

Jonathan T. Szczepanski, Ph.D.

Texas A&M University
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EDUCATION

The Scripps Research Institute, Department of Chemistry, La Jolla, CA

- Postdoctoral Fellow with Professor Gerald F. Joyce, Nov. 2010 – June 2015
- Recipient of the NIH Ruth L. Kirschstein National Research Service Award (F32)

The Johns Hopkins University, Department of Chemistry, Baltimore, MD

- Graduate research with Professor Marc M. Greenberg, June 2005 – Nov. 2010
- Ph.D., Chemistry, Dec. 2010
- M.A., Chemistry, Oct. 2007
- Recipient of the Sonneborn Fellowship awarded for excellence in research

Thesis: *The reactivity of abasic DNA lesions within naked DNA and nucleosome core particles*

The University of Minnesota, Department of Chemistry, Minneapolis, MN

- Undergraduate research with Professor Steven R. Kass, Sept. 2003 – May 2005
- B.S., Chemistry, May 2005
- Recipient of the Heisig Research Fellowship
- Participant in the Undergraduate Research Opportunity Program

PROFESSIONAL EXPERIENCE

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|----------------|---------------------------------------------------------------------------------------------------------------|
| 2024 – present | Professor, Department of Chemistry, Texas A&M University, College Station, TX |
| 2024 – present | Professor, Department of Biochemistry and Biophysics (Affiliated), Texas A&M University, College Station, TX |
| 2024 – present | Associate Editor, <i>Chemical Engineering Journal</i> |
| 2022 – present | Chair, Graduate Admissions and Recruiting, Department of Chemistry, Texas A&M University, College Station, TX |
| 2021 – 2024 | Associate Professor, Department of Chemistry, Texas A&M University, College Station, TX |
| 2015 – 2021 | Assistant Professor of Chemistry, Texas A&M University, College Station, TX |
| 2015 – 2021 | CPRIT Scholar in Cancer Research, Texas A&M University, College Station, TX |

HONORS AND AWARDS

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|------|----------------------------------------------------------------------------------------------|
| 2023 | Japan Society for the Promotion of Sciences (JSPS) Fellow, University of Tokyo, Tokyo, Japan |
| 2020 | Montague-Center for Teaching Excellence Scholar, Texas A&M University |
| 2017 | NIH Maximizing Investigators' Research Award (MIRA) |
| 2015 | Cancer Prevention and Research Institute of Texas (CPRIT) Scholar |
| 2012 | NIH Ruth L. Kirschstein National Research Service Award |
| 2009 | Sonneborn Fellowship, Johns Hopkins University |
| 2007 | Ernest M. Marks Award, Johns Hopkins University |

2005 Undergraduate Research Opportunity Program, University of Minnesota
2005 Heisig Research Fellowship, University of Minnesota

