Donovan C. Haines
Assistant Professor of Chemistry
Department of Chemistry
College of Arts and Sciences

Degrees Earned

Ph.D., in Chemistry (Biological Track), Wichita State University, 1998
B.S.in Biochemistry, Wichita State University, 1993

Peer-Review Publications and Artistic Performances/Exhibitions

Articles

Nucleophilic Substitution Reactions of Phenacyl Bromide Oxime: Effect of the Solvent and the Basicity of the Nucleophile, Wimalasena, K. and Haines, D.C., *Journal of Organic Chemistry*, 59, 6472-6474 (1994)

A General Progress Curve Method for the Kinetic Analysis of Suicide Enzyme Inhibitors, Wimalasena, K. and Haines, D.C., *Analytical Biochemistry*, 234, 175-182 (1996)

Chiral Multisubstrate Inhibitors of Dopamine β-Monooxygenase: Evidence for Dual Modes of Interaction, Wimalasena, K., Wimalasena, D.S., Dharmasena, S., Haines, D.C., and Alliston, K.R., *Biochemistry*, 36, 7144 – 7153 (1997)

The FMN-binding Domain of P450BM-3: Resolution, Reconstitution, and Flavin Analog Substitution, Haines, D.C., Sevrioukova, I.F., and Peterson, J.A., *Biochemistry*, 39, 9419 - 9429 (2000)

The Pivotal Role of Water in the Mechanism of $P450_{BM-3,}$ Haines, D.C., Tomchick, D.R., Machius, M., and Peterson, J.A., *Biochemistry*, 40, 13456 - 13465 (2001)

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., Murry, B., and Peterson, J.A., *Tetrahedron Letters*, 42, 4131 - 4133 (2001)

Plausible Molecular Mechanism for Fumarate Activation and Electron Transfer of the Dopamine β-Monooxygenase Reaction, Wimalasena, D.S., Jayatillake, S.P., Haines, D.C., and Wimalasena, K., *Biochemical Journal*, 367, 77-85 (2002)

pH-Induced Alteration and Oxidative Destruction of Heme in Purified Chromaffin Granule Cytochrome b_{561}: Implications for the Oxidative Stress in Catecholaminergic Neurons, Wanduragala, S., Wimalasena, D.S., Haines, D.C., Kahol, P.K., and Wimalasena, K., *Biochemistry*, 42, 3617- 3626 (2003)

L-Canavanine Made by Alfalfa Interferes with Quorum Sensing in *Sinorhizobium meliloti,* Keshavan, N.D., Chowdhary, P.K., Haines, D.C., and Gonzalez, J.E., *Journal of Bacteriology*, 187, 8427 - 8436 (2005)

Modulation of Zinc- and Cobalt-Binding Affinities Through Changes in the Stability of the Zinc Ribbon Protein L36, Kou, W., Kolla, H.S., Ortiz-Acevedo, A., Haines, D.C., Junker, M., and Dieckmann, G.R., *Journal of Biological Inorganic Chemistry*, 10, 167 - 180 (2005)

A Role for the Strained Phenylalanine Ring Rotation Induced by Substrate Binding to Cytochrome CYP102A1, Haines, D.C., *Protein and Peptide Letters*, 10, 977-80 (2006)

Obligatory Intermolecular Electron-Transfer from FAD to FMN in Dimeric P450BM-3, Kitazume, T., Haines, D.C., Estabrook, R.W., Chen, B., and Peterson, J.A., *Biochemistry*, 46, 11892-901 (2007)

Cloning, Expression And Characterization Of A New Self-Sufficient P450: CYP102A5 From *Bacillus cereus,* Chowdhary, P.K, Alemseghed, M., and Haines, D.C., *Archives of Biochemistry and Biophysics*, 468, 1, 32-43 (2007)

