Dominic F. Qualley, Ph.D.

Berry College
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Education:
Ph.D., Chemistry, (2002-2007), University of Alabama
Research Advisor: Stephen A. Woski
Dissertation Title: Synthesis and Survey of Non-Natural Bases in Nucleic Acids

B.A., Psychology (1994-1998), University of Minnesota
Research Advisor: Bridgette A. Barry (2000-2002), Professor of Chemistry and Biochemistry, Molecular Biology, and Biophysics
Projects: Purification and Crystallization of Photosystem II Manganese Stabilizing Protein (MSP) and *E. coli* Lactose Permease

Professional Experience:
Assistant Professor, Department of Chemistry and Biochemistry, Berry College, 2010-2016
Associate Professor, Department of Chemistry and Biochemistry, Berry College, 2016-present

Postdoctoral Research Associate, Department of Chemistry, The Ohio State University, 2007-2010
Research Advisor: Karin Musier-Forsyth, Professor and Ohio Eminent Scholar
Projects: Characterization of Nucleic Acid Chaperone Activity of Retroviral Nucleocapsid Proteins; Mechanisms of Retrovirus Restriction by Human APOBEC3G Protein

Graduate Researcher, Department of Chemistry, University of Alabama, 2002-2007
Research Advisor: Stephen Woski, Associate Professor
Projects: 5-Substituted Indoles as Base Stacking Models, Nitrocarbazoles as Universal Bases in PNA and DNA, Universal Base Properties of Two Fluorescent Bases in Peptide Nucleic Acid, Anti-Oxidant Properties of the Heme Undecapeptide Microperoxidase-11

Courses:
CHM 341 (Biochemistry I)
CHM 342 (Biochemistry II)
CHM 343 (Biochemistry Laboratory)
CHM 443I (Advanced Biochemistry)
CHM 223L (Organic Chemistry laboratory)
BCC 100 (First-Year Seminar)

Professional Affiliations:
American Chemical Society, 2002-present
Golden Key National Honor Society, 1998-present
Phi Kappa Phi National Honor Society, 1998-present
Biophysical Society, 2012-present

Publications (Berry College undergraduate co-authors are underlined):

"Bovine leukemia virus nucleocapsid protein is an efficient nucleic acid chaperone", D. F. Qualley, V. L. Sokolove, and J. L. Ross. *Biochem. Biophys. Res. Commun.*, **2015**, 458(3), 687-92.

"Single aromatic residue location alters nucleic acid binding and chaperone function of FIV nucleocapsid protein", H. Wu, W. Wang, N. Naiyer, E. Fichtenbaum, D. F. Qualley, M. J. McCauley, R. J. Gorelick, I. Rouzina, K. Musier-Forsyth, and M. C. Williams. *Virus Res.*, **2014**, 193, 39-51

"Oligomerization transforms human APOBEC3G from an efficient enzyme to a slowly dissociating nucleic acid-binding protein", K. R. Chaurasiya, M. J. McCauley, W. Wang, D. F. Qualley, T. Wu, S. Kitamura, H. Geertsema, D. S. Chan, A. Hertz, Y. Iwatani, J. G. Levin, K. Musier-Forsyth, I. Rouzina, and M. C. Williams. *Nat. Chem.*, **2014**, 6(1), 28-33

"Expression, purification, and characterization of full-length bovine leukemia virus Gag protein from bacterial culture", D. F. Qualley and B. L. Boleratz. *Protein Expr. Purif.* **2014**, 93, 32-37

"Inositol phosphates compete with nucleic acids for binding to bovine leukemia virus matrix protein: Implications for deltaretroviral assembly", D. F. Qualley, C. M. Lackey, and J. P. Paterson. *Proteins* **2013**, 81(8), 1377-1385

"C-terminal domain modulates the nucleic acid chaperone activity of human T-cell leukemia virus type 1 (HTLV-1) nucleocapsid protein (NC) via an electrostatic mechanism", D. F. Qualley, K. M. Stewart-Maynard, F. Wang, M. Mitra, R. J. Gorelick, I. Rouzina, M. C. Williams, and K. Musier-Forsyth. *J. Biol. Chem* **2010**, 285 (1), 295-307

"Aromatic hydrocarbons as universal bases in peptide nucleic acid", K. F. MacKinnon, D. F. Qualley, and S. A. Woski, *Tetrahedron Lett.* **2007**, *48*, 8074-8077

Presentations (Berry College undergraduate co-authors are underlined):

"Investigation of the anti-oxidant potential of microperoxidase-11", Dominic F. Qualley and Stephen A. Woski, 231st National Meeting of the American Chemical Society, Atlanta, GA, March 2006; Abstract MEDI 58 (poster)

"Stacking of nonnatural bases in nucleic acids", Stephen A. Woski, Cuiling Liu, and Dominic F. Qualley, 234th National Meeting of the American Chemical Society, Boston, MA, August 2007; Abstract CARB 59 (poster)

"DNA universal residues based on rational design", Dominic F. Qualley and Stephen A. Woski, 234th National Meeting of the American Chemical Society, Boston, MA, August 2007; Abstract CARB 57 (poster)

"The nucleocapsid protein of feline immunodeficiency virus is an efficient nucleic acid chaperone", Dominic F. Qualley and Karin Musier-Forsyth, Rust Belt RNA Meeting, Mt. Sterling, OH, October 2007 (poster)

