

Curriculum Vitae

Sandra Graham., Ph.D.
972-860-7140
SandraGraham@dcccd.edu

Eastfield College
3737 Motley Road
Mesquite, TX 75150

Education

Biology:

School Of Natural Sciences and Mathematics
University of Texas at Dallas, Richardson, TX
Ph.D. in Molecular Biology, 1987

School Of Natural Sciences and Mathematics
University of Texas at Dallas, Richardson, TX
M.S. in Biology, 1983

School Of Natural Sciences and Mathematics
University of Texas at Dallas, Richardson, TX
B.S. in Biology, 1978

Geospatial Information Sciences:

School Of Economic, Political And Policy Sciences
University of Texas at Dallas, Richardson, TX
Graduate Certificate in Geographic Information Systems, 2006

Teaching Experience

Richland College, Richardson, TX, January 2011 - present
Eastfield College, Mesquite, TX, January 2008 – present
Adjunct Instructor – Biology 1406 (Intro for Science Majors)
Biology 1408 (Intro for Non-Science Majors)

University of Texas at Dallas, Richardson, TX, September 1977 – May 1979
Laboratory Instructor – Molecular Biology Lab and Cell Biology Cell

Relevant Work Experience

Medical Technologist, Chester Hospital, Lancaster and Kiest Roads, Dallas, TX. 1976 thru 1983.
Hematology, microbiology, chemistry

NIH Postdoctoral Fellow, Cecil and Ida Green Center for Reproductive Biology Sciences, Department of Obstetrics-Gynecology, Univ. Texas Southwestern Medical Center at Dallas, Dr. Evan Simpson, supervisor. Nov. 1987 - Dec. 1990. Cloning and sequencing of human aromatase and computer modeling of the protein and its active site.

Visiting Postdoctoral Fellow, Department of Pharmaceutical Chemistry, School of Pharmacy, University of California, San Francisco, San Francisco, CA. Dr. Paul Ortiz de Montellano supervisor. Jan. 1991 - Sept. 1992.

Cloning and identification of critical residues in substrate binding (specifically camphor) in cytochromes P450.

I certify that statements made by me in this vitae are true, complete and correct.

Research Assoc. in the laboratories of Drs. J.A. Peterson and E.R. Simpson, Department of Biochemistry, Univ. Texas Southwestern Medical Center at Dallas Oct. 1992 - Aug. 1993. Identification of estrogen binding residues in aromatase, the enzyme that converts testosterone to estrogen.

Research Assistant Instructor, Department of Biochemistry, Univ. of Texas Southwestern Medical Center at Dallas Aug. 1993 - Aug. 1995. Identification and mutagenesis of residues critical in fatty acid binding and metabolism in proteins.

Research Instructor, Department of Biochemistry, Univ. of Texas Southwestern Medical Center at Dallas Sep. 1995 - 2006

Water Utilities Project Coordinator, City of Carrollton, February 2007 to present. Water conservation, water distribution, GIS mapping of water distribution system and wastewater collections systems.

Certificates, Certifications & Other Qualifications

Medical Technologist, American Medical Technologists certification (1981-1983).

