

Abbreviated CV
Donald E. Elmore

Wellesley College
Department of Chemistry
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Education

Bachelor of Arts in Chemistry and English (With honors in both majors)
Grinnell College; Grinnell, IA 1998

Doctor of Philosophy in Chemistry
California Institute of Technology; Pasadena, CA 2004
Thesis: Investigations of Ion Channel Structure-Function Relationships Using Molecular Modeling and Experimental Biochemistry
Advisor: Dennis A. Dougherty

Professional Experience

Assistant Professor of Chemistry—Wellesley College, July 2004-present
Courses: Chemical Analysis and Equilibrium (CHEM 205), Introduction to Biochemistry (CHEM 222), Biochemistry I (CHEM 221), Biochemistry II (CHEM 328), Molecular Modeling of Biochemical Systems (CHEM 329)

Visiting Instructor of Chemistry—Joint Science Department of Claremont McKenna, Pitzer, and Scripps Colleges, September 2003-May 2004
Courses: Introductory Chemistry Lecture and Lab (Ch 14-15), Organic Chemistry Lab (Ch 116-117), and Molecular Modeling Guest Lecturer (Ch 134)

Selected Honors and Awards

Wellesley College Pinanski Prize in Teaching, 2009
National Science Foundation Graduate Research Fellowship, 1998-2001
Division of Chemistry and Chemical Engineering TA Service Award, Fall 1999
Phi Beta Kappa
Grinnell Chemistry Department Alumni Award, 1998
Goldwater Scholar in Mathematics, Science, and Engineering, 1996-1998

Research Publications

(Wellesley undergraduate co-authors are underlined, equal contribution is denoted with +, and corresponding authors are denoted with *.)

- Bruce, L. A.; Sigman, J. A.; Randall, D.; Rodriguez, S.; Song, M. M.; Dai, Y.; Elmore, D. E.; Pabon, A.; Glucksman, M. J.; Wolfson, A. J.* "Hydrogen bond residue positioning in the 599-611 loop of thimet oligopeptidase is required for substrate selection." *FEBS J.* **2008**, *275*, 5607-5617.
- Fleming, E.; Maharaj, N. P.; Chen, J. L.; Nelson, R. B.; Elmore, D. E.* "Effect of lipid composition on buforin II structure and membrane entry." *Proteins: Structure, Function, and Bioinformatics.* **2008**, *73*, 480-491.
- Uyterhoeven, E. T.+; Butler, C. B.+; Ko, D.; Elmore, D. E.* "Investigating the nucleic acid interactions and antimicrobial mechanism of buforin II." *FEBS Lett.* **2008**, *582*, 1715-1718.
- Maurer, J. A.+*; Elmore, D. E.+*; Clayton, D.; Xiong, L.; Lester, H. A.; Dougherty, D. A. "Confirming the revised C-terminal domain of the MscL crystal structure." *Biophys. J.* **2008**, *94*, 4662-4667.
- Spronk, S. A.; Elmore, D. E.; Dougherty, D. A.* "Voltage-dependent hydration and conduction properties of the hydrophobic pore of the MscS channel." *Biophys. J.* **2006**, *90*, 3555-3569.
- Elmore, D. E.* "Molecular dynamics simulation of a phosphatidylglycerol membrane." *FEBS Lett.* **2006**, *580*, 144-148.
- Elmore, D. E.; Prentice, J. C.; Trosset, C. "Do students understand liberal arts disciplines?" *Liberal Education.* **2006**, *92*, 48-53.
- Elmore, D. E.; Dougherty, D. A.* "Investigating lipid composition effects on the mechanosensitive channel of large conductance (MscL) using molecular dynamics simulations." *Biophys. J.* **2003**, *85*, 1512-1524.
- Elmore, D. E.; Dougherty, D. A.* "Molecular dynamics simulations of wild type and mutant forms of the *M. tuberculosis* MscL channel." *Biophys. J.* **2001**, *81*, 1345-1359.
- Maurer, J. A.; Elmore, D. E.; Lester, H. A.; Dougherty, D. A.* "Comparing and contrasting *E. coli* and *M. tuberculosis* mechanosensitive channels (MscL). New gain of function mutations in the loop region." *J. Biol. Chem.* **2000**, *275*, 22238-22244.
- Elmore, D. E.; Dougherty, D. A.* "A computational study of nicotine conformations in the gas phase and in water." *J. Org. Chem.* **2000**, *65*, 742-747.
- Maut-Ner, M.; Elmore, D. E.; Scheiner, S.* "Ionic hydrogen bond effects on the acidities, basicities, solvation, solvent bridging, and self-assembly of carboxylic groups." *J. Am. Chem. Soc.* **1999**, *121*, 7625-7635.
- Kar, T.; Elmore, D. E.; Scheiner, S.* "BN-naphthalene and carbon-containing derivatives: An *ab initio* study." *J. Mol. Struct./THEOCHEM* **1997**, *392*, 65-74.

