

MELISSA D. KELLEY

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EDUCATION

Ph.D. Biochemistry and Molecular Biology, Department of Biochemistry and Molecular Biology, Oklahoma State University, May 2000

Dissertation Title: Growth Promoting Activity and Metabolism of Select Heteroarotinoids in Vitamin A-Deficient Rats.
Advisor: Dr. E.C. Nelson

B.S. Biochemistry, Department of Biochemistry, Kansas State University, May 1994

TEACHING EXPERIENCE

ASSISTANT PROFESSOR

Dept. of Chemistry, UCA (August 2003-Present)

Chemistry 1402: Physiological Chemistry I
Chemistry 3300: Principles of Biochemistry
Chemistry 2450: Physiological Chemistry II
Chemistry 4320: Biochemistry
Chemistry 4321: Biochemistry Laboratory

VISITING INSTRUCTOR

Dept. of Biochemistry and Molecular Biology, OSU (July 2001-June 2003)

Biochemistry 2344: Introduction to Organic and Biochemistry
Collaborating with Instructor of Record in Biochemistry 3653: Survey of Biochemistry
Freshmen Research Scholars Program:
Biochemistry 4990: Special Problems

Undergraduate Student Advising:

Responsibilities:

Aided in co-advisement of approximately 160 departmental undergraduates

Graduate Student Recruiting:

Responsibilities:

Implement the use of new graduate student recruiting materials
Recruit quality graduate students into the OSU Biochemistry program

POST-DOCTORAL RESEARCH ASSOCIATE

Dept. of Biochemistry and Molecular Biology, OSU (Sept 2000-June 2001)

Team-taught Biochemistry 2344: Introduction to Organic and Biochemistry, OSU.

Experience teaching numerous undergraduates on laboratory safety and techniques in a one-on-one or small group setting in a research laboratory. Laboratory techniques included pipetting, solution preparation, reverse-phase HPLC, solid and liquid phase extractions methods.

GRADUATE TEACHING ASSISTANT

Dept. Biochemistry and Molecular Biology, OSU (Sept 1994-May 2000)

Biochemistry 3653 Survey of Biochemistry

Biochemistry 3824: Introduction to Biochemistry Laboratory

Biochemistry 5824: Introduction to Graduate Biochemistry Laboratory

Instructed undergraduate students individually in the research laboratory on advanced laboratory techniques and data analysis. Students varied from freshmen to seniors.

Approximately 10-15 students per year.

Advised senior students on laboratory techniques and data collection for the Lou Wentz Research Scholars Program.

RESEARCH EXPERIENCE

ASSISTANT PROFESSOR

Dept. Chemistry, UCA (Aug 2003-present)

POST-DOCTORATE RESEARCH ASSOCIATE

Dept. Biochemistry and Molecular Biology, OSU (Sept 2000-June 2001)

Wrote research articles for publication, and progress reports and research plans for National Institute of Health grant application.

Coordinated and managed activities of both graduate and undergraduate students and technical staff in the laboratory on metabolite studies and data analysis.

Isolated, purified, and identified anticancer drug metabolites in vivo or a radiolabelled compound using solid phase extraction techniques coupled with reverse-phase HPLC.

Knowledgeable in laboratory animal care, drug administration and laboratory animal use forms which follow the National Institute of Health guidelines.

GRADUATE RESEARCH ASSISTANT

Dept. Biochemistry and Molecular Biology, OSU (Sept 1994-May 2000)

Isolated, purified, and identified anticancer drug metabolites in *in vitro* and *in vivo* biological media using liquid-liquid and solid phase extraction techniques coupled with reverse-phase HPLC.

Developed and implemented analytical methods for isolating and identifying metabolites from complex biological matrices, including liver, kidneys, testes, and serum.

Skilled in cell culture, laboratory animal care, drug administration, radiotracer methodologies, animal necropsy and tissue collection for metabolite isolation and histopathological techniques.

UNDERGRADUATE RESEARCH ASSISTANT

Dept. Biochemistry, Kansas State University (Aug 1993-May 1994)

Experience with circular dichroism, spectrophotometers, and protein quantitation.

FUNDING

Metabolism of the Anti-Cancer Drug 4-HPR (\$1000). UCA Faculty Enhancement Award. Oct. 2004.

Vitamin A Metabolism in Type 2 Diabetes (\$8430). University Research Council. Nov. 2004.

Type 2 Diabetes and Vitamin A Metabolism (\$2500). University Research Council Summer Stipend. Jan. 2005.

Enhancing Biochemistry Education by Attending the Education in the Biomolecular Sciences at the American Society for Biochemistry and Molecular Biology Meetings 2005 (\$1091). University Faculty Development Grant. Jan. 2005.

RUI: Chemical stimulants of vein cutting and trenching behaviors in insect herbivores (\$299,531). National Science Foundation. Jan. 2005. Co-PI with David Dussourd. Funding is pending.

ORGANIZATIONS

American Chemical Society

PLU (Chemistry Honorary)

Graduate Student Organization-Representative for Biochemistry Dept.

PUBLICATIONS

1. Simms-Kelley, M.D., Subramanian, S., Madler, M.M., Patrick, S.D., Klucik, J., Brown, C.W., Liu, S., Lemire, T.D., Benbrook, D.M., Birckbichler, P.J., Berlin, K.D. and Nelson, E.C. Heteroarotinoids Promote Growth in Vitamin A-Deficient Rats. *FASEB J.* 13: 896, 1999.
2. Liu, S. Berlin, K.D., Simms-Kelley, M.D., Nelson, E.C. and Benbrook, D.M. Optimization and Synthesis of (E)-4-[2-(3,4-Dihydro-4,4-dimethyl-2H-1-benzopyran-6-yl)-1-propenyl] benzoic Acid-11-[¹⁴C]. *J. Labelled Compounds and Radiopharmaceuticals* 42: 789-796, 1999.
3. Simms-Kelley, M.D., Subramanian, S., Spruce, L.W., Madler, M.M., Patrick, S.D., Grummer, R., Lemire, T.D., Benbrook, D.M., Birckbichler, P.J., Berlin, K.D. and Nelson, E.C. Growth Promoting Activity of Heteroarotinoids in Vitamin A-Deficient Rats. *FASEB J.* 12: 840, 1998.
4. Andersson, L.A., Johnson, A.K., Simms, M.D. and Willingham, T.R. Comparative Analysis of Catalases: Spectral Evidence Against Heme-Bound Water for the Solution of Enzymes. *FEBS.* 370: 97-100, 1995.
5. Simms-Kelley, M.D., Lemire, T.D., Berlin, K.D. and Nelson, E.C. Histopathological Effects of Four Heteroarotinoids on Vitamin A-Deficient Rat Epithelium and Spermatogenesis. Peer review.
6. Simms-Kelley, M.D., Berlin, K.D. and Nelson, E.C. Mono and Diaryl Sulfur-Containing Heteroarotinoids Promote Growth in Vitamin A-Deficient Rats. Peer review.
7. Simms-Kelley, M.D., Berlin, K.D., Kolli, K. and Nelson, E.C. Metabolites of a Sulfur-Containing Diaryl Heteroarotinoid in Vitamin A-Deficient Rat Liver and Serum. Peer review.