

SARAH DELANEY, Ph.D.

Brown University
Vernon K. Krieble Professor of Chemistry
Chair, Department of Chemistry
Delaney Laboratory: <https://sites.brown.edu/delaney>

EDUCATION

2004 Ph.D., Chemistry
California Institute of Technology, Pasadena, CA
Advisor: Prof. Jacqueline K. Barton
Thesis: Oxidative DNA damage by long-range charge transport

1999 B.A., Chemistry, *magna cum laude*
Middlebury College, Middlebury, VT
Advisor: Prof. Sunhee Choi
Thesis: Reaction of platinum(IV) anticancer agents with DNA

PROFESSIONAL APPOINTMENTS

2025-present Chair, Department of Chemistry
Brown University, Providence, RI

2025-present Vernon K. Krieble Professor of Chemistry
Brown University, Providence, RI

2024-present Member, Brown RNA Center
Brown University, Providence, RI

2022-2025 Senior Associate Dean of Academic Affairs, Graduate School
Brown University, Providence, RI

2022-present Member, Legorreta Cancer Center
Brown University, Providence, RI

2020-2025 Professor of Chemistry
Brown University, Providence, RI

2018-2022 Director of Graduate Studies in Chemistry
Brown University, Providence, RI

2013-2020 Associate Professor of Chemistry
Brown University, Providence, RI

2010-present Graduate Program Trainer in Molecular Biology, Cell Biology, and Biochemistry
Brown University, Providence, RI

2007-present Graduate Program Trainer in Molecular Pharmacology and Physiology
Brown University, Providence, RI

2007-2013 Assistant Professor of Chemistry
Brown University, Providence, RI

2004-2007 Damon Runyon Postdoctoral Fellow
Massachusetts Institute of Technology, Cambridge, MA
Advisor: Prof. John M. Essigmann

AWARDS

2025 Ivy+ Faculty Advancement Network Provost Leadership Fellow

2025 Timothy J. O'Leary, S. J., Distinguished Scientist, Gonzaga University

2020 Brown University Graduate School Faculty Award for Advising and Mentoring

2019 Keynote Address at University of Pittsburgh Hillman Cancer Center Annual Chromatin Symposium

2019, 2020	Two articles featured as <i>ACS Editors' Choice</i> (an honor given to one article across the American Chemical Society portfolio of journals per day based on "potential for broad interest")
2017	Annual Lectureship of Chemistry Graduate Student Series at Massachusetts Institute of Technology
2016	Cottrell Scholars Collaborative Academic Leadership Team Workshop (1 of 25 faculty nationwide selected to participate)
2011-2013	Philip J. Bray Award for Excellence in Teaching in the Physical Sciences, Brown University
2010-2015	National Institute of Environmental Health Sciences (NIH/NIEHS) Outstanding New Environmental Scientist (ONES) Award
2009	National Science Foundation ADVANCE Career Development Award
2008	Richard B. Salomon Faculty Research Award, Brown University
2004-2007	Damon Runyon Postdoctoral Fellowship
2002	Ralph M. Parson's Fellowship, California Institute of Technology
1998	Phi Beta Kappa Honor Society
1997	Barry M. Goldwater Scholar

PUBLICATIONS

Peer-Reviewed Articles

Student authors are indicated by * (graduate student advisees) and # (undergraduate advisees)

Postdoctoral authors are indicated by +

Collaborators are indicated by % (graduate collaborators) and ^ (faculty collaborators)