Invited Lectures (Since 2006)

- "Characterization and design of histone-derived antimicrobial peptides." Science Center Faculty Seminar Series. Wellesley College, Wellesley, MA; Feb. 2009.
- "Investigating histone-derived antimicrobial peptides with computer simulations and experimental biochemistry." Chemistry Department seminar. Suffolk University, Boston, MA; Jan. 2009.
- "Investigating bacterial membrane proteins with computer simulations and experimental biochemistry." Chemistry Department seminar. Mt. Holyoke College, South Hadley, MA; Sept. 2006.

Recent National Conference Presentations (Since 2008)

(Wellesley undergraduate co-authors are underlined.)

- Xie, Y.; Maharaj, N. P.; Fleming, E.; Elmore, D. E. "Investigating the role of proline in buforin II function." Poster presentation (BIOL section). American Chemical Society National Meeting, Salt Lake City, UT; Mar. 2009.
- Tsao, H. S.; Lee, A. T.; Maharaj, N. P.; Elmore, D. E. "Investigating the bactericidal mechanism of three novel histone-derived antimicrobial peptides." Poster presentation (BIOL section). American Chemical Society National Meeting, Salt Lake City, UT; Mar. 2009.
- Guayasamin, R. C.; Malcolm, H. R.; Hawkins, J. F.; Elmore, D. E.; Maurer, J. A. "Functional and structural comparisons of MscS and bCNG ion channels." Poster presentation (BIOL section). American Chemical Society National Meeting, Salt Lake City, UT; Mar. 2009.
- Xie, Y.; Maharaj, N. P.; Fleming, E.; Elmore, D. E. "Investigating the role of proline in buforin II function." Poster presentation. Biophysical Society Annual Meeting, Boston, MA; Mar. 2009.
- Lee, A. T.; Tsao, H. S.; Maharaj, N. P.; Elmore, D. E. "Investigating the bactericidal mechanism of three novel histone-derived antimicrobial peptides." Poster presentation. Biophysical Society Annual Meeting, Boston, MA; Mar. 2009.
- Malcolm, H. R.; Hawkins, J. F.; Guayasamin, R. C.; Elmore, D. E.; Maurer, J. A. "Gating of bacterial cyclic nucleotide gated (bCNG) channels in response to membrane tension." Poster presentation. Biophysical Society Annual Meeting, Boston, MA; Mar. 2009.
- Maharaj, N. P.; Ooi, E. H.; Elmore, D. E. "Interactions of wild type buforin II with physiologically relevant lipid membranes." Poster presentation. Biophysical Society Annual Meeting, Long Beach, CA; Feb. 2008.
- Fleming, E.; Chen, J. L.; Elmore, D. E. "Determining the role of proline in the membrane interactions of buforin II." Poster presentation. Biophysical Society Annual Meeting, Long Beach, CA; Feb. 2008.
- Xiong, L.; Maurer, J. A.; Elmore, D. E. "Confirming the revised C-terminal domain of the *M. tuberculosis* MscL crystal structure" Poster presentation. Biophysical Society Annual Meeting, Long Beach, CA; Feb. 2008.
- Malcolm, H. R.; Xiong, L.; Caldwell, D. B.; McConnell, J. K.; Littlejohn, S.; Topic, A.; Elmore, D. E.; Maurer, J. A. "Cloning and initial characterization of bacterial cyclic nucleotide gated (bCNG) ion channels." Poster presentation. Biophysical Society Annual Meeting, Long Beach, CA; Feb. 2008.

Research Grants

Extramural grants:

- "Dissecting membrane interactions of the antimicrobial peptide buforin II using computer modeling and experimental biochemistry." Research Corporation Cottrell College Science Award. June 2006-June 2008. \$41,561. Role: PI.
- "Molecular dynamics simulations of buforin II membrane translocation." TeraGrid Development Allocation (DAC). Aug. 2008-Aug. 2009. 30,000 service units (SUs). Role: PI.

Wellesley College grants:

- "Structural and functional comparisons of mechanosensitive and ligand-gated ion channels." Faculty Award. May 2009-Apr. 2010. \$3500. Role: PI.
- "Molecular modeling in biochemistry." Education, Research and Development. Jan.-May 2009. \$3000. Role: PI.
- "Determining the transmembrane topology of bacterial cyclic nucleotide gated ion channels." Brachman-Hoffman Small Grant. June 2008-May 2009. \$4000. Role: PI
- "Determining the transmembrane topology of bacterial cyclic nucleotide gated ion channels." Faculty Award. Sept. 2007-Aug. 2008. \$3000. Role: PI.
- "Computer modeling of bacterial cyclic nucleotide gated (bCNG) channel ligand binding sites." Science Reserve Fund. Jan.-June 2006. \$1337. Role: PI.
- "Molecular modeling in biochemistry." Education, Research and Development. Jan.-May 2005. \$3648. Role: PI.

Selected Service Activities

Biological Chemistry Interdepartmental Major Advisory Committee, 2004-present
Elected to Wellesley College Agenda Committee, 2009-present
Vice-president Wellesley College Chapter of Sigma Xi, 2009-present
Wellesley College Medical Professions Advisory Committee, 2005-2007
Organizing committee for Junior Faculty Research Seminar Series, 2006-2007
Search committee for three assistant professor positions in the Chemistry Department, 2005-2007
Advisory committee for New Faculty Orientation, 2005