Interactions of Substrates at the Surface of P450s Can Greatly Enhance Substrate Potency, Hegde, A., Haines, D.C., Bondlela, M., Chen, B., Schaffer, N., Tomchick, D.R., Machius, M., Nguyen, H., Chowdhary, P.K., Stewart, L., Lopez, C., and Peterson, J.A., *Biochemistry*, 46, 14010-7 (2007)

Bacillus megaterium CYP102A1 Oxidation of Acyl Homoserine Lactones and Acyl Homoserines, Chowdhary, P.K., Keshavan, N., Nguyen, H., Peterson, J.A., González, J.E., and Haines, D.C., *Biochemistry*, 46, 14429-37 (2007)

Crystal Structure of Inhibitor Bound P450BM-3 Reveals Open Conformation of Substrate Access Channel, Haines, D.C., Chen, B., Tomchick, D.R., Bondlela, M., Hegde, A., Machius, M., and Peterson, J.A., *Biochemistry* 47, 3662-3670 (2008)

Dominant Role of Paraoxonases in the Inactivation of the Pseudomonas aeruginosa Quorum Sensing Signal N-(3-Oxododecanoyl)-L-Homoserine Lactone, Teiber J.F., Horke S., Haines D.C., Chowdhary P.K.[PhD], Xiao J., Kramer G.L., Haley R.W., Draganov D.I., *Infection and Immunity*, 76, 2512-9 (2008)

A Single Mutation in P450BM-3 Enhances Acyl Homoserine Lactone : Acyl Homoserine Substrate Binding Selectivity Nearly 250-Fold, Chowdhary, P.K, Stewart, L., Lopez, C., and Haines, D.C., *Journal of Biotechnology*, accepted May 2008 (avail. online May 2008).

Funded External Grants

Engineering an Efficient Cholesterol Hydroxylase from a Highly Active Fatty Acid Hydroxylase, CYP102A1, Haines, D.C. (PI), Welch Foundation, Houston, TX, 2005-8, $150,000 (University of Texas at Dallas)

Potential Regulation of Production of Metastasis-Inducing Oxysterol by Interaction of CYP46 with Profilin and GAS7, Haines, D.C (PI)., American Cancer Society Institutional Research Grant to University of North Texas Health Sciences Center, 2004, $15,000 (University of Texas at Dallas)

Peer-Review Presentations/Posters

Acyl Homoserine Lactone Inactivation by Mammalian P450 Enzymes, Southwest P450 Meeting, Houston, TX, May 2008.

Cytochrome P450: Drugs, Bugs, and Brains, Sam Houston State University, Huntsville, TX, November 2007.

Faster Than a Speeding Bullet: New Insights into CYP102s, American Chemical Society Midwest Regional Meeting, Kansas City, KS, November 2007.

Faster Than a Speeding Bullet: New Insights into CYP102s, Southwest P450 Meeting, Houston, TX, May 2007.

Cytochrome P450 Oxidation of Acyl Homoserine Lactones in Bacterial Quorum Sensing: Torching Enemy Communication?, Southern Methodist University, Department of Chemistry, Dallas, TX, March 2006.

Cytochrome P450: The Master Chemist, Wichita State University, Department of Chemistry, Wichita, KS, March 2005.

P450BM-3 (CYP102A1): A Probable Quorum Quencher, (This award winning invited talk was presented by graduate student Puneet Chowdhary), Southwest P450 Meeting, Houston, TX, May 2004.

Cytochrome P450: The Master Chemist, University of Texas at Commerce, Department of Chemistry, Commerce, TX, February 2004.

From Thin Air: Biomachinery That Uses Oxygen For Defense, Emotion, And Thought
University of Texas at Dallas, Institute for Biomedical Sciences and Technology, Richardson, TX, January 2004.

Computational AnalysisOf Substrate-Induced Alteration Of Heme-Phenylalanine Interactions In Class III P450s, Southwest Macromolecular Symposium, Houston, TX, October 2003.

Computational Analysis of Substrate-Induced Alteration of Heme-Phenylalanine Interactions in Class III P450s, Southwest P450 Meeting, Houston, TX, May 2003.