PUBLICATIONS

46. Han, X.; Sczepanski, J. T.* An Expanded Substrate Scope for Cross-Chiral Ligation Enables Efficient Synthesis of Long L-RNAs. **2024**. (Submitted)
45. Yu, C.-H.; He, X.; Wang, Y.; Sczepanski, J. T.* A Comprehensive Interrogation of Mirror-Image L-RNA-Protein Interactions Reveals Key Mechanisms of L-RNA Cytotoxicity and a Chemical Mitigation Strategy. **2024**. (Submitted)
44. Shearer, V.; Yu, C.-H.; Han, X.; Sczepanski, J. T.* The Clinical Potential of L-Oligonucleotides: Challenges and Opportunities. **2024**. (In Revision)
43. Li, J.; Clark, V.; Yu, C. -H.; Scida, K.; Pellitero, M. A.; Zhong, W.; Demek, E.; Fountain, J.; Mahlum, J. D.; Haaland, R. E.; Carr, G. V.; Sczepanski, J. T.*; and Arroyo-Currás, N.* Monitoring HIV Antiretroviral Therapy via Aptamer-Based Measurements in Preclinical Animal Models and in Patient Plasma. (In Revision).
42. Zhong, W.; Sczepanski, J. T.* Chimeric D/L-DNA Probes of Base Excision Repair Enable Real-Time Monitoring of Thymine DNA Glycosylase Activity in Live Cells. *J Am. Chem. Soc.* **2023**, *145*, 17066-17074.
41. McGregor, L. A.; Deckard, C. E. III; Smolen, J. A.; Porter, G. M.; Sczepanski, J. T.* Thymine DNA Glycosylase Mediates Chromatin Liquid-Liquid Phase Separation in a DNA Methylation-Dependent Manner. *J. Biol. Chem.* **2023**, *299*, 104907.
40. McGregor, L. A.; Zhu, B.; Goetz, A. M.; Sczepanski, J. T.* Thymine DNA Glycosylase is an RNA-Binding Protein with High Selectivity for G-Rich Sequences. *J. Biol. Chem.* **2023**, *299*, 104590.
39. Pellitero, M.A.; Kundu, N.; Sczepanski, J.T.; Arroyo-Curras, N.* Os(ii/iii) complex supports pH-insensitive electrochemical DNA-based sensing with superior operational stability than the benchmark methylene blue reporter. *Analyst* **2023**, *148*, 806-813.
38. Yu, C.- H.; Sczepanski, J. T.* The Influence of Chirality on the Behavior of Oligonucleotides Inside Cells: Revealing the Potent Cytotoxicity of G-Rich L-RNA. *Chem. Sci.* **2023**, *14*, 1145-1154.
37. Piwko, T. A.; Han, X.; Kabza, M. A.; Dey, S.; Sczepanski, J. T.* Inverse In Vitro Selection Enables Comprehensive Analysis of Cross-Chiral L-Aptamer Interactions. *ChemBioChem* **2022**, *23*, e202200520. Featured in: "Hot Topic: RNA".
36. Sczepanski, J. T.* L-DNA: Applications and the Recognition of Mirror Image Nucleic Acids. *Glen Report* 33-21 **2022**.
35. Clark, V.; Waters, K.; Orsburn, B.; Bumpus, N. N.; Kundu, N.; Sczepanski, J. T.; Ray, P.; Arroyo-Curras, N.* Human Cyclophilin B Nuclease Activity Revealed via Nucleic Acid-based Electrochemical Sensors. *Angew. Chem. Int. Ed.* **2022**, *61*, e202211292.
34. Li, J.; Sczepanski, J. T.* Targeting a Conserved Structural Element from the SARS-CoV-2 Genome using L-DNA Aptamers. *RSC Chem. Biol.* **2022**, *3*, 79-84.

33. Kabza, A. M.; Kundu, N.; Zhong, W.; Sczepanski, J. T.* Integration of Chemically Modified Nucleotides with DNA Strand Displacement Reactions for Applications in Living Systems. *Wiley Interdiscip. Rev. Nanomed. Nanobiotechnol.* **2022**, *14*, e1743.
32. Yu, C.-H.; Kabza, A. M.; Sczepanski, J. T.* Assembly of Long L-RNA by Native RNA Ligation. *Chem. Commun.* **2021**, *57*, 10508-10511.
31. Kundu, N.; Young, B. E.; Sczepanski, J. T.* Kinetics of Heterochiral Strand Displacement From PNA-DNA Heteroduplexes. *Nucleic Acids Res.* **2021**, *49*, 6114-6127.
30. Shaver, A.; Kundu, N.; Young, B. E.; Philip, V.; Sczepanski, J. T.; Arroyo-Curras, N.* Nuclease Hydrolysis Does Not Drive the Rapid Signal Decay of DNA Aptamer Based Electrochemical Sensors in Biological Fluids. *Langmuir* **2021**, *37*, 5213-5221.
29. Deckard, C. E. III; Sczepanski, J. T.* Reversible Chromatin Condensation by the DNA Repair and Demethylation Factor Thymine DNA Glycosylase. *Nucleic Acids Res.* **2021**, *49*, 2450–2459.
28. Zhong, W.; Sczepanski, J. T.* Direct Comparison of D-DNA and L-DNA Strand-Displacement Reactions in Living Mammalian Cells. *ACS Synth. Biol.* **2021**, *10*, 209–212.
27. Tjhung, K. F.[†]; Sczepanski, J. T.[†]; Murtfeldt, E. R.; Joyce, G. J.* RNA-Catalyzed Cross-Chiral Polymerization of RNA. *J. Am. Chem. Soc.* **2020**, *142*, 15331–15339.
26. Kabza, A. M.; Sczepanski, J. T.* L-DNA-Based Catalytic Hairpin Assembly Circuit. *Molecules* **2020**, *25*, 947. <https://doi.org/10.3390/molecules25040947>
25. Dey, S.; Sczepanski, J. T.* *In Vitro* Selection of L-DNA Aptamers that Bind a Structured D-RNA Molecule. *Nucleic Acids Res.* **2020**, *48*, 1669–1680.
24. Young, B. E.; Sczepanski, J. T.* Heterochiral DNA Strand-Displacement Based on Chimeric D/L-Oligonucleotides. *ACS Synth. Biol.* **2019**, *8*, 2756–2759.
23. Deckard, C. E.; Banerjee, D. R.; Sczepanski, J. T.* Chromatin Structure and the Pioneering Transcription Factor FOXA1 Regulate TDG-Mediated Removal of 5-formylcytosine from DNA. *J. Am. Chem. Soc.* **2019**, *141*, 14110–14114.
22. Kabza, A. M.; Kundu, N.; Young, B. E.; Sczepanski, J. T.* Heterochiral Nucleic Acid Circuits. *Emerg. Top. Life Sci.* **2019**, *3*, 501–506.
21. Banerjee, D. R.; Deckard, C. E. III; Zeng, Y.; Sczepanski, J. T.* Acetylation of the Histone H3 Tail Domain Regulates Base Excision Repair on Higher-Order Chromatin Structures. *Sci. Rep.* **2019**, *9*, 15972. <https://doi.org/10.1038/s41598-019-52340-0>
20. Young, B. E.; Kundu, N.; Sczepanski, J. T.* Mirror-Image Oligonucleotides: History and Emerging Applications. *Chem. Eur. J.* **2019**, *25*, 7981–7990.
19. Zhong, W.; Sczepanski, J. T.* A Mirror Image Fluorogenic Aptamer Sensor for Live-Cell Imaging of MicroRNAs. *ACS Sens.* **2019**, *4*, 566–570.
18. Deckard, C. E. III; Sczepanski, J. T.* Polycomb Repressive Complex 2 Binds RNA Irrespective of Stereochemistry. *Chem. Commun.* **2018**, *54*, 12061–12064. Article highlighted in *C&E News* (Vol. 96, October 15, 2018).

