

Ralph Elliot Kleiner

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EDUCATION

May 2011 Harvard University, Cambridge, MA
Ph.D. in Chemistry

June 2005 Princeton University, Princeton, NJ
A.B. in Chemistry, *Cum Laude*
Certificate in Applied and Computational Mathematics

APPOINTMENTS

2017-present Associated Faculty in Molecular Biology, Princeton University
2016-present Assistant Professor of Chemistry, Princeton University
2014-2016 Revson Foundation Biomedical Fellow, The Rockefeller University
2011-2014 Damon Runyon Postdoctoral Fellow, The Rockefeller University

TRAINING

2011-2016 The Rockefeller University, Laboratory of Chemistry and Cell Biology
(Postdoctoral) Principal Investigator: Professor Tarun M. Kapoor
Investigated readers of DNA-damage-associated histone mark γ H2AX using chemical proteomics, biochemistry, and cell biology; developed methods for generating site-specifically modified tubulin and microtubules

2005-2011 Harvard University, Department of Chemistry and Chemical Biology
(Ph.D.) Principal Investigator: Professor David R. Liu
Developed strategies for the synthesis and selection of DNA-templated synthetic polymers and small molecules; discovered highly selective Src kinase inhibitors and the first physiologically active inhibitor of Insulin-Degrading Enzyme (IDE) from a DNA-templated macrocycle library

2002-2005 Princeton University, Department of Chemistry and Department of
(A.B.) Chemical Engineering
Principal Investigators: Professor Michael H. Hecht, Professor Christodoulos Floudas
Conducted research on the design and biophysical analysis of *de novo* four-helix bundle proteins.

AWARDS

2023 International Chemical Biology Society (ICBS) Young Chemical Biologist Award
2023 Kavli Fellow
2019 NSF CAREER Award
2019 Alfred P. Sloan Foundation Research Fellowship
2017 Sidney Kimmel Foundation Scholar Award
2016 Damon Runyon Dale F. Frey Award for Breakthrough Scientists

2014	Revson Foundation Fellowship in Biomedical Science
2012	Damon Runyon Cancer Research Foundation Postdoctoral Fellowship
2001	National Merit Scholar