"Nucleic acid chaperone activity of the feline immunodeficiency virus nucleocapsid protein", Dominic F. Qualley and Karin Musier-Forsyth, 40th Central Regional Meeting of the American Chemical Society, Columbus, OH, June 2008 (selected oral presentation)

"Human APOBEC3G - purification and binding characterization using surface plasmon resonance", Dominic F. Qualley, National Institutes of Health, Bethesda, MD, August 17, 2009 (invited oral presentation)

"C-terminal domain regulates the nucleic acid chaperone activity of human T-cell leukemia virus type 1 (HTLV-1) nucleocapsid protein (NC) via an electrostatic mechanism", Dominic F. Qualley, Kristen M. Stewart-Maynard, Fei Wang, Mithun Mitra, Robert J. Gorelick, Ioulia Rouzina, Mark C. Williams and Karin Musier-Forsyth, 238th National Meeting of the American Chemical Society, Washington, DC, August 2009; Abstract BIOL 155 (poster)

"C-terminal domain regulates the nucleic acid chaperone activity of human T-cell leukemia virus type 1 (HTLV-1) nucleocapsid protein (NC) via an electrostatic mechanism", Dominic F. Qualley, Kristen M. Stewart-Maynard, Fei Wang, Mithun Mitra, Robert J. Gorelick, Ioulia Rouzina, Mark C. Williams and Karin Musier-Forsyth, 7th International Retroviral NC Symposium , Minneapolis, MN, September 2009; (selected oral presentation)

"Role of prolyl-tRNA synthetase in tRNAPro packaging during bovine leukemia virus replication", Anna E. Garber and Dominic F. Qualley, 243rd National Meeting of the American Chemical Society, San Diego, CA, March 2012; Abstract CHED 447 (poster)

"Cloning, purification, and nucleic acid binding properties of bovine leukemia virus nucleocapsid protein", Victoria Sokolove and Dominic F. Qualley, 243rd National Meeting of the American Chemical Society, San Diego, CA, March 2012; Abstract CHED 435 (poster)

"Biophysical investigation of deltaretrovirus assembly", Dominic F. Qualley, Huntingdon College, Montgomery, AL, October 2013 (invited oral presentation)

"*In vitro* study of assembly events during bovine leukemia virus replication", Dominic F. Qualley, Southeastern Regional Meeting of the American Chemical Society, Atlanta, GA, November 2013; Abstract 341 (selected oral presentation)

"Mutational analysis of bovine leukemia virus nucleocapsid protein", Victoria L. Sokolove and Dominic F. Qualley, Southeastern Regional Meeting of the American Chemical Society, Atlanta, GA, November 2013; Abstract 712 (poster)

"Expression and purification of the bovine leukemia virus Gag protein", Bethany L. Boleratz and Dominic F. Qualley, Southeastern Regional Meeting of the American Chemical Society, Atlanta, GA, November 2013; Abstract 1016 (poster)

"Study of RNA binding to matrix domain of Gag protein in bovine leukemia virus", Anna-Carson Rimer and Dominic F. Qualley, Southeastern Regional Meeting of the American Chemical Society, Atlanta, GA, November 2013; Abstract 1024 (poster)

"Purification and RNA-binding properties of the West Nile virus core protein", Katelyn Hambrick and Dominic F. Qualley, Combined Southwest Region Meeting and the Southeastern Regional Meeting of the American Chemical Society, Memphis, TN, November 2015; Abstract 793 (poster)

"Role of gag domains in bovine leukemia virus RNA packaging", Heidi King and Dominic F. Qualley, Combined Southwest Region Meeting and the Southeastern Regional Meeting of the American Chemical Society, Memphis, TN, November 2015; Abstract 792 (poster)

Externally Funded Proposals

Gary Breton, Kevin Hoke, Dominic Qualley, Theunis van Aardt (Shorter U.), "Acquisition of a 400 MHz Spectrometer to Facilitate Faculty Research and Improve Undergraduate Research Training." Award # 1125616, National Science Foundation, $258,871.00. (Funded September 2011)

Awards

McRae Award, Berry College, 2015.

Professional Service

Editorial Board member for the American Journal of Biochemistry and Journal of Pediatric Biochemistry

Reviewer for the Czech Science Foundation, Proposal # 14-17160P, "Study of Mason-Pfizer Monkey Virus Matrix Protein Interaction with Plasma Membrane"

Reviewer for *Biochemistry: The Molecular Basis of Life* (three chapters), 6th Edition, McKee and McKee, Oxford University Press.

College Service

Writing Across the Curriculum Committee (MNS Rep), Fall 2011 – Spring 2013

Planning Council (FA Rep), Fall 2012 – Spring 2014

Faculty Development Committee (MNS Rep), Fall 2012 - Spring 2015 (Chair: Fall 2012 – Spring 2014, *ex officio*: Fall 2014 – Spring 2015)

Council for Student Scholarship (FA Rep), Fall 2014 – Spring 2016

Pre-Pharmacy Advisor, Fall 2012 – Spring 2016

Institutional Review Board (MNS Rep), Fall 2014 – present (Chair: Fall 2015 – Spring 2016)

Pre-Med Advisory Committee, Fall 2012 – present

One Health Committee, Spring 2013 – present

Faculty Assembly Parliamentarian, Fall 2016 – present

College Advisory Committee on Promotion and Tenure, Fall 2016 - present