17. Banerjee, D. R.[†]; Deckard, C. E. III[†]; Elinsky, M. B.; Batteas, J. D.; Sczepanski, J. T.* A Plug-and-Play Approach for Preparing Chromatin Containing Site-Specific DNA Modifications: The Influence of Chromatin Structure on Base Excision Repair. *J. Am. Chem. Soc.* **2018**, *140*, 8260–8267.
16. Kabza, A. M.[†]; Young, B. E.[†]; Sczepanski, J. T.* Heterochiral DNA Strand-Displacement Circuits. *J. Am. Chem. Soc.* **2017**, *139*, 17715–17718.
15. Kabza, A. M.; Sczepanski, J. T.* An L-RNA Aptamer with Expanded Chemical Functionality Inhibits MicroRNA Biogenesis. *ChemBioChem* **2017**, *18*, 1824–1827.

Before Texas A&M University

14. Sczepanski, J. T.; Joyce, G. F.* Specific Inhibition of MicroRNA Processing Using L-RNA Aptamers. *J. Am. Chem. Soc.* **2015**, *137*, 16032–16037.
13. Sczepanski, J. T.; Joyce, G. F.* A Cross-Chiral RNA Polymerase Ribozyme. *Nature* **2014**, *515*, 440–442. This article was highlighted in *Nature News & Views (Nature 515, 347–348 [2014])* and *C&E News (Chem. Eng. News 92, 39 [2014])*.
12. Sczepanski, J. T.; Joyce, G. F.* Binding of a Structured D-RNA Molecule by an L-RNA Aptamer. *J. Am. Chem. Soc.* **2013**, *135*, 13290–13293.
11. Zhou, C.; Sczepanski, J. T.; Greenberg, M. M.* Histone Modification via Rapid Cleavage of C4'-Oxidized Abasic Sites in Nucleosome Core Particles. *J. Am. Chem. Soc.* **2013**, *135*, 5274–5277.
10. Sczepanski, J. T.; Zhou, C.; Greenberg, M. M.* Nucleosome Core Particle-Catalyzed Strand Scission at Abasic Sites. *Biochemistry* **2013**, *52*, 2157–2164.
9. Sczepanski, J. T.; Joyce, G. F.* Synthetic Evolving Systems that Implement a User-Specified Genetic Code of Arbitrary Design. *Chem. Biol.* **2012**, *19*, 1324–1332.
8. Zhou, C.; Sczepanski, J. T.; Greenberg, M. M.* Mechanistic Studies on Histone Catalyzed Cleavage of Apyrimidinic/Apurinic Sites in Nucleosome Core Particles. *J. Am. Chem. Soc.* **2012**, *134*, 16734–16741.
7. Sczepanski, J. T.; Hiemstra, C.; Greenberg, M. M.* Probing DNA Interstrand Cross-Link Formation by an Oxidized Abasic Site Using Nonnative Nucleotides. *Bioorg. Med. Chem.* **2011**, *19*, 5788–5793.
6. Sczepanski, J. T.; Wong, R. S.; McKnight, J. N.; Bowman, G. D.; Greenberg, M. M.* Rapid DNA-Protein Cross-Linking and Strand Scission by an Abasic Site in a Nucleosome Core Particle. *Proc. Natl. Acad. Sci. USA.* **2010**, *107*, 22475–22480.
5. Wong, R. S.; Sczepanski, J. T.; Greenberg, M. M.* Excision of a Lyase-Resistant Oxidized Abasic Lesion from DNA. *Chem. Res. Toxicol.* **2010**, *23*, 766–770.
4. Greenberg, M. M.*; Newman, C. A.; Resendiz, M.; Sczepanski, J. T. Photochemical Generation and Reactivity of 5,6-Dihydrouridin-6-yl Radical. *J. Org. Chem.* **2009**, *74*, 7007–7012.
3. Sczepanski, J. T.; Jacobs, A.; Van Houten, B.; Greenberg, M. M.* Double-Strand Break Formation During Nucleotide Excision Repair of a DNA Interstrand Cross-Link. *Biochemistry* **2009**, *48*, 7565–7567. This article was highlighted in *Chemical Research in Toxicology (Chem. Res. Toxicol. 22, 1651 [2009])*.
2. Sczepanski, J. T.; Jacobs, A.; Majumdar, A.; Greenberg, M. M.* Scope and Mechanism of Interstrand