Geographic Information Systems Certification, U T Dallas, 2006

Water Distribution License, State of Texas. 2008 – present

Wastewater Collection License, State of Texas, 2008 - present

Publications and Papers

1. "3-beta-hydroxysteroid dehydrogenase/delta 5->4 isomerase expression in rat and characterization of the testis isoform." Lorence, M. C., Naville, D., Graham-Lorence, S., Mack, S. O., Murry, B. A., Trant, J. M., and Mason, J. I. (1991) *Mol. Cell Endocrinol.* **80**, 21-31.
2. "Structure-function relationships of human aromatase cytochrome P-450 using molecular modeling and site-directed mutagenesis." Graham-Lorence, S., Khalil, W., Lorence, M. C., Mendelson, C. R., and Simpson, E. R. (1991) *J. Biol. Chem.* **266**, 11939-11946.
3. "Nucleotide sequence of a cDNA encoding porcine testis 17-alpha-hydroxylase cytochrome P-450." Conley, A.J., Graham-Lorence, S., Kagimoto, M., Lorence, M. C., Murry, B. A., Oka, K., Sanders, D., and Mason, J.I., (1992) *Biochim. Biophys. Acta* **1130**, 75-77.
4. "Cytochrome P-450terp. Isolation and purification of the protein and cloning and sequencing of its operon." Peterson, J. A., Lu, J. Y., Geisselsoder, J., Graham-Lorence, S., Carmona, C., Witney, F., and Lorence, M. C. (1992) *J. Biol. Chem.* **267**, 14193-14203.
5. "Heme Binding Site and Reactivity." Ortiz de Montellano, P. and Graham-Lorence, S. (1992) *in Handbook of Experimental Pharmacology* vol. 105, Springer - Verlag, Heidelberg, Germany.
6. "Active Sites of the Cytochrome P450cam (CYP101) F87W and F87A Mutants. Evidence for significant structural reorganization without alteration of catalytic regioselectivity." Tuck, S. F., Graham-Lorence, S., Peterson, J. A., and Ortiz de Montellano, P. (1993) *J. Biol. Chem.* **268**, 269-275.
7. "Functional Domains of Human Aromatase Cytochrome P450 Characterized by Molecular Modelling and Site-Directed Mutagenesis." Amarneh, B., Corbin, C. J., Peterson, J. A., Simpson, E. R., and Graham-Lorence, S. (1993) *Mol. Endocrin.* **44** 7, 1617-1624.
8. "Structure and Function in P450s: Are Bacterial P450s Good Models for Eukaryotic P450s?" Peterson, J. A., Deisenhofer, J., Hasemann, C., Ravichandran, K. G., Boddupalli, S. S., and Graham-Lorence, S. (1994) *in Proceedings of the 8th International Conference on Cytochrome P450* (M. Lechner, ed.) pp. 271-277, John Libbey Eurotext Limited.
9. "Mutants Affecting Substrate Recognition and Substrate Binding in P450BM-P." Graham-Lorence, S., Sanders, D., and Peterson, J. A. (1994) *in Proceedings of the 8th International Conference on Cytochrome P450* (M. Lechner, ed.) pp. 471-473, John Libbey Eurotext Limited.
10. "Structure and Function in P450s: Are Bacterial P450s Good Models for Eukaryotic P450s?" Peterson, J. A., Deisenhofer, J., Hasemann, C., Ravichandran, K. G., Boddupalli, S. S., and Graham-Lorence, S. (1994) *in Proceedings of the 8th International Conference on Cytochrome P450* (M. Lechner, ed.) pp. 271-277, John Libbey Eurotext Limited.

