

KARL A. HAUSHALTER, PH.D.

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ACADEMIC POSITIONS

Associate Professor 2009-present
Harvey Mudd College
Departments of Chemistry and Biology

Iris and Howard Critchell Assistant Professor 2007-2009
Harvey Mudd College
Departments of Chemistry and Biology

Assistant Professor 2003-2007
Harvey Mudd College
Departments of Chemistry and Biology

RESEARCH INTERESTS

Biochemistry of protein:nucleic acid interactions.
Influence of chromatin structure on DNA processing enzymes.
Inducing DNA damage as a host defense against retroviral infection.

EDUCATION

Damon Runyon Cancer Research Fund Postdoctoral Fellowship 2001-2003
University of California San Diego
Advisor: Professor James T. Kadonaga
Biochemical and biophysical studies of the dynamics of chromatin assembly.

Ph.D. in Chemistry 1996-2001
Harvard University
Advisor: Professor Gregory L. Verdine
Isolated and characterized novel DNA repair enzymes. Mechanistic studies of DNA repair enzymes using kinetic analysis and atomic force microscopy.

B.A. in Chemistry, Summa Cum Laude 1992-1996
Rice University
Undergraduate Research Advisor: Professor Lon J. Wilson
Measured self-exchange electron-transfer kinetics for cupro-protein models.

Undergraduate Researcher Summers
California Institute of Technology 1993-1995
Advisor: Professor John D. Roberts
Used NMR spectroscopy to investigate the influence of hydrogen bonding on the rates of rotation about the amide bond in ureas.

TEACHING

Bio 182/Chem 182, Chemistry of Living Systems	2004-2008
Bio 184/Chem 184, Methods in Biochemistry Laboratory	2004-2008
Bio 187/Chem 187/STS 187, HIV-AIDS: Science, Society and Service	2008
Bio 189/Chem 189, Topics in Biochemistry and Molecular Biology	2005-2008
Bio 198, Directed Reading on HIV-AIDS	2008
Chem 21, General Chemistry	2003, 2007, 2008
Chem 25, General Chemistry Laboratory	2003, 2007
Chem 56, Carbon Compounds	2009
Chem 58, Carbon Compounds Laboratory	2004-2009
Chem 105, Organic Chemistry	2004-2006
Chem 111, Organic Chemistry Laboratory	2004-2006
HMC Summer Institute, Molecular Biology Module	2004-2008

RESEARCH STUDENT MENTORING

Chikezie Okoro (UMBC Meyerhoff Scholar, Chemistry, '12)	2009-present
Athena Anderson (Chemistry, '11)	2009-present
Daniel Garcia (Biology, '10)	2008-2009
Hannah Savage (Mathematics, '10)	2008-2009
Christina Snyder (Joint Chemistry/Biology, '09)	2008-2009
Nadia Abuelezam (Joint Math/Biology, '09) – in partnership with TASO Uganda	2008
Seanna Vine (Chemistry, '09) – in partnership with TASO Uganda	2008
Karen Chiu (Williams College, Chemistry, '10)	2008
Alexandra Torres (Harvard University, Biology, '11)	2008
Caitlin Olmsted (Chemistry, '10)	2008-present
Vikram Shivaji (Joint Chemistry/Biology, '10)	2008-present
Ethan Sokol (Joint Chemistry/Biology, '10)	2007-2009
Janina Moretti (Joint Chemistry/Biology, '07)	2006-2007
Ken Loh (Chemistry, '09)	2006-2008
Jennifer Fukuto (Joint Chemistry/Biology, '09)	2006-2008
Matthew Hoss (Joint Chemistry/Biology, '08)	2005-2007
Fang-Yuan Chang (Joint Chemistry/Biology, '07)	2005-2007
Katie Mouzakis (Joint Chemistry/Biology, '07)	2005-2007
Sara Hummel, (Chemistry, '06)	2005-2006
Brianna Lyon-Roberts (Chemistry, '06)	2005-2006
Yan Pu (Claremont McKenna College, Molecular Biology, '06)	2005-2006
Tiffany Wu (Harvard University, Chemistry, '06)	2004-2005
Sarah Bundick, (Chemistry and Biology, '05)	2004-2005
Steven Petesch (Chemistry, '05)	2004-2005
Ryan Mashiyama (Chemistry, '04)	2003-2004
Kit Rodolfa (Chemistry and Physics, '04)	2003-2004
Alexis Kaushansky (Chemistry, '04)	2003-2004