Cross-Link Formation by the C4'-Oxidized Abasic Site. *J. Am. Chem. Soc.* **2009**, *131*, 11132–11139.

1. Sczepanski, J. T.; Jacobs, A.; Greenberg, M. M.* Self-Catalyzed DNA Interstrand Cross-Link Formation by an Abasic Site. *J. Am. Chem. Soc.* **2008**, *130*, 9646–9647.

*Corresponding Author

†These authors contributed equally to this work

PATENTS

5. Li, J.; Yu, C.-H., Clark, V., Sczepanski, J. T.*; Arroyo-Curras, N.* Monitoring HIV Antiretroviral Therapy via Aptamer-Based Measurements in Patient Plasma and in Preclinical Animal Models. Provisional Patent No. US63/633108; Filed: April 12, 2024.
4. Li, J.; Sczepanski, J. T.* Aptamer Displacement Assays for Identification of Nucleic Acid Binding Drug Candidates. Provisional Patent No. US63/358258; Filed: July 5, 2022.
3. Sczepanski, J. T.* A Rewritable Molecular Model for Configurational Determination of Chiral Centers. Provisional Patent No. US63/148932; Filed: February 12, 2021.
2. Deckard, C. E. III; Sczepanski, J. T.* L-Oligonucleotide Inhibitors of Polycomb Repressive Complex 2 (PRC2). International Patent No. PCT/US19/49759; Filed: September 5, 2019.
1. Kabza, A. M.; Young, B. E.; Sczepanski, J. T.* Heterochiral DNA Strand-Displacement Reactions and Circuits. International Patent No. PTC/US2019/016502; Filed: February 4, 2019.

*Lead Author(s)

SEMINARS AND OTHER PRESENTATIONS

- 10/24 Department of Chemistry, University of Texas at Austin, Austin, TX (Invited Seminar)
- 9/24 Department of Chemistry, University of Houston, Houston, TX (Invited Seminar)
- 9/24 Department of Chemistry, Sam Houston State University, Huntsville, TX (Invited Seminar)
- 8/24 American Chemical Society National Meeting, Denver, CO (Highlighting BIOL Faculty & Industry Leaders, BIOL)
- 6/14 Welch eXperimental (WelchX) Collaboration Retreat, Austin, TX (Invited Participant)
- 5/24 2nd Texas Chemical Biology Conference, Rice University, Houston, TX (Invited Seminar)
- 11/23 New England Biolabs, Ipswich, MA (Invited Seminar)
- 9/23 Department of Chemistry & Biochemistry, Texas State University, San Marcos, TX (Invited Seminar)
- 6/23 Gordon Research Conference: Nucleic Acids, Newry, ME (Poster)
- 5/23 Department of Pharmaceutical Sciences, University of California Irvine, Irvine, CA (Invited Seminar)
- 4/23 20th Annual Conference on Foundation of Nanoscience, Snowbird, UT (Invited Seminar)
- 11/22 Department of Chemistry, UC Riverside, Riverside, CA (Invited Seminar)
- 9/22 Department of Chemistry, Tulane University, New Orleans, LA (Invited Seminar)
- 7/22 Arrakis Therapeutics, Waltham, MA (Invited Seminar)
- 7/22 2022 Telluride Nucleic Acids Chemistry Workshop, Telluride, CO (Invited Seminar)
- 6/22 Gordon Research Conference: Bioorganic Chemistry, Andover, NH (Invited Seminar)
- 10/21 2021 Southwest Regional Meeting of the American Chemical Society, Austin, TX (Invited Seminar)
- 8/21 Department of Chemistry, Metro State University Denver, Denver, CO (Invited Seminar)
- 8/21 Department of Chemistry, CU Denver, Denver, CO (Invited Seminar)
- 10/20 Radiation Research Society's 66th Annual Meeting (Invited Seminar)

