

Christina Fitzsimmons, PhD
ACS Postdoctoral Fellow
National Cancer Institute | National Institutes of Health

christina.fitzsimmons@nih.gov
LinkedIn: Christina M. Fitzsimmons
Twitter: @FitzsimmonsCM

EDUCATION

- 2011-2016 University of California, San Francisco, *San Francisco, CA*
Ph.D. in Chemistry and Chemical Biology
Dissertation: *Substrate Specificity of the Radical SAM Methyl Synthase RlmN*
- 2007-2011 Macalester College, *St. Paul, MN*
BA in Biology
BA in Chemistry with Honors
Chemistry Honors Thesis: *Characterization of a Flavin-Dependent Monooxygenase Involved in Siderophore Biosynthesis in Aspergillus nidulans*

RESEARCH EXPERIENCE

- 2017-Present **Postdoctoral Fellow, National Cancer Institute, National Institutes of Health**
Advisor: Pedro J. Batista
Project: Exploring the interaction between cellular environment and RNA modifications
- 2012-2016 **Graduate Research, University of California San Francisco**
Advisor: Danica Fujimori
Project: Enzyme-substrate recognition of tRNA methylating enzyme
- 2011-2012 **Graduate Program Rotations, University of California San Francisco**
Rotation Advisors: William F. DeGrado; John D. Gross; Danica Fujimori
Projects: Small molecule inhibitor synthesis; protein NMR; RNA methylating enzymes
- 2009 **Research in Molecular Biology (Course-based REU), Macalester College**
Advisor: Mary Montgomery
Project: Generating GFP-fusion biomarkers to explore developmental conservation in *C. elegans*
- 2008-2011 **Chemistry Honors Thesis Research, Macalester College**
Advisor: Christopher T. Calderone
Project: Characterizing enzymes responsible for the biosynthesis of fungal secondary metabolites

SCIENTIFIC CONTRIBUTIONS

Peer Reviewed Publications:

* *Indicates co-first author* | # *Indicates co-corresponding author*

1. Patel R, Curt K, **Fitzsimmons CM**, Batista PJ, Bates S, Gottesman M, Robey RW. (2021). "Dual inhibition of histone deacetylases and the mammalian target of rapamycin promotes apoptosis in cell line models of uveal melanoma." *Investigative Ophthalmology and Visual Science*. Vol.62, 16
2. Chan D*. **Fitzsimmons CM***#, Mandler MD, Batista PJ. (2021) "Ten Simple Rules for acing virtual interviews in academic or scientific settings." *PLOS Computational Biology*. 17(6): e1009057.
3. **Fitzsimmons CM** and Batista PJ. (2019). "It's complicated...m⁶A-dependent regulation of gene expression in cancer." *BBA - Gene Regulatory Mechanisms*. 1862, 3, 382-393.
4. Kundert K, Lucas JE, Watters KE, Fellmann C, Ng AH, Heineike BM, **Fitzsimmons CM**, Oakes, BL, Qu J, Prasad N, Rosenberg OS, Savage DF, El-Samad H, Doudna JA, Kortemme T. (2019). "Controlling CRISPR-Cas9 with ligand-activated and ligand-deactivated sgRNAs." *Nature Communications*. Volume 10, Article number: 2127.

5. **Fitzsimmons CM** and Fujimori DG. (2016) “Determinants of tRNA Recognition by the Radical SAM Enzyme RlmN” *PLoS One*. 11(11): e0167298.

Preprints and Submitted:

1. Robey RW*, **Fitzsimmons CM***, Guiblet WM, Wang L, Jenkins LM, Mitchell A, Frye W, Gonzalez-Dalmasy J, Huff LM, Wade H, Ali-Rahmani F, Piscopio AD, Winkler J, Arda HE, Bates SE, Batista PJ, and Gottesman MM. “The methyltransferases METTL7A and METTL7B confer resistance to thiol-based histone deacetylase inhibitors in cancer cells.” In Revision
<https://www.biorxiv.org/content/10.1101/2022.10.07.511310v1>
2. **Fitzsimmons CM**, Mandler MD, Lunger JC, Chan D, Maligireddy S, Schmiechen AC, Thalalla Gamage S, Link C, Jenkins LM, Crooks DR, Meier JL, Linehan WM, and Batista PJ. “Rewiring of RNA methylation by the oncometabolite fumarate in renal cell carcinoma.” Submitted
<https://www.biorxiv.org/content/10.1101/2023.04.10.536262v1>