EXTERNAL GRANTS

National Science Foundation Research at Undergraduate Institutions 2006-2009
DNA Glycosylase Initiated Repair of Damaged Nucleosomes
\$289,110

Merck/AAAS Undergraduate Science Research Program 2005-2007
Served as the PI for this grant awarded to the chemistry and biology departments in support of our summer undergraduate research program in chemical biology
\$60,000

Research Corporation Cottrell College Science Award 2003-2005
The influence of chromatin structure on the repair of 8-oxoguanine DNA lesions
\$34, 976

Camille & Henry Dreyfus Faculty Start-up Grant for Undergraduate Institutions 2003-2007
The influence of chromatin structure on the repair of aberrant bases by DNA glycosylases
\$20,000

INTERNAL GRANTS

Mellon Career Enhancement New Venture Award 2009-present
Supplement for sabbatical scholarship including travel and course work related to global health, HIV-AIDS, and the role of faith-based organizations in societies' response to AIDS.
\$8,000

HMC 2020 Strategic Vision Fund 2007-2008
Development of the new integrative experiences course "HIV-AIDS: Science, Society and Service" and seed funding for an international collaboration with TASO Uganda.
\$5,000

FELLOWSHIPS AND AWARDS

Merck-AAAS Undergraduate Science Research Program Travel Award	2007
Damon Runyon Cancer Research Fund Postdoctoral Fellowship	2001-2003
American Chemical Society Organic Division Graduate Research Fellowship	1999-2000
National Science Foundation Graduate Research Fellowship	1996-1999
Derek Bok Center Certificate for Teaching Excellence	1996, 97, 98
Nominee for the Levenson Outstanding Teaching Fellow Award	1997
Zevi and Bertha Salburg Memorial Award for Chemistry Excellence	1996
Phi Beta Kappa	1996
Sallyport Award for Most Distinguished Service for Rice University	1996
Hubert E. Bray Scholar-Athlete of the Year for Rice University	1995, 1996
GTE/CoSIDA Academic All-American Scholar Athlete, 2 nd Team At-Large	1995

COLLEGE AND DEPARTMENT SERVICE

Strategic Vision Diversity Subcommittee for Faculty Hiring	2007-2008
Campus Life Committee	2007-2008
Multicultural Allies Program	2007-present
Academic liaison, CMS varsity swim team	2007-present
Classroom Undergraduate Research Experience (CURE) study facilitator	2006
Strategic planning workshop subcommittee – Optimizing the HMC Experience	2006
HMC 50 th Anniversary Lecture Series subcommittee	2005-2006
ADL Campus of Difference Diversity Trainer	2005-2007
HMC Summer Institute Instructor	2004-present
Pre-Medical Student Advisor	2004-present
Teaching and Learning Committee	2004-2007
Subcommittee on the Joint Major in Chemistry and Biology	2003-2004
Chair, Radiation Safety Committee	2003-present

PROFESSIONAL SERVICE

Ford Foundation Diversity Fellowships Predoctoral Program, review panel	2008
NSF Center for Integration of Teaching, Research, and Learning, panelist	2008
Foothill AIDS Project, instructor for staff refresher training	2008-present
Project Kaleidoscope, Faculty for the 21 st Century	2007-present
National Science Foundation, Ad-Hoc Reviewer	2005-2006
Sigma Xi, Claremont Colleges Chapter Secretary, Vice-President, President	2004-2008

PUBLICATIONS

K. D. Mouzakis, T. Wu, K. A. Haushalter. 2009. Thermolability and compromised excision activity of polymorphic forms of hOGG1, *BMC Molecular Biology* (submitted)

K. A. Haushalter. 2008. Labeling DNA and Preparing Probes, *Current Protocols Essential Laboratory Techniques*, 8.4.1-8.4.22.

K. A. Haushalter, D. J. Asai. 2006. Beyond Bio2010: If We Build It, Will They Come? *Council of Undergraduate Research Quarterly*, **26**, 160-163.