PUBLICATIONS

1. "Chemical approaches to investigate post-transcriptional RNA regulation" **Kleiner, R.E.** *ACS Chem. Biol.* (2023) <https://doi.org/10.1021/acscchembio.3c00406>.
2. "Inhibition of nucleolar transcription by oxaliplatin involves ATM/ATR kinase signaling" Nechay, M.; Wang, D.; **Kleiner, R.E.** *Cell Chem. Biol.* (2023) <https://doi.org/10.1016/j.chembiol.2023.06.010>.
3. "Profiling dynamic RNA-protein interactions using small molecule-induced RNA editing" Seo, K.W.; **Kleiner, R.E.** *Nat. Chem. Biol.* (2023) <https://doi.org/10.1038/s41589-023-01372-9>.
4. "Global Discovery of Covalent Modulators of Ribonucleoprotein Granules" Ciancone, A.M.*; Seo, K.W.*; Chen, M.*; Borne, A.L.; Libby, A.H.; Bai, D.L.; **Kleiner, R.E.***; and Hsu*, K.L. *J. Am. Chem. Soc.* **145**, 11056-66 (2023).
5. "Tracking chromatin state changes using nanoscale photo-proximity labeling" Seath, C.P.; Burton, A.J.; Sun, X.; Lee, G.; **Kleiner, R.E.**; MacMillan, D.W.C.; Muir, T.W. *Nature* **616**, 574-580 (2023).
6. "Live-cell RNA imaging with metabolically incorporated fluorescent nucleosides" Wang, D.; Shalamberidze, A.; Arguello, A.E.; Purse, B.; **Kleiner, R. E.** *J. Am. Chem. Soc.* **144**, 14647-14656 (2022).
7. "Reactivity-dependent profiling of RNA 5-methylcytidine dioxygenases" Arguello, A.E.; Li, A.; Sun, X.; Eggert, T.W.; Mairhofer, E.; **Kleiner, R.E.** *Nat. Commun.* **13**, 4176 (2022).
8. "Chemical Method to Sequence 5-Formylcytosine on RNA" Li, A.; Sun, X.; Arguello, A.E.; **Kleiner, R.E.** *ACS Chem. Biol.* **17**, 3, 503-508 (2022).
9. "Interrogating the Transcriptome with Metabolically Incorporated Ribonucleosides" **Kleiner, R.E.** *Mol. Omics.* **17**, 833-41 (2021).
10. "Activity-based RNA-modifying enzyme probing reveals DUS3L-mediated dihydrouridylation" Dai, W.; Li, A.; Yu, N.J.; Nguyen, T.; Leach, T.W.; Wuhr, M.; **Kleiner, R.E.** *Nat. Chem. Biol.* **17**, 1178-1187 (2021).
11. "A neural m6A/Ythdf pathway is required for learning and memory in Drosophila" Kan, L.; Ott, S.; Joseph, B.; Park, E.S.; Dai, W.; **Kleiner, R.E.**; Claridge-Chang, A.; Lai, E.C. *Nat. Commun.* **12**, 1458 (2021).
12. "Mechanisms of Epitranscriptomic Gene Regulation" Seo, K.W.; **Kleiner, R.E.** *Biopolymers* doi: 10.1002/bip.23403 (2020).
13. "Cell- and Polymerase-Selective Metabolic Labeling of Cellular RNA with 2'-Azidocytidine" Wang, D.; Zhang, Y.; **Kleiner, R. E.** *J. Am. Chem. Soc.* **142**, 14417-14421 (2020).
14. "YTHDF2 Recognition of N¹-methyladenosine (m¹A)-modified RNA Is Associated with Transcript Destabilization" Seo, K. W.; **Kleiner, R. E.** *ACS Chem. Biol.* **15**, 132-139 (2020).
15. "High-throughput approaches to profile protein-RNA interactions" Nechay, M.; **Kleiner, R. E.** *Curr. Opin. Chem. Biol.* **54**, 37-44 (2019).
16. "In vitro selection with a site-specifically modified RNA library reveals the binding preferences of N⁶-methyladenosine (m⁶A) reader proteins" Arguello, A. E.; Leach, R. W.; **Kleiner, R. E.** *Biochemistry* **58**, 3386-3395 (2019).
17. "A Metabolic Engineering Approach to Incorporate Modified Pyrimidine Nucleosides into Cellular RNA" Zhang, Y.; **Kleiner, R. E.** *J. Am. Chem. Soc.* **141**, 3347-3351 (2019).
18. "A Photocrosslinking-Based RNA Chemical Proteomics Approach to Profile m⁶A-Regulated Protein-RNA Interactions" Arguello, A. E.; Srikumar, T.; **Kleiner, R. E.** *Curr. Protoc. Nucleic Acid Chem.* **75**, e69 (2018).
19. "Reading the RNA Code" **Kleiner, R. E.** *Biochemistry* **57**, 11-12 (2018).

20. "RNA Chemical Proteomics Reveals the N⁶-Methyladenosine (m⁶A)-Regulated Protein-RNA Interactome" Arguello, A. E.; DeLiberto, A. N.; **Kleiner, R. E.** *J. Am. Chem. Soc.* **139**, 17249-17252 (2017).

Publications before Princeton:

21. "A Chemical Proteomics Approach to Reveal Direct Protein-Protein Interactions in Living Cells" **Kleiner, R. E.**; Hang, L. E.; Molloy, K. R.; Chait, B. T.; Kapoor, T. M. *Cell Chem. Biol.* **25**, 110-120.e3 (2018).
22. "Structural and Biochemical Basis for Intracellular Kinase Inhibition by Src-specific Peptidic Macrocycles" Aleem, S. U.*; Georghiou, G.*; **Kleiner, R. E.***; Guja, K. E.; Craddock, B. P.; Lyczek, A.; Chan, A. I.; Garcia-Diaz, M.; Miller, W. T.; Liu, D. R.; Seeliger, M. A. *Cell Chem. Biol.* **23**, 1103-1112 (2016).
23. "Mutations in Human Tubulin Proximal to the Kinesin-Binding Site Alter Dynamic Instability at Microtubule Plus- and Minus-Ends" Ti, S. C.; Pamula, M. C.; Howes, S. C.; Duellberg, C.; Cade, N. I.; **Kleiner, R. E.**; Forth, S.; Surrey, T.; Nogales, E.; Kapoor, T. M. *Dev. Cell* **4**, 72-84 (2016).
24. "Chemical Proteomics Reveals a γ H2AX-53BP1 Interaction in the DNA Damage Response" **Kleiner, R. E.**; Verma, P.; Molloy, K. R.; Chait, B. T.; Kapoor, T. M. *Nat. Chem. Biol.* **10**, 807-814 (2015).
25. "Anti-Diabetic Activity of Insulin-Degrading Enzyme Inhibitors Mediated by Multiple Hormones" Maianti, J. P.; McFedries, A.; Foda, Z. H.; **Kleiner, R. E.**; Du, X.; Lessring, M.; Tang, W.; Charron, M. J.; Seeliger, M. A.; Saghatelian, A.; Liu, D. R.; *Nature* **511**, 94-98 (2014).
26. "Bumping Up Kinase Activity with an ATP-Derived Neo-Substrate" **Kleiner, R. E.**; Kapoor, T. M. *Cell* **154**, 716-718 (2013).
27. "Site-Specific Chemistry on the Microtubule Polymer" **Kleiner, R. E.**; Ti, S. C.; Kapoor, T. M. *J. Am. Chem. Soc.* **135**, 12520-12523 (2013).
28. "Highly specific, bisubstrate-competitive Src inhibitors from DNA-templated macrocycles" Georghiou, G.*; **Kleiner, R. E.***; Pulkoski-Gross, M.; Liu, D. R.; Seeliger, M. A. *Nat. Chem. Biol.* **8**, 366-374 (2012).
29. "Small-Molecule Discovery from DNA-Encoded Chemical Libraries" **Kleiner, R. E.***; Dumelin, C. E.*; Liu, D. R. *Chem. Soc. Rev.* **40**, 5707-5717 (2011).
30. "In Vitro Selection of a DNA-Templated Small-Molecule Library Reveals a Class of Macrocyclic Kinase Inhibitors" **Kleiner, R. E.**; Dumelin, C. E.; Tiu, G. C.; Sakurai, K.; Liu, D. R. *J. Am. Chem. Soc.* **132**, 11779-11791 (2010).
31. "An In Vitro Translation, Selection and Amplification System for Peptide Nucleic Acid" Brudno, Y.; Birnbaum, M. E.; **Kleiner, R. E.**; Liu, D. R. *Nat. Chem. Biol.* **6**, 148-155 (2010).
32. "DNA-Templated Polymerization of Side-Chain-Functionalized Peptide Nucleic Acid Aldehydes" **Kleiner, R. E.**; Brudno, Y.; Birnbaum, M. E.; Liu, D. R. *J. Am. Chem. Soc.* **130**, 4646-4659 (2008).
33. "An Intein-Based Genetic Selection Enables Construction of a High-Quality Library of Binary Patterned De Novo Sequences" Bradley, L. H.; **Kleiner, R. E.**; Wang, A. F.; Hecht, M. H.; Wood, D.W. *Protein Eng. Des. Sel.* **18**, 201-207 (2005).

INVITED SEMINARS

1. Department of Biochemistry and Molecular Biology, Thomas Jefferson University, January 2024, Philadelphia, PA.
2. Therapeutic Innovation Center, Baylor College of Medicine, November 2023, Houston, TX.
3. Cancer Pharmacology Program, Rutgers Cancer Institute of New Jersey, May 2023, virtual
4. Department of Chemistry, University of California, Davis, April 2023, Davis, CA
5. Department of Chemistry, Yale University, April 2023, New Haven, CT.
6. Department of Chemistry, University of California, Berkeley, February 2023, Berkeley, CA.
7. Department of Chemistry, Columbia University, February 2023, New York, NY.

