

Jason C. Baker, Ph.D.

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Education

Doctor of Philosophy, Biochemistry, January 1999

Department of Biochemistry, Kansas State University, Manhattan, KS

Dissertation title: Expression, Purification, and Characterization of Three Isoforms of Human Pyruvate Dehydrogenase Kinase

Bachelor of Science, Biochemistry, May 1993

Department of Biochemistry, Kansas State University, Manhattan, KS

Professional Experience

- ◆ Associate Professor of Biology Fall 2005-present
Missouri Western State University, St. Joseph, MO

- ◆ Assistant Professor of Biology Fall 2000-2005
Missouri Western State College, St. Joseph, MO

- ◆ Guest Lecturer Fall 1999
University of Nebraska College of Dentistry, Lincoln, NE
Biochemistry course: Lecture topics- enzyme kinetics, mechanisms, and control; glycolysis

- ◆ Postdoctoral Research Fellow 1999-2000
University Nebraska Medical Center, Eppley Cancer Institute, Omaha, NE

Awarded Fellowships and Grants

- ◆ National Cancer Institute of the National Institutes of Health (R15 CA096723) 2003- 2006
Todd T. Eckdahl, Jason C. Baker, Benjamin D. Caldwell, Missouri Western State University
“Antitumor Drugs that Bind the DNA Minor Groove”, \$136,000

- ◆ Department of Defense Breast Cancer Research Program 2000
Postdoctoral Traineeship (proposal # BC990250), \$143,000
“The Role of KSR-Associated Kinases in Breast Cancer Signaling”
Eppley Cancer Institute, University of Nebraska Medical Center
(3 year grant transferred to new post-doc researcher upon leaving UNMC for position with MWSU)

- ◆ National Cancer Institute Training Grant (5 T32 CA09476-11) 1999-2000
Postdoctoral Fellowship
Eppley Cancer Institute, University of Nebraska Medical Center

Submitted Grants

- ◆ National Cancer Institute of the National Institutes of Health 2005, 2007
Todd T. Eckdahl, Jason C. Baker, Melissa Daggett, Missouri Western State University
“Antitumor Drugs that Bind the DNA Minor Groove”
- ◆ National Science Foundation, Scholarship in STEM program 2007
Deborah Becker, Jason Baker, Michael Ducey, Jennifer Hageman, Missouri Western State University
“Midwest Information Technology and Science Scholarship Program”
- ◆ National Science Foundation, Scholarship in STEM program 2008 – Reviews Pending
Deborah Becker, Jason Baker, Michael Ducey, Jennifer Hageman, Missouri Western State University
“Midwest Information Technology and Science Scholarship Program”

Professional Memberships

- Missouri Academic of Sciences, 2001- present (lifetime member)
- American Society for Microbiology, 2001 - present
- National Association of Advisors for Health Professions, 2000- present
- Genome Consortium for Active Teaching, 2002 – 2005
- Association of College and University Biology Educators, 2008 - present

Awards

- ◆ Missouri Western Board of Governors Distinguished Professor Award (service) 2009
- ◆ Missouri Western Jesse Lee Myers Excellence in Teaching Award 2005
- ◆ Missouri Western Board of Governors Distinguished Professor Award (teaching) 2005
- ◆ Merck Outstanding Graduate Student Research Award 1998
Department of Biochemistry, Kansas State University
- ◆ Merck Outstanding Graduate Student Teaching Award 1996
Department of Biochemistry, Kansas State University

Peer-Reviewed Publications

Judith Knadler, David Ashley, **Jason Baker**. A Selective Survey of Microbial Flora in the Water of Seven Missouri Caves. *Transactions of the Missouri Academy*, submitted April 2009 (in review)

Kristen Walton, **Jason Baker**. Group projects as a method of promoting student scientific communication and collaboration in a public health microbiology course. *Bioscene*, in press (accepted January 2009)

Jason C. Baker, Paula Overfelt. Health Professions Advisors and AHECs: A Partnership That Benefits All. *The Advisor*. 2007, 27(3): 39-42

Jason C. Baker, Richard E. Crumley, and Todd T. Eckdahl. Random Amplified Polymorphic DNA PCR in the Microbiology Teaching Laboratory: Identification of Bacterial Unknowns. *Biochemistry and Molecular Biology Education*. 2002, 30: 394-397

Roche TE, **Baker JC**, Yan X, Hiromasa Y, Gong X, Peng T, Dong J, Turkan A, Kasten SA. Distinct regulatory properties of pyruvate dehydrogenase kinase and phosphatase isoforms. *Prog Nucleic Acid Res Mol Biol*. 2001;70:33-75. Review.