52. *Barbosa, G.M. and **Delaney, S.** Initiation of base excision repair is modulated by nucleosome occupancy modifying sequences. *DNA Repair* (2025) [DOI:10.1016/j.dnarep.2025.103852](https://doi.org/10.1016/j.dnarep.2025.103852)
51. *Ferrara, J.C. and **Delaney, S.** A balancing act: Thymine DNA glycosylase combines sequence and rotational preferences to define lesion excision in the nucleosome core particle. *Biochemistry* (2025) 64, 2068. [DOI:10.1021/acs.biochem.5c00090](https://doi.org/10.1021/acs.biochem.5c00090)
50. %Cai, A. *LaVigne, K.L., %Crisalli, A.M., **Delaney, S.**, ^Min, J.-H. and ^Cho, B.P. Comparative studies on bulky DNA damage binding by nucleotide excision repair proteins using surface plasmon resonance, differential scanning fluorometry, and DNase I footprinting. *Chem Res Toxicol.* (2025) 38, 206. [DOI: 10.1021/acs.chemrestox.4c00456](https://doi.org/10.1021/acs.chemrestox.4c00456)
49. *Sutton, T.B., %Sawyer, D.L., %Naila, T., ^Sweasy, J.B., ^Tomkinson, A.E., and **Delaney, S.** Global screening of base excision repair in nucleosome core particles. *DNA Repair* (2024) 144, 103777. [DOI: 10.1016/j.dnarep.2024.103777](https://doi.org/10.1016/j.dnarep.2024.103777)
48. %Ma, J., %Qi, R., ^Harcourt, E.M., %Chen, Y.T., *Barbosa, G.M., %Peng, Z., %Howarth, S., **Delaney, S.**, and ^Li, D. (**Delaney, S.** and Li, D. are co-corresponding authors) 3,*N*⁴-etheno-5-methylcytosine blocks TET1-3 oxidation but is repaired by ALKBH2, 3 and FTO. *Nucleic Acids Research* (2024) 52, 12378. [DOI: 10.1093/nar/gkae818](https://doi.org/10.1093/nar/gkae818)
47. ^Smerdon, M. J., ^Wyrick, J. J., and **Delaney, S.** A Half Century of Exploring DNA Excision Repair in Chromatin. *J. Biol. Chem.* (2023) 299, 105118. [DOI: 10.1016/j.jbc.2023.105118](https://doi.org/10.1016/j.jbc.2023.105118)
46. *Rioux, K.L. and **Delaney, S.** Ionic strength modulates excision of uracil by SMUG1 from nucleosome core particles. *DNA Repair* (2023) 125, 103482. [DOI: 10.1016/j.dnarep.2023.103482](https://doi.org/10.1016/j.dnarep.2023.103482)
45. *Cook, J. C. and **Delaney, S.** The domino effect: Nucleosome dynamics and the regulation of base excision repair enzymes. *DNA* (2022) 2, 248. [DOI: 10.3390/dna2040018](https://doi.org/10.3390/dna2040018)