Enzymatic Monooxygenation: From Chemistry To Structural Biology, Texas Christian University, Department of Chemistry, Fort Worth, TX, October 2001.

Work or Professional Experiences

Assistant Professor of Chemistry: 2008 - current
Department of Chemistry, Sam Houston State University, Hunstville, TX
Manage/Direct Research Laboratory: Enzyme cloning, expression, and engineering
Undergraduate Courses: Biochemistry, Organic Chemistry (incl. labs)
Graduate Courses: Advanced Biochemistry I

Assistant Professor of Chemistry: 2001 - 2008
Department of Chemistry, The University of Texas at Dallas, Richardson, TX
Managed/Directed Research Laboratory: Enzyme cloning, expression, engineering, and spectroscopic and kinetic characterization, organic synthesis, natural product extraction and characterization, quorum sensing bioassay
Undergraduate Courses: Biochemistry, Organic Chemistry (incl. labs), Analytical Chemistry (incl. labs)
Graduate Courses: Physical Biochemistry, Chemistry Literature and Communications
Guest Lectures in: Physical Chemistry, Bionanotechnology

Postdoctoral Researcher: 1999 - 2001
Julian A. Peterson Laboratory, Department of Biochemistry, University of Texas Southwestern Medical Center at Dallas, Dallas, TX
Techniques: Site directed mutagenesis, stopped-flow kinetics, fluorescence spectroscopy, protein crystallography, enzyme cloning and expression, GC/MS, organic synthesis of acyl amino acid substrates, enzymatic eicosanoid synthesis on the 100 mg scale

Graduate Teaching Assistant: 1994 - 1998
Department of Chemistry, Wichita State University, Wichita, KS
Courses: General Chemistry, Biochemistry, Instrumental Methods, Computer Lab

Graduate Research Assistant: 1994 - 1998
Kandatege Wimalasena Laboratory, Department of Chemistry, Wichita State University, Wichita, KS
Tasks: Organic synthesis of thione containing enzyme inhibitors, enzyme kinetics, enzyme purification, spectroscopy of enzymes (UV-vis, EPR), mass spec, FPLC (size-exclusion, ion exchange, chromatofocusing) HPLC

Honors and Awards

B.L. Parker Endowed Fellowship, 1995 – 1998
Wichita State Univ. Outstanding Senior Chemist (ACS), 1994
National Merit Semifinalist, 1989
State of Kansas Scholar, 1989

Other Competencies

2007 – 2008	Reviewer (Manuscript), Biochemistry
2006 – 2008	Reviewer (Grant Proposal), National Science Foundation
2005 – 2008	Coordinator, Univ. of Texas at Dallas Department of Chemistry Doctoral Qualifying Examination
2005 – 2008	Assistant Recruiter, Univ. of Texas at Dallas Department of Chemistry Graduate Program
2005 – 2008	Member, Univ. of Texas at Dallas Biosafety Committee
2005 – 2008	Reviewer (Manuscript), Journal of the American Chemical Society
2002 – 2008	Interviewer, Univ. of Texas at Dallas Health Professions Advisory Committee
2002 – 2008	Reviewer (Grant Proposal), Alzheimer Association
2006 – 2007	Organizer, Affiliation Between Dept. of Chemistry and Eurasian National University, Astana, Kazakhstan
2006 – 2007	Reviewer (Grant Proposal), U.S. Civilian Research and Development Foundation (CRDF)
2002 – 2007	Member, Univ. of Texas at Dallas Chemistry Department Web Page Committee
2005	Assistant Organizer, 14th International Conference on Cytochromes P450 (Dallas, TX)
2001 – 2005	Chair, Univ. of Texas at Dallas Chemistry Departmental Seminar
2002 – 2003	Demonstrator, Alpha Phi Omega Boy Scout Camp
2001 – 2002	Demonstrator, Alpha Phi Omega Science Fair