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11. "Aromatase Cytochrome P450, the Enzyme Responsible for Estrogen Biosynthesis." Simpson, E. R., Mahendroo, M. S., Means, G. D., Kilgore, M. W., Hinshelwood, M. M., Graham-Lorence, S., Amarneh, B., Ito, Y., Fisher, C. R., Michael, M. D., Mendelson, C. R., and Bulun, S. E. (1994) *Endocr. Rev.* **15**, 342-355.
12. "A Three-Dimensional Model of P450arom Using P450BM-P as a Template." Graham-Lorence, S., Peterson, J. A., and Simpson, E. R. (1994) in Proceedings of the 8th International Conference on Cytochrome P450 (M. Lechner, ed.) pp. 817-820, John Libbey Eurotext Limited.
13. "Bacterial P450s: Structural Similarities and Functional Differences." Peterson, J. A. and Graham-Lorence, S. E. (1995) in *Cytochrome P-450: Structure, Mechanism, and Biochemistry*, Second Edition (Ortiz de Montellano, P. R., ed.) pp. 151-180, Plenum Press, New York.
14. "A Three-Dimensional Model of Aromatase Cytochrome P450" Graham-Lorence, S., Amarneh, B., White, R. E., Peterson, J. A., and Simpson, E. R. (1995) *Protein Science* **4**, 1065-1080.
15. "P450s: Structural Similarities and Functional Differences." Graham-Lorence, S. E., and Peterson, J. A. (1996) *FASEB J.* **10**, 206-214.
16. "The Highly Stereoselective Oxidation of Polyunsaturated Fatty Acids by P450BM-3." Capdevila, J. H., Wei, S., Helvig, C., Falck, J. R., Belosludtsev, Y., Truan, G., Graham-Lorence, S. E., and Peterson, J. A. (1996) *J. Biol. Chem.* **271**, 22663-22671.
17. "The Molecular Structure of P450s: The Conserved and the Variable Elements" Graham-Lorence, S. E., and Peterson, J. A. (1996) in *Advances in Molecular and Cell Biology*, Vol. 14 Physiological Functions of Cytochrome P450 in Relation to Structure and Regulation (C. Jefcoate, ed.) pp.57-79, JAI Press Inc., Greenwich, CT.
18. "Structural Alignments of P450s and Extrapolations to the Unknown." Graham-Lorence, S. E., and Peterson, J. A. (1996) *Meth. Enzymol.* **272**, 315-326.
19. "The P450 Gene Superfamily: Structural Similarities and Functional Differences." Peterson, J. A., and Graham-Lorence, S. E. (1996) Proceedings of the Thirty-Fourth Hanford Symposium on Health and the Environment - Biomacromolecules: From 3-D Structure to Applications (Ornstein, R. L., ed.) pp. 155-165.
20. "An Active Site Mutation, F87V, Converts P450BM-3 into a Highly Stereoselective Arachidonic Acid Epoxygenase." Graham-Lorence, S. E., Falck, J. R., Wei, S., Belosludtsev, Y., Peterson, J. A., and Capdevila, J. H. (1997) *J. Biol. Chem.* **272**, 1127-1135.
21. "P450BM-3: A Tale of Two Domains ... or Is It Three?" Peterson, J. A., Sevrioukova, I., Truan, G., and Graham-Lorence, S. E. (1997) *Steroids* **62**, 117-123.
22. "Aromatase expression in health and disease." Simpson, E. R., Zhao, Y., Agarwal, V. R., Michael, M. D., Bulun, S. E., Hinshelwood, M. M., Graham-Lorence, S. E., Sun, T., Fisher, C. R., Qin, K., Mendelson, C. R. (1997) *Recent. Prog. Horm. Res.* **52**, 185-213.
23. "A close family resemblance - The importance of structure in understanding cytochromes P450." Peterson, J. A. & Graham, S. E. (1998). *Structure* **6**, 1079-1085.
24. "How similar are P450s and what can their differences teach us?" Graham, S.E. and Peterson, J.A. (1999) *Arch. Biochem. Biophys.* **369**, 24-29.
25. "Practical, enantiospecific syntheses of 14,15-EET and leukotoxin B (vernolic acid)." Falck, J.R., Reddy, Y.K., Haines, D.C., Reddy, K.M., Krishna, U.M., Graham, S.E., Murry, B., and PETERSON, J.A. (2001) *Tetrahedron Lett.* **42**, 4131-4133
26. "Molecular modeling of mammalian cytochromes P450: Application to study enzyme function." Szklarz, G.D., Graham, S.E., and Paulsen, M.D. (2000) in *Vitamins and Hormones – Advances in Research and Applications*, Vol. 58, pp. 53-87 (Litwack, G., ed.)
27. "Sequence alignments, variabilities, and vagaries." Graham SE, Peterson JA. (2002) *Methods Enzymol.* **357**:15-28.
28. "Probing the interaction of bovine Cytochrome P450_{sc} (CYP11A1) with adrenodoxin: Evaluating site-directed mutations by molecular modeling." Usanov, S.A., Graham, S.E., Lepesheva, G.I., Azeva, T.N., Strushkevich, N.V., Gilep, A.A., Estabrook, R.W. and Peterson, J.A. (2002) *Biochemistry* **41**, 8310-8320.
29. "Assessment of arginine 97 and lysine 72 as determinants of substrate specificity in cytochrome P450 2C9 (CYP2C9)." Davies, C., Witham, K., Scott, J. R., Pearson, A., DeVoss, J. J., Graham, S. E., & Gillam, E. M. (2004) *Drug Metab Dispos.* **32**, 431-436.
30. "Cholesterol binding to cytochrome P450 7A1, a key enzyme in bile acid biosynthesis." Mast, N., Graham, S. E., Andersson, U., Bjorkhem, I., Hill, C., Peterson, J., & Pikuleva, I. A. (2005) *Biochemistry* **44**, 3259-3271.

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31. "Distinct binding of cholesterol and 5beta-cholestane-3alpha,7alpha,12alpha-triol to cytochrome P450 27A1: evidence from modeling and site-directed mutagenesis studies". Mast N, Murtazina D, Liu H, Graham SE, Bjorkhem I, Halpert JR, Peterson J, Pikuleva IA. (2006) *Biochemistry*. Apr 11;45(14):4396-404
32. "Hybrid homology modeling and mutational analysis of cytochrome P450C24A1 (CYP24A1) of the Vitamin D pathway: insights into substrate specificity and membrane bound structure-function." Annalora AJ, Bobrovnikov-Marjon E, Serda R, Pastuszyn A, Graham SE, Marcus CB, Omdahl JL. (2007) *Arch Biochem Biophys*. Apr 15;460(2):262-73

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