44. *Li, C., *Rioux, K.L, and **Delaney, S.** Histone variants H3.3 and H2A.Z/H3.3 facilitate excision of uracil from nucleosome core particles. (2022) *DNA Repair* 116, 103355. [DOI: 10.1016/j.dnarep.2022.103355](https://doi.org/10.1016/j.dnarep.2022.103355)
43. *Biechele-Speziale, D.J., *Sutton, T.B., and **Delaney, S.** Obstacles and Opportunities for Base Excision Repair in Chromatin. *DNA Repair* (2022) 116, 103345. [DOI: 10.1016/j.dnarep.2022.103345](https://doi.org/10.1016/j.dnarep.2022.103345)
42. *Tarantino, M. E. and **Delaney, S.** Kinetic Analysis of the Effect of N-terminal Acetylation in Thymine DNA Glycosylase. *Biochemistry* (2022) 61, 895-908. [DOI: 10.1021/acs.biochem.1c00823](https://doi.org/10.1021/acs.biochem.1c00823)
41. *Caffrey, P.J. and **Delaney, S.** Nucleosome core particles lacking H2B or H3 tails are altered structurally and have differential base excision repair fingerprints. *Biochemistry* (2021) 60, 210-218. [DOI: 10.1021/acs.biochem.0c00877](https://doi.org/10.1021/acs.biochem.0c00877)
40. *Rioux, K.L. and **Delaney, S.** 1,*N*⁶-ethenoadenine: From molecular to biological consequences. *Chem. Res. Toxicol.* (2020) 33, 2688-2698. Invited review, peer reviewed. [DOI:10.1021/acs.chemrestox.0c00326](https://doi.org/10.1021/acs.chemrestox.0c00326)
39. *Caffrey, P.J., #Kher, R., %Bian, K., ^Li, D., and **Delaney, S.** Comparison of the base excision and direct reversal repair pathways for correcting 1,*N*⁶-ethenoadenine in strongly positioned nucleosome core particles. (2020) *Chem. Res. Toxicol.* 33, 1888-1896. [DOI:10.1021/acs.chemrestox.0c00089](https://doi.org/10.1021/acs.chemrestox.0c00089). **(ACS Editors' Choice Article for May 1, 2020) (Journal cover)**
38. *Caffrey, P.J. and **Delaney, S.** (2020) Chromatin and other obstacles to base excision repair: Potential roles in carcinogenesis. *Mutagenesis.* 35, 39-50. Special Issue on the Implications of DNA Damage on Human Diseases. Invited review, peer reviewed. [DOI:10.1093/mutage/gez029](https://doi.org/10.1093/mutage/gez029)
37. *Kennedy, E.E., *Li, C., and **Delaney, S.** (2019) The global repair profile of human alkyladenine DNA glycosylase on nucleosomes reveals DNA packaging effects. *ACS Chem. Biol.* 14, 1687-1692. [DOI: 10.1021/acscchembio.9b00263](https://doi.org/10.1021/acscchembio.9b00263)
36. *Li, C. and **Delaney, S.** (2019) Challenges for base excision repair enzymes: Acquiring access to damaged DNA in chromatin. Book chapter in *The Enzymes: DNA Repair* Vol 45, 27-57, ISSN 1874-6047, Co-editors: Prof. Linlin Zhou, Prof. Laurie S. Kaguni; Publisher: Elsevier). [DOI: 10.1016/bs.enz.2019.07.002](https://doi.org/10.1016/bs.enz.2019.07.002)
35. *Li, C., and **Delaney, S.** (2019) Histone H2A variants facilitate DNA repair in chromatin. *ACS Chem. Biol.* 4, 1041-1050. [DOI: 10.1021/acscchembio.9b00229](https://doi.org/10.1021/acscchembio.9b00229) **(ACS Editors' Choice Article for May 7, 2019)**
34. *Tarantino, M.E., %Dow, B., ^Drohat, A.C., and **Delaney, S.** (2018) Nucleosomes and the three glycosylases: High, medium, and low levels of excision by the uracil DNA glycosylase superfamily. *DNA Repair* 72, 56-63. [DOI: 10.1016/j.dnarep.2018.09.008](https://doi.org/10.1016/j.dnarep.2018.09.008)
33. *Kennedy, E.E., *Caffrey, P.J., and **Delaney, S.** (2018) Initiation of base excision repair in chromatin. *DNA Repair* 71, 87-92. Invited review, peer reviewed. [DOI: 10.1016/j.dnarep.2018.08.011](https://doi.org/10.1016/j.dnarep.2018.08.011)
32. *Bilotti, K., *Tarantino, M. E., and **Delaney, S.** (2018) Human oxoguanine glycosylase 1 removes solution accessible 8-oxo-7,8-dihydroguanine lesions from globally substituted nucleosomes except in the dyad region. *Biochemistry* 57, 1436-1439. [DOI: 10.1021/acs.biochem.7b01125](https://doi.org/10.1021/acs.biochem.7b01125) **(Journal cover)**
31. *Bilotti, K., *Kennedy, E.E., *Li, C., and **Delaney, S.** (2017) Human OGG1 activity in nucleosomes is facilitated by transient unwrapping of DNA and is influenced by the local histone environment. *DNA Repair* 59, 1-8. [DOI: 10.1016/j.dnarep.2017.08.010](https://doi.org/10.1016/j.dnarep.2017.08.010)
30. *Olmon, E.D. and **Delaney, S.** (2017) Differential ability of five DNA glycosylases to recognize and repair damage on nucleosomal DNA. *ACS Chem. Biol.* 12, 692-701. [DOI: 10.1021/acscchembio.6b00921](https://doi.org/10.1021/acscchembio.6b00921) **(Journal cover)**
29. *Huang, J. and **Delaney, S.** (2016) Unique biophysical properties of repetitive DNA. *J. Phys. Chem. B* 120, 4195-4203. [DOI: 10.1021/acs.jpccb.6b00927](https://doi.org/10.1021/acs.jpccb.6b00927)
28. *Huang, J., *Yennie, C.J., and **Delaney, S.** (2015) Klenow fragment discriminates against the incorporation of the hyperoxidized dGTP lesion spiroiminodihydantoin into DNA. *Chem. Res. Toxicol.* 28, 2325-2333. [DOI: 10.1021/acs.chemrestox.5b00330](https://doi.org/10.1021/acs.chemrestox.5b00330)
27. #Tarantino, M.E., *Bilotti, K., *Huang, J. and **Delaney, S.** (2015) Rate-determining step of flap endonuclease 1 (FEN1) reflects a kinetic bias against long flaps and trinucleotide repeat sequences. *J. Biol. Chem.* 290, 21154-21162. [DOI: 10.1074/jbc.M115.666438](https://doi.org/10.1074/jbc.M115.666438)