9/20 Department of Chemistry, Duke University, Durham, NC (Invited Seminar)
9/20 Department of Chemistry, University of Illinois Urbana-Champaign, Champaign, IL (Invited Seminar)
4/20¹ Department of Chemistry, New York University, New York, NY (Invited Seminar)
4/20 Department of Pharmaceutical Sciences, University of California Irvine, Irvine, CA (Invited Seminar)
4/20¹ Department of Chemistry, The Scripps Research Institute, La Jolla, CA (Invited Seminar)
4/20¹ Department of Chemistry and Biochemistry, University of California San Diego, San Diego, CA (Invited Seminar)
3/20¹ Department of Molecular Biosciences, The University of Texas at Austin, Austin, TX, (Invited Seminar)
3/20 Department of Electrical Engineering and Radiology, Stanford University, Stanford, CA (Invited Seminar)
3/20 Department of Chemistry, University of California Berkeley, Berkeley, CA (Invited Seminar)
3/20 Department of Chemistry, University of California Santa Cruz, Santa Cruz, CA (Invited Seminar)
3/20 Department of Chemistry, University of California Davis, Davis, CA (Invited Seminar)
2/20 Department of Chemistry, University of Minnesota, Minneapolis, MN (Invited Seminar)
2/20 Department of Chemistry, University of Utah, Salt Lake City, UT (Invited Seminar)
1/20 Department of Chemistry, University of the Philippines, Quezon City, Philippines (Invited Seminar)
9/19 Department of Chemistry, University of Connecticut, Storrs, CT (Invited Seminar)
9/19 Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA (Invited Seminar)
9/19 Department of Chemistry, University of Pittsburgh, Pittsburgh, PA (Invited Seminar)
8/19 258th American Chemical Society National Meeting, San Diego, CA (Contributed Seminar, ANYL)
8/19 258th American Chemical Society National Meeting, San Diego, CA (Contributed Seminar, Early Career Investigator Session, BIOL)
6/19 Gordon Research Conference: Nucleosides, Nucleotides, and Oligonucleotides, Newport, RI (Contributed Seminar)
5/19 Texas Chemical Biology Conference, College Station, TX (Session Chair)
4/19 Department of Chemistry & Biochemistry, University of Delaware, Newark, DE (Invited Seminar)
4/19 Department of Chemistry, Johns Hopkins University, Baltimore, MD (Invited Seminar)
4/19 Department of Chemistry & Biochemistry, University of Maryland, College Park, MD (Invited Seminar)
1/19 Gordon Research Conference: RNA Nanotechnology, Ventura, CA (Contributed Seminar)
10/18 Truman State University, Kirksville, MI (Student Recruitment Seminar)
8/18 Aptamers in Boulder, Boulder, CO (Invited Seminar)
5/18 Institute of Biosciences & Technology, Texas A&M College of Medicine, Houston, TX (Invited Seminar)
4/18 Texas Southern University, Houston, TX (Student Recruitment Seminar)
3/18 255th American Chemical Society National Meeting, New Orleans, LA (Contributed Seminar, Early Career Investigator Session, BIOL)
11/17 Department of Biochemistry, Texas A&M University, College Station, TX (Invited Seminar)
6/17 Gordon Research Conference: Nucleosides, Nucleotides, and Oligonucleotides, Newport, RI (Poster)
5/17 11th RNA Consortium Meeting, City of Hope, Los Angeles, CA (Invited Seminar)
4/17 ENG-LIFE Workshop, Texas A&M University, College Station, TX (Invited Seminar)
2/17 Keystone Symposia, Noncoding RNAs: From Disease to Targeted Therapeutics, Alberta, Canada (Contributed Seminar)
6/16 Aptamers in Bordeaux, Bordeaux, France (Poster)
5/16 NIH Mentoring Workshop for New Faculty in Organic and Biological Chemistry, Dallas, TX (Selected Participant)
4/16 Department of Biology, Texas A&M University, College Station, TX (Invited Seminar)
1/16 College of Science Big Data Workshop, Texas A&M University, College Station, TX (Invited Seminar)

- 10/15 External Advisory and Development Council, Texas A&M University, College Station, TX (Invited Seminar)
- 10/15 Keck Institute for Space Studies, *Don't Follow (Just) the Water: Does Life Occur in Non-Aqueous Media?* Pasadena, CA (Workshop Participant)

¹Denotes a seminar that was canceled due to COVID-19 restrictions.