G. J. Gemmen, R. Sim, K. A. Haushalter, P. C. Ke, J. T. Kadonaga, D. E. Smith. 2005. Forced unraveling of nucleosomes assembled on heterogeneous DNA using core histones, NAP-1, and ACF, *J Mol Biol*, **351**, 89-99.

J. E.A. Wibley, T. R. Waters, K. A. Haushalter, G. L. Verdine, L. H. Pearl. 2003. Structure and Specificity of the Vertebrate Anti-Mutator Uracil-DNA Glycosylase SMUG1, *Molecular Cell*, **11**, 1647-1659.

K.A. Haushalter, J. T. Kadonaga. 2003. Chromatin assembly by DNA-translocating motors. *Nature Rev. Mol. Cell Biol.*, **4**, 613-620.

L. Chen, K. A. Haushalter, C. M. Lieber, G. L. Verdine. 2002. Direct visualization of a DNA glycosylase searching for damage. *Chemistry & Biology*, **9**, 345-350.

H. Nilsen, K. A. Haushalter, P. Robins, D. E. Barnes, G. L. Verdine, T. Lindahl. 2001. Excision of deaminated cytosine from the vertebrate genome: role of the SMUG1 uracil DNA glycosylase. *EMBO J.*, **20**, 4278-4286.

K. A. Haushalter, P. T. Stukenberg, M. W. Kirschner, G. L. Verdine. 1999. Identification of a new uracil DNA glycosylase family by expression cloning using synthetic inhibitors. *Current Biology*, **9**, 174-185.

K. A. Haushalter, J. Lau, J. D. Roberts. 1996. An NMR investigation of the effect of hydrogen bonding on the rates of rotation about the C-N bonds in urea and thiourea. *Journal of the American Chemical Society*, **118**, 8891-8896.

PRESENTATIONS (UNDERGRADUATE CO-AUTHORS UNDERLINED, PRESENTING AUTHOR LISTED FIRST)

Christina Snyder, Vikram Shivaji, Karl A. Haushalter. 2009. Expression of Human APOBEC3G and Exploration of the DNA Binding of its Catalytic Domain. *Southern California Undergraduate Research Conference in Chemistry and Biochemistry*, April 25, 2009. Los Angeles, CA.

Ethan Sokol, Daniel Garcia, Karl A. Haushalter. 2009. Trapping the hOGG1-nucleosomal DNA ternary complex. *Southern California Undergraduate Research Conference in Chemistry and Biochemistry*, April 25, 2009. Los Angeles, CA.

Hannah Savage, Karl A. Haushalter. 2009. Discrete state system model for DNA repair enzyme search mechanism. *Southern California Undergraduate Research Conference in Chemistry and Biochemistry*, April 25, 2009. Los Angeles, CA.

Caitlin Olmsted, Jennifer Fukuto, Janina Moretti, Karl A. Haushalter. 2009. Cross-linking histones and DNA to prevent transient site exposure.. *Southern California Undergraduate Research Conference in Chemistry and Biochemistry*, April 25, 2009. Los Angeles, CA.

Karl A. Haushalter. 2008. AIDS: Then and Now. Invited talk. *Another Voice*. May 18, 2008. Claremont, CA.

Karl A. Haushalter. 2008. What your parents never told you about DNA: Studies of DNA oxidation and repair. Department seminar. *Santa Clara University*. April 21, 2008. Santa Clara, CA.

Ken Loh, Ethan Sokol, Karl A. Haushalter. 2008. Characterization of the hOGG1-nucleosomal DNA ternary complex. *Experimental Biology 2008 – Annual Meeting of the American Society for Biochemistry and Molecular Biology*, April 5-8, 2008. San Diego, CA. [awarded Honorable Mention in the undergraduate poster competition]

Jennifer Fukuto, Karl A. Haushalter. 2008. Cross-linking histones and DNA to prevent transient site exposure. *Experimental Biology 2008 – Annual Meeting of the American Society for Biochemistry and Molecular Biology*, April 5-8, 2008. San Diego, CA.

Karl A. Haushalter. 2008. What your parents never told you about DNA: Studies of DNA oxidation and repair. Department seminar. *Lewis and Clark College*. March 18, 2008. Portland, OR.