8. Department of Chemistry, University of Chicago, January 2023, Chicago, IL.
9. Department of Chemistry, University of Pennsylvania, January 2023, Philadelphia, PA.
10. Chemical Biology Program, Memorial Sloan Kettering Cancer Center, December 2022, New York, NY.
11. Department of Chemistry, Stanford University, November 2022, Palo Alto, CA
12. Molecular Discovery Seminar Series, National Cancer Institute, November 2022, Frederick, MD.
13. Department of Biochemistry, University of Colorado, Boulder, November 2022, Boulder, CO.
14. Department of Chemistry, Harvard University, October 2022, Cambridge, MA.
15. Department of Pharmacological Sciences, Stony Brook University, October 2022, Stony Brook, NY.
16. Department of Chemistry, The Scripps Research Institute, October 2022, San Diego, CA.
17. Department of Chemistry and Biochemistry, University of California, San Diego, October 2022, San Diego, CA.
18. Department of Chemistry, Boston College, September 2022, Chestnut Hill, MA
19. Department of Chemistry, New York University, September 2022, New York, NY
20. Department of Chemistry, Cornell University, May 2022, Ithaca, NY
21. Department of Chemistry, University of California, Irvine, April 2022, Irvine, CA
22. Department of Materials Science and Chemical Engineering, State University of New York, Stony Brook, March 2022, virtual seminar
23. Department of Chemistry, University of Michigan, February 2022, Ann Arbor, MI
24. RNA Institute, University of Albany, February 2022, virtual seminar
25. Epigenetics Consortium, University of Minnesota, April 2021, virtual seminar
26. Department of Chemistry, University of the Sciences, January 2021, virtual seminar
27. Emerging Science and Innovation, Pfizer, January 2021, virtual seminar
28. Department of Pharmacology, Physiology and Neuroscience, Rutgers New Jersey Medical School, May 2020 (rescheduled), Newark, NJ
29. Cancer Pharmacology Research Program, Rutgers Cancer Institute of New Jersey, November 2019, New Brunswick, NJ
30. Chemical Biology Interface Summer Retreat, Perelman School of Medicine, University of Pennsylvania, July 2019, Philadelphia, PA
31. Center for Advanced Biotechnology and Medicine, Rutgers University, December 2018, Piscataway, NJ

CONFERENCE PRESENTATIONS

1. Oral Presentation. *Gordon Research Conference on RNA Editing and Modification*, March 2023, Ventura, CA.
2. Oral Presentation. *Kavli Frontiers of Science Symposium*, March 2023, Irvine, CA.
3. Oral Presentation. *Telluride Science Research Center Workshop on Nucleic Acid Chemistry*, July 2022, Telluride, CO.
4. Oral Presentation. *Gordon Research Conference on Bioorganic Chemistry*, June 2022, Andover, NH
5. Oral Presentation. *Symposium on Chemistry of Nucleic Acid Components*, June 2022, Cesky Krumlov, Czech Republic.
6. Oral Presentation. *American Society for Biochemistry and Molecular Biology*, April 2022, Philadelphia, PA.
7. Oral Presentation. *American Chemical Society National Meeting*, March 2022, Hybrid Meeting
8. Oral Presentation. *Pacificchem*, December 2021, Virtual Meeting
9. Oral Presentation. *Discovery on Target*, September 2021, Boston, MA
10. Oral Presentation. *Discovery on Target*, September 2020, Virtual Meeting
11. Oral Presentation. *American Chemical Society National Meeting*, August 2020, Virtual Meeting

12. Oral Presentation. *Symposium on Chemistry of Nucleic Acid Components*, June 2020 (rescheduled), Cesky Krumlov, Czech Republic.
13. Oral Presentation. *Gordon Research Conference on Bioorganic Chemistry*, June 2020 (rescheduled), Andover, NH
14. Oral Presentation. *American Chemical Society National Meeting*, August 2019, San Diego, CA
15. Oral Presentation. *Gordon Research Conference on Nucleosides, Nucleotides and Oligonucleotides*, June 2019, Newport, RI.
16. Oral Presentation. *Annual Meeting of the RNA Society*, June 2019, Krakow, Poland.
17. Oral Presentation. *Gordon Research Conference on RNA Editing*, March 2019, Lucca, Italy.
18. Oral Presentation. *American Chemical Society National Meeting*, August 2018, Boston, MA.

ISSUED U.S. PATENTS

1. "Macrocyclic kinase inhibitors and uses thereof" Liu, D. R.; **Kleiner, R. E.** U.S. Patent No. 8,975,232
2. "Macrocyclic insulin-degrading enzyme (IDE) inhibitors and uses thereof" Liu, D. R.; Maianti, J. P.; Saghatelian, A.; **Kleiner, R. E.** U.S. Patent No. 9,610,322

TRAINEES

Ph.D. students

2022-present Dhruv Dhingani
2022-present Vincent Rinaolo
2021-present Jianwei Wang
2019-present Xuemeng Sun, General Exam Pass
2019-present Jingwei Ji, General Exam Pass
2019-present Tanner Eggert, General Exam Pass
2018-present Nathan Yu, General Exam Pass
2018 Joy Nyaanga, Completed Master's Thesis
2017-2020 Yu Zhang, General Exam Pass
2017-2023 Kyung Seo, Ph.D.
2017-2023 Wei Dai, Ph.D.
2017-2022 Misha Nechay, Ph.D
2016-2022 A. Emilia Arguello, Ph.D.