Before Texas A&M University

- 10/14 Cell Symposia on Regulatory RNAs, Berkeley, CA (Poster)
- 7/14 The Fourteenth International Conference on the Synthesis and Simulation of Living Systems, New York, NY (Selected Seminar)
- 3/12 243rd American Chemical Society National Meeting, San Diego, CA (Seminar)
- 8/09 238th American Chemical Society National Meeting, Washington, DC (Poster)
- 8/08 236th American Chemical Society National Meeting, Philadelphia, PA (Poster)
- 8/08 Conference on Chemical Insights into Biological Processes (Poster)

RESEARCH GRANTS – CURRENT

Federal

National Institutes of Health (NIH) 09/01/24 – 08/31/29
 NIGMS Maximizing Investigators' Research Award (MIRA) \$1,760,087
 R35GM124974 (PI: Szczepanski)
 Amount to Szczepanski: \$1,760,087
"Mirror Image Aptamers: Next Generation RNA-Binding Reagents for Basic Research and Therapeutic Applications"

National Institutes of Health (NIH) 9/01/23 – 08/31/25
 R21AI175968 (PI: Szczepanski) \$461,575
"An L-Aptamer-Displacement Assay for High-Throughput Screening of RNA-Targeted Small Molecule Antivirals"

State (Texas)

The Welch Foundation 08/01/24 – 07/31/25
 X-AX-0008-20240723 (PI: Szczepanski & McHardy) \$100,000
 Amount to Szczepanski: \$50,000
"WelchX: Development of PROTACs with programmable oligonucleotide-based linkers"

Other

The Leona M. and Harry B. Helmsley Charitable Trust 05/01/22 – 4/30/25
 2209-05517 (PI: Arroyo-Curras) \$2,011,865.00
 Amount to Szczepanski (Co-PI): \$607,500
"Development of Wearable Insulin-Binding Aptamer-Based Biosensors For Continuous Insulin Monitoring"

RESEARCH GRANTS – PENDING

National Science Foundation (NSF) 01/01/25 – 12/31/29
 NSF2437757 (PI: Szczepanski) \$1,332,581
"Mechanisms of DNA Demethylation: The Molecular Interplay Between Thymine DNA Glycosylase and RNA"

RESEARCH GRANTS – CONCLUDED

Federal

National Science Foundation (NSF) 08/01/21 – 07/31/24
NSF2126416 (PI: Sczepanski) \$568,365
*“Mechanisms of DNA Demethylation: The Molecular Interplay
Between Thymine DNA Glycosylase and Chromatin Structure”*

National Science Foundation (NSF) 07/01/21 – 06/30/24
NSF2114588 (PI: Horning, David; Salk Institute) \$881,161
Amount to Sczepanski (Co-PI): \$152,415
“Cross-Chiral Genetic Systems”

National Institutes of Health (NIH) 09/15/17 – 09/14/23
NIGMS Maximizing Investigators’ Research Award (MIRA) \$1,787,532
R35GM124974 (PI: Sczepanski)
Amount to Sczepanski: \$1,787,532
*“Mirror Image Aptamers: Next Generation RNA-Binding Reagents
for Basic Research and Therapeutic Applications”*

The RNA Society 09/27/21 – 09/26/23
“Establishment of the Aggieland RNA Salon” \$2,000

National Science Foundation (NSF) 09/31/20 – 09/30/23
NSF2003534 (PI: Glassensmith, Jeremiah; UT Dallas) \$410,129
Amount to Sczepanski (Co-PI): \$140,000
*“Collaborative Research: L-RNA Based Reactive Oxygen Species
Detection and Response Systems”*

National Institutes of Health (NIH) 08/02/19 – 08/01/22
R21HD099707 (PI: Sczepanski) \$394,126
Amount to Sczepanski: \$394,126
*“CLAP-seq: An Aptamer-Based Platform for Transcriptome-Wide
Mapping of RNA Modifications”*

National Institutes of Health (NIH) 06/01/19 – 05/31/22
R21EB027855 (PI: Sczepanski) \$394,629
Amount to Sczepanski: \$394,629
“Mirror Image DNA Circuits for Complex microRNA Analysis in Live Cells”