Liu S, Gong X, Yan X, Peng T, **Baker JC**, Li L, Robben PM, Ravindran S, Andersson LA, Cole AB, Roche TE. Reaction mechanism for mammalian pyruvate dehydrogenase using natural lipoyl domain substrates. *Arch Biochem Biophys*. 2001 Feb 15;386(2):123-35.

Baker JC, Yan X, Peng T, Kasten S, Roche TE. Marked differences between two isoforms of human pyruvate dehydrogenase kinase. *J Biol Chem*. 2000 May 26;275(21):15773-81.

Thomas E. Roche, Shengjiang Liu, Sundari Ravindran, **Jason C. Baker**, Lijuan Wang (1996) Role of the E2 core in the dominant mechanism of regulatory control of mammalian pyruvate dehydrogenase complex. Birkhäuser Verlag Basel/Switzerland, *Alpha-Keto Acid Dehydrogenase Complexes*, M. S. Patel, T. E. Roche, R. A. Harris (eds)

Shengjiang Liu, **Jason C. Baker**, P. C. Andrews, Thomas E. Roche (1995) Recombinant Expression and Evaluation of the Lipoyl Domains of the Dihydrolipoyl Acetyltransferase Component of the Human Pyruvate Dehydrogenase Complex. *Arch. Bioch. Biophys*. **316**, 926-940

Shengjiang Liu, **Jason C. Baker**, Thomas E. Roche (1995) Binding of the Pyruvate Dehydrogenase Kinase to Recombinant Constructs Containing the Inner Lipoyl Domain of the Dihydrolipoyl Acetyltransferase Component. *J. Biol. Chem*. **270**, 793-800

Presentations

Jason C. Baker. "An Effective, Low-Cost Investigative Fungal Laboratory for Allied Health Microbiology Students" presented at American Society for Microbiology Conference for Undergraduate Educators, May 2009, Colorado State University

Jason C. Baker, Kristen L.W. Walton. "A Successful Lab Project that Increases Bioinformatics Competency and Skills in Undergraduates" presented at Missouri Academy of Science, April 2009, Northwest Missouri State Univ.

Jason C. Baker. "Isolation, Identification, and Mode-of-Action Characterization of Bacocin, A Novel Bacteriocin Discovered at Missouri Western" presented to the Psi Xi Chapter of Tri-Beta Biological Honors Society, Nov. 2008

Jason C. Baker "Functional and Molecular Characterization of a New Bacteriocin" presented at Missouri Academy of Science, April 2007, MWSU

J. Rushin, **J. Baker**, D. Boutwell, C. Chevalier, M. Daggett, T. Eckdahl, S. Seeger, K. Walton "Using two-week learning cycle blocks (LCBs) as a way for non-major general biology students to do science in the lab." National Association of Biology Teachers, 2007

Jason Baker, David Ashley. "One-Day Infectious Disease Workshop" developed for the Northwest Missouri Area Health Education Center, presented January 2007

Baker, J, Caldwell, B., Daggett, M., Eckdahl, T. "Faculty working together to conduct undergraduate research" presented at the Conference on Applied Learning in Higher Education, MWSU, 2006

Jason C. Baker "DYOE (Design Your Own Experiment): A Model for One-Week Independent Laboratory Projects

in a Microbiology Course” presented at American Society for Microbiology Conference on Undergraduate Education, New Orleans, LA, May 21-23, 2004

Jason C. Baker “Regulation of Pyruvate Dehydrogenase: A Possible Treatment for Type II Diabetes” presented at Tri-Beta Northcentral-2 District Convention, April 12-13, 2003

Baker, J.C., Eckdahl, T.T., Crumley, R.E. “RAPD PCR in the Microbiology Lab: a Molecular Approach to Identification of Bacterial Unknowns” presented at the Missouri Academy of Sciences, April 2002, Springfield, MO and American Society for Microbiology Education Conference, May 2002, Salt Lake City, UT

Presentations with Students

Brock, S.R., J. Knadler, M. Triplett, T. Brown, and J.C. Baker. “Characterization, Isolation, and Identification of Bacocin, a Novel Bacteriocin” presented at Missouri Academy of Science, April 2009, Northwest Missouri State University (First place award winner for best research presentation)

Kristin Fee, Jason Baker. “Understanding Phenotype Variation and Gene Transfer through Prodigiosin Production in *Serratia marcescens*” presented at URSI symposium, MWSU, December 2008

Susan Brock, Travis Brown, Jason Baker. “Isolation, Identification, and Mode-of-Action Characterization of Bacocin, A Novel Bacteriocin Discovered at Missouri Western” presented at Summer Research Institute symposium, July 2008