Postdoctoral fellows

2021-2023 Muhan He, Ph.D.
2020-2021 Xiaojia Si, Ph.D.
2020-2021 Uday Ghanty, Ph.D.
2020-2021 Elisabeth Mairhofer, Ph.D.
2019-2022 Ang Li, Ph.D.
2018-present Danyang Wang, Ph.D.
2017-2019 Jennifer Villers, Ph.D.

Princeton undergraduate students, independent work

2023-present Neal Redding, MOL, junior paper and senior thesis
2022-2023 Yaakov Zinberg, MOL, junior paper and senior thesis
2021-2022 Sophia Goldberg, CHM, junior paper and senior thesis
2019-2020 Rohan Shah, MOL, junior paper and senior thesis
2018-2019 Saumya Umashankar, CHM, junior paper and senior thesis
2018 Jacqueline Dragon, CHM, junior paper

Princeton undergraduate students, summer research

2022	Sebastian Castro, LEACH summer program
2021	Cindy Cheng, LEACH summer program
2020	Nancy Tran, LEACH summer program
2019	Sophia Goldberg, LEACH summer program
2018	Sarah Perkins, LEACH summer program
2017	Jared Shulkin, LEACH summer program

TEACHING EXPERIENCE

Spring 2023	Instructor, CHM 541: Chemical Biology II, Princeton University
Fall 2022	Instructor, CHM 538: Topics in Biological Chemistry, Princeton University
Spring 2022	Instructor, CHM 541: Chemical Biology II, Princeton University
Fall 2021	Instructor, CHM 538: Topics in Biological Chemistry, Princeton University
Fall 2020	Instructor, CHM 538: Topics in Biological Chemistry, Princeton University
Spring 2020	Instructor, CHM 541: Chemical Biology II, Princeton University
Fall 2019	Instructor, CHM 538: Topics in Biological Chemistry, Princeton University
Spring 2019	Instructor, CHM 541: Chemical Biology II, Princeton University
Fall 2018	Instructor, CHM 538: Topics in Biological Chemistry, Princeton University
Spring 2018	Instructor, CHM 541: Chemical Biology II, Princeton University
Fall 2017	Instructor, CHM 538: Topics in Biological Chemistry, Princeton University
Spring 2017	Instructor, CHM 541: Chemical Biology II, Princeton University
Fall 2015	Teaching Fellow, TPCB Principles of Chemical Biology, The Rockefeller University
Spring 2006	Teaching Fellow, Chem 27: Organic Chemistry of Life, Harvard University
Fall 2006	Teaching Fellow, Chem 280: Macromolecular Structure and Function, Harvard University

SERVICE ACTIVITIES

Princeton University service

2023-2024	Princeton Ludwig Branch Faculty Search Committee
2023	Research Mentor for Visiting Faculty Research Partnership (Prof. Graham Chakafana from Hampton University), Department of Chemistry
2022-2023	Faculty Search Committee, Department of Chemistry
2021-2022	Faculty Search Committee, Princeton Bioengineering Initiative
2020-present	Graduate Studies Committee, Department of Chemistry
2019-2022	Committee on Examinations and Standing
2019-present	Organized Chemical Biology Seminar Series, Department of Chemistry
2016-2020	Organized Chemical Biology Supergroup
2016-present	Graduate Admissions Committee, Department of Chemistry
2016-present	Faculty Fellow, Forbes College
2016-present	Served on 25 FPO committees (including 4 of my own students) – Liye Chen, Aishan Zhao, Krupa Jani, Josef Gramespacher, Eva Ge, Nyssa Emerson, Lina Feng, Sara Daley, Alessio Caruso, Hugh Wilson, Max Watkins, Michael Wang, Emilia Arguello, Brad Lukasak, Kenzie Clark, Misha Nechay, Etienne Gallant, James Oakley, Wei Dai, Kyung Seo, Rurun Wang, Geoffrey Dann, Adam Stevens, Zhaoyue Zhang, Leslie Beh
2016-present	Served on 40 Ph.D. General Exam Committees (including 9 of my own students)
2016-2022	Department Retreat Organizing Committee, Department of Chemistry
2016-2022	Research Mentor for LEACH Summer Research Program, Department of Chemistry
2004-2005	Committee on the Course of Study