National Institutes of Health (NIH) 09/12/18
R35GM124974 (PI: Sczepanski) \$100,000
Amount to Sczepanski: \$100,000
*“Mirror Image Aptamers: Next Generation RNA-Binding Reagents for Basic
Research and Therapeutic Applications: Administrative Supplement for Equipment”*

State (Texas)

The Welch Foundation 06/01/19 – 05/31/22
A1909 (PI: Sczepanski) \$240,000
Amount to Sczepanski: \$240,000
“Synthesis and Applications of DNA-Encoded Libraries of Mirror Image RNA”

Cancer Prevention and Research Institute of Texas (CPRIT) 08/31/19 – 08/30/21
RP190560 (PI: Szczepanski) \$52,055
Amount to Szczepanski: \$52,055
“Development of a Novel Class of PRC2 Inhibitors Comprised of Mirror Image RNA”

The Welch Foundation 06/01/16 – 05/31/19
A-1909 (PI: Szczepanski) \$195,000
“Development of Cross-Chiral Nucleic Acid Biosensors for Detection of RNA Structure”

Cancer Prevention and Research Institute of Texas (CPRIT) 06/01/15 – 12/31/19
RR15038 (PI: Szczepanski) \$2,000,000
Amount to Szczepanski: \$2,000,000
“Recruitment of First-Time Tenure-Track Assistant Professor”

Other

Texas A&M University 09/01/19 – 08/31/22
X-Grant (PI: Zhang) \$1,429,791
Amount to Szczepanski (Co-PI): \$147,756
“Biology Hidden in RNA Structure and Modifications”

Texas A&M University 01/01/20 – 12/31/21
T3 Grant (PI: Szczepanski) \$30,000
Amount to Szczepanski: \$10,000
“In Vitro Reconstitution of CRISPR Display: Investigation of LncRNA-Chromatin Interactions”

Texas A&M University 09/01/17 – 08/31/18
Strategic Transformative Research Program (PI: Szczepanski) \$50,000
Amount to Szczepanski: \$25,000
“RNApex: A Genetically Encoded Electron Microscopy Reporter for RNA”

TEACHING

Texas A&M University, College Station, TX

- Organic Chemistry I (Chemistry 227): Fall 2023, Fall 2022, Fall 2021, Spring 2021, Fall 2020, Fall 2019, Fall 2018, Fall 2016, Spring 2018
- Nucleic Acids Chemistry (Chemistry 689): Spring 2022, Spring 2018
- Regents Scholars Program (Instructor)
- Chemistry Open House, Summer 2017 (KHP Activity and Demonstration Development Grant Awardee)

The Scripps Research Institute, La Jolla, CA

- Guest lecture: Structural Biology 216, *Alphabet 2: Nucleic Acids – Chemistry and Secondary Structure*, Ian Wilson director, September 2014

Johns Hopkins University, Baltimore, MD

- Teaching Assistant: Organic Chemistry I and Organic Chemistry II (AS.030.205 and AS.030.205, respectively)
- Teaching Assistant: Intermediate Organic Chemistry Laboratory (AS.030.228), Ernest M. Marks Award for excellence in teaching, 2007

UNIVERSITY SERVICE

| | |
|--------------|-----------------------------------------------------------------------------|
| 2023–present | Department of Chemistry Communications Committee |
| 2022–present | Chair: Department of Chemistry Graduate Admissions and Recruiting Committee |
| 2021–present | Department of Chemistry Executive Committee |
| 2020–present | Department of Chemistry Proactive Recruitment Operations Committee |
| 2019–present | Department of Chemistry Graduate Admissions and Recruiting Committee |
| 2019–present | Youth Adventure Program (Instructor) |
| 2018 | Department of Chemistry Faculty Search Committee |
| 2018–present | Texas A&M University Radiological Safety Committee (Voting Member) |
| 2017–present | Chemistry Open House (Annual Participant) |
| 2016–present | Faculty Liaison to the Graduate Student Association of Chemistry (GSAC) |
| 2016 | Department of Chemistry Faculty Search Committee |
| 2016 | EADC Road Scholar Program |
| 2016 | Department of Chemistry Head Search Committee |
| 2016 | Department of Chemistry Faculty Search Committee |