26. *Schermerhorn, K.M. and **Delaney, S.** (2014) A Chemical and kinetic perspective of base excision repair of DNA. *Acc. Chem. Res.* 47, 1238-1246. Invited review, peer reviewed. [DOI: 10.1021/ar400275a](https://doi.org/10.1021/ar400275a)
25. *Volle C.B. and **Delaney S.** (2013) AGG/CCT interruptions affect nucleosome formation and positioning of healthy-length CGG/CCG triplet repeats. *BMC Biochemistry* 14, 1-12. [DOI: 10.1186/1471-2091-14-33](https://doi.org/10.1186/1471-2091-14-33)
24. *Schermerhorn, K.M. and **Delaney, S.** (2013) Transient-state kinetics of apurinic/aprimidinic (AP) endonuclease 1 acting on an authentic AP site and commonly-used substrate analogs: The effect of diverse metal ions and base mismatches. *Biochemistry* 52, 7669-7677. [DOI: 10.1021/bi401218r](https://doi.org/10.1021/bi401218r)
23. *Volle, C.B. and **Delaney, S.** (2012) CAG/CTG repeats alter affinity for the histone core and positioning of DNA in the nucleosome. *Biochemistry* 51, 9814-9825. [DOI: 10.1021/bi301416v](https://doi.org/10.1021/bi301416v)
22. *Yennie, C.J. and **Delaney, S.** (2012) Thermodynamic consequences of the hyperoxidized guanine lesion guanidinohydantoin in duplex DNA. *Chem. Res. Toxicol.* 25, 1732-1739. [DOI: 10.1021/tx300190a](https://doi.org/10.1021/tx300190a)
21. *Volle, C.B., *Jarem, D.A., and **Delaney, S.** (2012) Trinucleotide repeat DNA alters structure to minimize the thermodynamic impact of 8-oxo-7,8-dihydroguanine. *Biochemistry* 51, 52-62. [DOI: 10.1021/bi201552s](https://doi.org/10.1021/bi201552s)
20. **Delaney, S.**, *Jarem, D.A., *Volle, C.B., and *Yennie, C.J. (2012) Chemical and biological consequences of oxidatively damaged guanine in DNA. *Free Rad. Res.* 46, 420-441. Invited review, peer reviewed. [DOI: 10.3109/10715762.2011.653968](https://doi.org/10.3109/10715762.2011.653968)
19. *Jarem, D.A. and **Delaney, S.** (2011) Premutation *huntingtin* allele adopts a non-B conformation and contains a hot spot for DNA damage. *Biochem. Biophys. Res. Comm.* 416, 146-152. [DOI: 10.1016/j.bbrc.2011.11.013](https://doi.org/10.1016/j.bbrc.2011.11.013)
18. *Ávila Figueroa, A., #Cattie, D.A., and **Delaney, S.** (2011) A small unstructured nucleic acid disrupts a trinucleotide repeat hairpin. *Biochem. Biophys. Res. Comm.* 413, 532-536. [DOI: 10.1016/j.bbrc.2011.08.130](https://doi.org/10.1016/j.bbrc.2011.08.130)
17. *Jarem, D.A., #Wilson, N.R., *Schermerhorn, K.M., and **Delaney, S.** (2011) Incidence and persistence of 8-oxo-7,8-dihydroguanine within a hairpin intermediate exacerbates a toxic oxidation cycle associated with trinucleotide repeat expansion. *DNA Repair* 10, 887-896. [DOI: 10.1016/j.dnarep.2011.06.003](https://doi.org/10.1016/j.dnarep.2011.06.003)
16. %Cooper, D.C., *Yennie, C.J., %Morin, J.B., **Delaney, S.**, and ^Suggs, J.W. (2011) Development of a DNA-damaging ferrocene amino acid. *J. Organomet. Chem.* 696, 3058-3061. [DOI: 10.1016/j.jorganchem.2011.05.018](https://doi.org/10.1016/j.jorganchem.2011.05.018)
15. *Ávila Figueroa, A., #Cattie, D.A., and **Delaney, S.** (2011) Structure of even/odd trinucleotide repeat sequences modulates persistence of non-B conformations and conversion to duplex. *Biochemistry* 50, 4441-4450. [DOI: 10.1021/bi200397b](https://doi.org/10.1021/bi200397b)
14. *Jarem, D.A., #Huckaby, L.V., and **Delaney, S.** (2010) AGG Interruptions in (CGG)_n DNA repeat tracts modulate the structure and thermodynamics of non-B conformations *in vitro*. *Biochemistry* 49, 6826-6837. [DOI: 10.1021/bi1007782](https://doi.org/10.1021/bi1007782)
13. *Ávila Figueroa, A. and **Delaney, S.** (2010) Mechanistic studies of hairpin to duplex conversion for trinucleotide repeat sequences. *J. Biol. Chem.* 285, 14648-14657. [DOI: 10.1074/jbc.M109.061853](https://doi.org/10.1074/jbc.M109.061853)
12. *Jarem, D.A., #Wilson, N.R., and **Delaney, S.** (2009) Structure-dependent DNA damage and repair in a trinucleotide repeat sequence. *Biochemistry* 48, 6655-6663. [DOI: 10.1021/bi9007403](https://doi.org/10.1021/bi9007403)
 **Featured as a "Spotlight Article" in *Chemical Research in Toxicology* (2009) 22, 1497-1498. [DOI: 10.1021/tx9002403](https://doi.org/10.1021/tx9002403)