Susan Brock, Judith Knadler, Meredith Triplet, Jason Baker. “Functional and molecular characterization of a new bacteriocin” presented at American Society For Biochemistry and Molecular Biology annual meeting, San Diego, April 2008 and Summer Research Institute symposium, MWSU, July 2007

Judith W. Knadler and Jason C. Baker, Ph.D “Characterization of a Newly Discovered Bacteriocin” presented at the URSI symposium, MWSU, Oct. 2006

Knadler, J., Ashley, D., Baker, J. “2006 Status Report on Microbes Identified from Missouri Cave Waters” presented at Missouri Academy of Sciences, Truman State University, April 2006

Willie Gilbert and Jason C. Baker. “The effectiveness of newly developed hand soaps at killing common bacteria” presented at Tri-Beta District Convention, Lyons, KS, April 2006

Benefield, Amanda, Baker, Jason C. “Antimicrobial Effectiveness of Laundry Detergents.” presented at Multidisciplinary Research Day, May 2005, Missouri Western State College and Tri-Beta District Convention, Reis Biological Field Station, Steelville, MO, April 2005

Brianna Peterson, Jason C. Baker “DNA Microarray Analysis of Anti-tumor Drugs on Human Breast Cancer” presented at Missouri Academy of Sciences, April 17, 2004, Rockhurst University, Kansas City, MO

Knadler, Judy, David C. Ashley and Jason C. Baker. 2004. “Results from preliminary attempts to monitor microbes in cave water samples” presented at Missouri Academy of Sciences, April 17, 2004, Rockhurst University, Kansas City, MO

Barkman, Katie; Bundy, Kendra (Faculty Collaborators: Baker, J.C.; Ashley, D.C.) “Evaluation of Commercially Available Canine Parasite Diagnosis Products for Use in the Laboratory Component of a Medical Parasitology Course” presented at Multidisciplinary Research Day, December 2003, Missouri Western State College

Baker, Jason, PhD, Bentz, Kim, SN, Buckallew, Jennifer, SN, Gant, Mystique, SN, Gregory, Becky, SN, Hicks, Cara, SN, Voelkel, RN, MS "The Effectiveness of Three Surgical Skin Prep Solutions" presented at Multidisciplinary Research Day, December 2003, Missouri Western State College

Brianna Peterson, Jason C. Baker "DNA microarray Analysis of the Effects of Anti-Tumor Drugs on Human Breast Cancer" presented at Undergraduate Research Summer Institute Symposium, October 28, 2003, Missouri Western State College

Laurie Glasgow, Benjamin Caldwell, Jason C. Baker "Investigations of the Effects of NSAIDs on Antibiotic Susceptibility in Staphylococcus aureus" presented at 221st National Meeting of the American Chemical Society, April, 2001, San Diego, CA

Fuerbacher, Leigh Ann, Shannon Brewer, Danny Stark, Jason C. Baker and David C. Ashley. "Microbiology lab for Bio111" presented at the district meeting of Beta Beta Beta, National Biology Honor Society; Reis Biological Station, Steelville, MO, April 5, 2001.

Lindsay Perez, Jason C. Baker "Evaluation of the Antibacterial Properties of Essential Aromatherapy Oils" presented at Interdisciplinary Research Day, November, 2000, Missouri Western State College

Select Professional Service and Activities

- Chair of the MWSU Faculty Senate *ad hoc* Graduate Studies Committee, Sept. 2005 – April 2007
- Strategic Planning Opportunity Co-Chair and Steering Committee Member, 2007 – present
- Missouri Academy of Science annual meeting local arrangements committee, 2006/2007
- Participated in the Learning Communities Summer Institute 2003, Evergreen State College, Olympia, WA, June 24-29, 2003
- Participated and presented at American Society for Microbiology (ASM) Conference for Undergraduate Educators (2001, 2002, 2004, 2006, 2009) and the society's General Meeting (2008)
- Participated and presented at Missouri Academy of Sciences annual meetings, 2001, 2002, 2004, 2007, 2009
- Participated in the Central Association of Advisors for the Health Professions bi-annual meetings, 2001, 2003, 2007
- Serve as a Health Professions Advisor including chair of the Health Professions Scholarship Committee and chair of the Medical School Admission Agreements Committee, 2000 - present
- Serve as Bench Science Internship Coordinator for Department of Biology, Missouri Western State University, 2001 - present
- Serve as Missouri Western State University Pre-Professional Club faculty advisor (2000-2005, 2006-present)