Student Committees

Adam R. Hillaire (Barondeau, Chemistry), Elena Scott (Laganowsky, Chemistry), Shiangi Sharma (Liu (Chemistry), Gopal K. Dubey (Liu, Chemistry), Roshan M. Regy (Mittal, Chemical Eng.), Joseph Romanowski (Adelman, GENE), Lauren Stover (Laganowsky, Chemistry), Conghe Tian (Burgess, Chemistry), Lauren Blankenship (Liu, Chemistry), Peng-Hsun Chen (Liu, Chemistry), Sopida Thavornpradit (Burgess, Chemistry), Jonathan Whisenant (Burgess, Chemistry), Yuchen Qiao (Liu, Chemistry), Aaron Jacobson (Burgess, Chemistry), Andrew Collins (Menet, Biology), Syed Muhammad (Burgess, Chemistry), Bosheng Zhao (Burgess, Chemistry), Kaci Kratch (Liu, Chemistry), Chesley Rowlett (Liu, Chemistry), Sreyashree Bose (Shippen, BioBio), Zhi Geng (Liu, Chemistry), David Bautista (Mitchell, Biology).

PROFESSIONAL SERVICE

Professional Affiliations

- The RNA Society
- American Chemical Society

Referee of Journal Articles

- *Proceedings of the National Academy of Sciences USA*
- *Nucleic Acids Research*
- *Analytical Chemistry*
- *ACS Sensors*
- *ACS Chemical Biology*
- *ACS Applied Materials & Interfaces*
- *Journal of the American Chemical Society*
- *ChemBioChem*
- *Biochemistry*
- *Communications Chemistry*
- *Cell Chem*
- *Chemical Society Reviews*
- *Scientific Reports*
- *Analyst*
- *Organic & Biomolecular Chemistry*
- *Aptamers*
- *Chemical Science*
- *Cell Chemical Biology*

- *PloS One*
- *Molecules*
- *F1000 Research*
- *Nature Communications*
- *ACS Synthetic Biology*
- *Chemical Research in Toxicology*
- *Molecular Cell*
- *Angewandte Chemie*

Referee of Grant Proposals

- National Science Foundation
- National Institutes of Health
- Research Corporation
- National Science Foundation of China

SCZEPANSKI GROUP MEMBERS

Current

a. Graduate Students

- Chen-Hsu Yu (Year 5)
- Xuan Han (Year 5)
- Lauren McGregor (Year 4)
- Allison Goetz (Year 3)
- Boris Zhu (Year 3)
- Victoria Shearer (Year 3)
- Christopher Chamblee (Year 2)
- Tharaka Amarasekara (Year 2)
- Kalista Vanden Berge (Year 2)
- Rosemarie Elloisa Acero (Year 2)
- Jarrett Lee (Year 1)
- Suryadeep Sur (Year 1)

b. Post Doctoral Researchers

- Dr. Moazzameh Ramezani
- Dr. Moujab Choukeife

c. Undergraduate Students

- Lauren Alvarez
- Tyler Guilbault

Former

a. Graduate Students

- Wenrui Zhong (Defended Oct., 2022); Current Position: Postdoctoral Researcher, Stanford University, Stanford, CA.
- Nandini Kundu (Defended Oct., 2021); Current Position: Postdoctoral Researcher, UC Irvine, Irvine, CA
- Charles Deckard (Defended Oct., 2020); Current Position: Institute Research Investigator, MD Anderson Cancer Center, Houston, TX
- Adam Kabza (Defended May, 2020); Current Position: Scientist, Avidity Biosciences, La Jolla, CA.
- Brian Young (Defended Oct., 2019); Current Position: Senior Scientist, Cherokee Federal, Atlanta, GA.

b. Post Doctoral Researchers

- Dr. Sougata Dey; Current position: Scientist, Fannin, Houston, TX, USA.

- Dr. Michael Bekhit; Current Position: Assistant Professor, Lamar University, Beaumont, TX
- Dr. Jing Li; Current Position: Unknown.
- Dr. Chinmay Phadke; Current Position: Postdoctoral Research Fellow, Texas A&M University, College Station, TX, USA.
- Dr. Deb Ranjan Banerjee; Current Position: Assistant Professor of Chemistry, National Institute of Technology: Durgapur, West Bengal, India.

c. Undergraduate Students

- Caitlin Zumalt
- Yuval Kavosh
- Linda Ahaiwe
- Margarita Fong
- Ian Hall (REU)
- Julia Santell (TURC)
- Benjamin Chi (REU)
- John Harkins
- Alex Piwko
- Xing-Han Zhang
- Gabriella Porter
- Jada Gray (REU)
- Jacob Kogut
- Rolando Albarracin-Rivera (REU)
- Eduardo Rosario-Diaz (REU)

d. Other

- Siqi Xi (Visiting Scholar, University of Tokyo, Tokyo, Japan)