Karl A. Haushalter, Sabrina Aurora. 2008. The Global HIV-AIDS Pandemic in 2008. Invited talk. *CUCCC Adult Education Forum*, March 2, 2008. Claremont, CA

Karl A. Haushalter. 2007. Developing critical thinking in introductory biochemistry through exploratory writing in an electronic collaborative learning environment. Invited talk. *Experimental Biology 2007 – Annual Meeting of the American Society for Biochemistry and Molecular Biology*. April 28-May 2, 2007. Washington, DC

Fang-Yuan Chang, Karl A. Haushalter. 2007. Covalent trapping of the hOGG1:nucleosomal DNA complex. *233rd National Meeting of the American Chemical Society*. March 25-29, 2007. Chicago, IL.

Matthew T. Hoss, Karl A. Haushalter. 2007. Kinetic analysis of nucleosomal DNA repair. *233rd National Meeting of the American Chemical Society*. March 25-29, 2007. Chicago, IL.

Ken Loh, Karl A. Haushalter. 2007. Trapping of a nucleosomal DNA repair intermediate. *233rd National Meeting of the American Chemical Society*. March 25-29, 2007. Chicago, IL.

Janina Moretti, Karl A. Haushalter. 2007. Does Base Excision Repair of Nucleosomal DNA Occur via a Transient Site Exposure Mechanism? *Keystone Symposium on Genome Instability and Repair*. January 17-21, 2007. Breckenridge, CO.

Kathryn Mouzakis, Tiffany Wu, Karl A. Haushalter. 2007. Thermolability and Compromised Excision Activity of Polymorphic Forms of hOGG1. *Keystone Symposium on Genome Instability and Repair*. January 17-21, 2007. Breckenridge, CO.

Karl A. Haushalter. 2006. What your parents never told you about DNA: Studies of DNA oxidation and repair. Invited talk. *California State University Northridge*. November 15, 2006. Northridge, CA.

Karl A. Haushalter, Fang-Yuan Chang, Ken Loh. 2006. Probing the Structure of a Covalent DNA Repair Intermediate. *Nucleic Acid Enzymes FASEB Summer Research Conference*. June 10-15, 2006. Saxtons River, VT.

Karl A. Haushalter. 2006. Research-like Experiences in a Biochemistry Laboratory Course Focused on DNA Repair. *Experimental Biology 2006 – Annual Meeting of the American Society for Biochemistry and Molecular Biology*. April 1-5, 2006. San Francisco, CA.

Sara Hummel, Matthew Hoss, Karl A. Haushalter. 2006. Sequence Specificity of Human 8-Oxoguanine DNA Glycosylase. *231st National Meeting of the American Chemical Society*. March 26-30, 2006. Atlanta, GA.

Fang-Yuan Chang, Karl A. Haushalter. 2006. Trapping the hOGG1:nucleosomal DNA complex. *231st National Meeting of the American Chemical Society*. March 26-30, 2006. Atlanta, GA.

Karl A. Haushalter. 2005. Biochemistry in Context: A Case Study Approach. *Experimental Biology 2005 – Annual Meeting of the American Society for Biochemistry and Molecular Biology*. April 2-6, 2005. San Diego, CA.

Karl A. Haushalter. 2005. Biochemistry in Context: A Case Study Approach. Invited talk. *229th National Meeting of the American Chemical Society*. March 13-17, 2005. San Diego, CA.

Sarah Bundick, Ryan Mashiyama, Karl A. Haushalter. 2005. Substrate location by the DNA repair enzyme SMUG1. *229th National Meeting of the American Chemical Society*. March 13-17, 2005. San Diego, CA.

Steven Petesch, Karl A. Haushalter. 2005. How does the DNA glycosylase MutY repair nucleosomal DNA?. *229th National Meeting of the American Chemical Society*. March 13-17, 2005. San Diego, CA.

Gregory Gemmen, Ronald Sim, Karl Haushalter, Pu Chun Ke, James Kadonaga, Douglas Smith. 2005. Forced unraveling of nucleosomes assembled on heterogeneous DNA using core histones, NAP-1, and ACF. *Biophysical Society 49th Annual Meeting*. February 12-16, 2005. Long Beach, CA.