chemical Research in Toxicology* (2016) April 22, DOI: 10.1021/acs.chemrestox.6b00070

Samantha L. Malone Rubright, Linda L. Pearce* and Jim Peterson** “Environmental Toxicology of Hydrogen Sulfide” (invited review) *Nitric Oxide* (2017) 71 (1) 1-13. DOI: 10.1016/j.niox.2017.09.011

Quan Yuan, Linda L. Pearce,* and Jim Peterson* “Relative Propensities of Cytochrome c Oxidase and Cobalt Corrins for Reaction with Cyanide and Oxygen: Implications for Amelioration of Cyanide Toxicity” *Chemical Research in Toxicology* (2017) 30(12) 2197-2308. DOI: 10.1021/acs.chemrestox.7b00275

Kristin L. Frawley, Andrea A. Cronican, Linda L. Pearce,* and Jim Peterson* “Sulfide Toxicity and Its Modulation by Nitric Oxide in Bovine Pulmonary Artery Endothelial Cells” *Chemical Research in Toxicology* (2017) 30(12) 2100-2009. DOI: 10.1021/acs.chemrestox.7b00147

Andrea A. Cronican, Kristin L. Frawley, Erin P. Straw, Elisenda Lopez-Manzano, Hirunwut Praekunatham, Jim Peterson,* and Linda L. Pearce* “A Comparison of the Cyanide-Scavenging Capabilities of Some Cobalt-Containing Complexes in Mice” *Chemical Research in Toxicology* (2018) 31(4) 259-268. DOI: 10.1021/acs.chemrestox.7b00314

2. Books and Book Chapters

1. Samantha L Malone, Linda L Pearce & Jim Peterson. Environmental Toxicology of Cyanide. *Clinical and Experimental Toxicology of Cyanide*. Chichester, UK: John Wiley & Sons. 2015.

3. Service (Professionally Related)

Periodic reviewer
(since 2000):

Free Radical Biology & Medicine
Nitric Oxide: Biology & Chemistry
Journal of the American Physiological Society
International Journal of Radiation Biology
Journal of Chemical Toxicology

2007-2018: Abstract reviewer for student awards, Society for Free Radicals & Biology in Medicine.

2012-2017: Community College of Allegheny County (CCAC): teaching general and organic chemistry, career advice/guidance to students enrolled in chemistry classes