SARAH DELANEY, Ph.D.

Brown University
Senior Associate Dean of Academic Affairs, Graduate School
Professor 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

2024-present	Member, Brown RNA Center Brown University, Providence, RI
2022-present	Senior Associate Dean of Academic Affairs, Graduate School Brown University, Providence, RI
2022-present	Member, Legorreta Cancer Center Brown University, Providence, RI
2020-present	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

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 *ACS Editors' Choice* (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)

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
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
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
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
43. *[1]Biechele-Speziale, D.J., [1]Sutton, T.B., and **Delaney, S.** Obstacles and Opportunities for Base Excision Repair in Chromatin. *DNA Repair* (2022) 116, 103345. [1]Co-first authors (in alphabetical order). DOI: 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
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
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
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. **(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
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/acschembio.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
35. *Li, C., and **Delaney, S.** (2019) Histone H2A variants facilitate DNA repair in chromatin. *ACS Chem. Biol. 4*, 1041-1050. DOI: 10.1021/acschembio.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
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
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 **(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
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/acschembio.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.jpcb.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
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
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
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
24. *Schermerhorn, K.M. and **Delaney, S.** (2013) Transient-state kinetics of apurinic/apyrimidinic (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
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
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
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
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
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

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
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
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
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
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
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
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

    ***Featured as a "Spotlight Article" in Chemical Research in Toxicology (2009) 22, 1497-1498.* DOI: 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 peroxynitrite. *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.