Curriculum Vitae, Ralph E. Kleiner

2004-2005 President's Award for Distinguished Teaching Selection Committee

Other professional activities

2022-2023 Guest editor for *RSC Chemical Biology* themed collection: The Epitranscriptome
2022 *Ad hoc* member, NIH Synthetic and Biological Chemistry A (SBCA) Study Section
2016-present Grant Reviewer for National Science Foundation (USA), European Research Council, Deutsche Forschungsgemeinschaft (Germany), National Science Centre (Poland), KU Leuven Research Council (Belgium)
2016-present Reviewer for *Nature Chemical Biology*, *Nature Chemistry*, *Nature Structural and Molecular Biology*, *Nature Reviews Genetics*, *Nucleic Acids Research*, *Journal of the American Chemical Society*, *ACS Chemical Biology*, *ACS Biochemistry*, *Angewandte Chemie*, *RSC Chemical Biology*, *ChemBioChem*
2016-present RNA Society, Member
2016-present American Chemical Society, Member

CURRENT SUPPORT

Princeton University Innovation Fund for New Ideas in the Natural Sciences

Kleiner (PI) 07/01/2023-06/30/2025

"Can post-transcriptional RNA pyrimidine modifications protect cells from UV photodamage?"
\$200,000

Rutgers Cancer Institute-Princeton Ludwig Branch Pilot award

Kleiner (PI) 06/14/2022-12/31/2023

"Cancer-associated epitranscriptomic reprogramming through RNA dihydrouridine modification"
\$100,000

Princeton Ludwig Branch Seed Grant

Kleiner (PI) 01/01/2023-12/31/2023

"Metabolism of modified epigenetic nucleosides in cancer cells"
\$100,000

Princeton Biocondensate Program

Kleiner (Co-PI) 09/01/2021-08/31/2023

"Interrogating the role of RNA and RNA modifications at DNA damage foci"
\$50,000

National Science Foundation CAREER MCB-1942565

Kleiner (PI) 12/15/2019-11/30/2024

"CAREER: A Chemoproteomic Strategy to Decipher Epitranscriptomic Pyrimidine Modifications"
\$1,000,000

National Institutes of Health R01 GM132189

Kleiner (PI) 04/01/2019-03/31/2024

"Chemical Approaches to Illuminate the Epitranscriptome"
\$1,000,000

COMPLETED SUPPORT

Gordon and Betty Moore Foundation

Kleiner (Co-PI) 01/01/2019-12/31/2022

"Electron Transfer Through Entrained DNA Strands"

Curriculum Vitae, Ralph E. Kleiner

\$297,022

Princeton Catalysis Initiative

Kleiner (Co-PI) 07/01/2020-6/30/2022

“Profiling the RNA modification landscape of SARS-CoV-2”

\$60,000

Sloan Foundation Research Fellowship

Kleiner (PI) 09/15/2019-09/14/2021

“Chemical Approaches to Illuminate Nucleic Acid Biology”

\$70,000

Princeton Catalysis Initiative

Kleiner (Co-PI) 07/01/2019-06/30/2021

“Mapping the RNA epitranscriptome using nanopore sequencing and machine learning”

\$60,000

Princeton Catalysis Initiative

Kleiner (Co-PI) 07/01/2018-06/30/2020

\$60,000

Princeton University Innovation Fund for New Ideas in the Natural Sciences

Kleiner (PI) 04/01/2018-03/31/2020

“A ‘turn-on’ fluorescent probe to visualize interactions of the anti-cancer drug cisplatin with cellular RNA”

\$200,000

Sidney Kimmel Foundation Scholar Award

Kleiner (PI) 07/01/2017-06/30/2019

“Chemical Approaches to Investigate RNA Modifications in Cancer Progression and Therapy”

\$200,000

Damon Runyon Cancer Research Foundation Dale F. Frey Award for Breakthrough Scientists

Kleiner (PI) 09/01/2016-08/31/2018

“Using Chemistry to Illuminate DNA and RNA Damage Processes in Cells”

\$100,000