Publications from postdoctoral, graduate, and undergraduate research

11. **Delaney, S.**, Delaney, J.C., and Essigmann, J.M. (2007) Chemical-biological fingerprinting: Probing the properties of DNA lesions formed by peroxyxynitrite. *Chem. Res. Toxicol.* 20, 1718-1729.

10. Neeley, W.L., **Delaney, S.**, Alekseyev, Y.O., Jarosz, D.F., Delaney, J.C., Walker, G.C., and Essigmann, J.M. (2007) DNA polymerase V allows bypass of toxic guanine oxidation products *in vivo*. *J. Biol. Chem.* **282**, 12741-12748.
9. **Delaney, S.**, Neeley, W.L., Delaney, J.C., and Essigmann, J.M. (2007) The substrate specificity of MutY for hyperoxidized guanine lesions *in vivo*. *Biochemistry* **46**, 1448-1455.
8. **Delaney, S.**, Yoo, J., Stemp, E.D., and Barton, J.K. (2004) Charge equilibration between two distinct sites in double helical DNA. *Proc. Natl. Acad. Sci. U.S.A.* **101**, 10511-10516.
7. **Delaney, S.** and Barton, J.K. (2003) Long-range DNA charge transport. *J. Org. Chem.* **68**, 6475-6483. Invited review, peer reviewed
6. Yoo, J., **Delaney, S.**, Stemp, E.D., and Barton, J.K. (2003) Rapid radical formation by DNA charge transport through sequences lacking intervening guanines. *J. Am. Chem. Soc.* **125**, 6640-6641.
5. **Delaney, S.** and Barton, J.K. (2003) Charge transport in DNA duplex/quadruplex conjugates. *Biochemistry* **42**, 14159-14165.
4. **Delaney, S.**, Pascaly, M., Bhattacharya, P.K., #Han, K., and Barton, J.K. (2002) Oxidative damage by ruthenium complexes containing the dipyridophenazine ligand or its derivatives: A focus on intercalation. *Inorg. Chem.* **41**, 1966-1974.
3. Choi, S., #**Delaney, S.**, #Orbai, L., #Padgett, E.J., and #Hakemian, A.S. (2001) A platinum(IV) complex oxidizes guanine to 8-oxo-guanine in DNA and RNA. *Inorg. Chem.* **40**, 5481-5482.
2. Choi, S., #Mahalingaiah, S., #**Delaney, S.**, #Neale, N.R., and #Masood, S. (1999) Substitution and reduction of platinum(IV) complexes by a nucleotide, guanosine 5'-monophosphate. *Inorg. Chem.* **38**, 1800-1805.
1. Choi, S., #Filotto, C., #Bisanzo, M., #**Delaney, S.**, #Lagasee, D., #Whitworth, J.L., #Jusko, A., #Li, C.R., #Wood, N.A., #Willingham, J., #Schwenker, A., and #Spaulding, K. (1998) Reduction and anticancer activity of platinum(IV) complexes. *Inorg. Chem.* **37**, 2500-2504.