In Preparation:

1. Mandler MD, Guiblet WM, **Fitzsimmons CM**, Maligireddy S, McDonald K, Batista PJ. “Elucidating the modification status of tRNAs in response to environmental and metabolic stress.”
2. Bryce-Smith S, Burri D, Danecka W, Fansier M, **Fitzsimmons CM**, Gazzara M, Germain PL, Gonzalez-Uriate A, Haynes S, Herdman C, Herrmann CJ, Kanitz A, Katsantoni M, Marini F, McDonnell E, Nicolet B, Poon CL, Rot G, Schärffen L, Seyres D, Wan YK, Wu PJ, Zhuang F, Barash Y and Zavolan M. “APAEval: A community effort to benchmark tools for alternative polyadenylation”
 - GitHub repository: <https://github.com/iRNA-COSI/APAEval>
 - SeqeraLab Blog Post: <https://seqera.io/blog/rna-society/>
 - RNA Society 2022 Oral Presentation: tinyurl.com/22tmekm8
3. Crooks DR, Cawthon GM, **Fitzsimmons CM**, Perez M, Ricketts CJ, Vocke CD, Yang Y, Middleton, L, Schmidt LS, Tandon M, Meier JL, Batista PJ, Linehan WM. “Splice Mutation in the Fumarate Hydratase Gene in Patients With Clinical and Biochemical Manifestations of Hereditary Leiomyomatosis and Renal Cell Cancer (HLRCC)”
4. Gonzalez-Dalmasy J, Robey RW, Frye W, **Fitzsimmons CM**, Batista PJ, Gottesman MM. “Characterization of METTL7A function across various species.”

Oral Presentations:

July 2022	HHMI-Janelia Leading Edge Symposium “Investigating metabolic-epitranscriptomic crosstalk in health and disease” Leading Edge Symposium: https://youtu.be/xL-IE0-Di-c
Dec 2021	NIH RNA Club: RNA Biology with Distinction Fellow Award Seminar “Investigating the molecular and cellular roles of metabolism on RNA epitranscriptomics in RCC”
June 2021	NIH Future Research Leaders Conference “Investigating the molecular and cellular roles of metabolism on RNA epitranscriptomics”
Mar 2021	21st Annual NCI Fellows and Young Investigator’s Colloquium “Investigating the role of metabolism and epitranscriptomics in RCC”
Nov 2020	NCI RNA Biology Initiative Retreat “Investigating the molecular and cellular roles of metabolism on RNA epitranscriptomics in RCC”
May 2020	NIH RNA Club “Investigating the intersection of metabolism on RNA epitranscriptomics in RCC”

- Mar 2020 **20th Annual NCI Fellows and Young Investigator's Colloquium (Canceled due to COVID-19)**
"Investigating the role of metabolism and epitranscriptomics in RCC"
- Nov 2019 **NCI RNA Biology Initiative Retreat**
"Investigating the role of metabolism and epitranscriptomics in RCC"
- July 2019 **Sallie Rosen Kaplan Postdoctoral Fellows Retreat**
"Linking metabolism and RNA modifications in hereditary renal cell carcinoma"
- Apr 2019 **NCI Fellows and Young Investigators Seminar Series**
"Investigating the molecular and cellular roles of metabolism on RNA epitranscriptomics"
- Apr 2010 **MN Academy of Sciences Winchell Undergraduate Symposium**
"Characterization of a flavin-dependent amine hydroxylase required for siderophore biosynthesis in Aspergillus nidulans" BEST TALK AWARD

Poster Presentations:

- May 2023 **24th Annual NCI Fellows and Young Investigator's Colloquium**
"The methyltransferases METTL7A and METTL7B confer resistance to thiol-based histone deacetylase inhibitors"
- Apr 2023 **NCI Symposium on RNA Biology**
"Rewiring of RNA Methylation by the oncometabolite fumarate in renal cell carcinoma"
- Mar 2023 **Fox Chase Cancer Center: Cancer Epigenetics Institute Symposium**
"Rewiring of RNA methylation by the oncometabolite fumarate in renal cell carcinoma"
- Nov 2022 **American Cancer Society Jiler Professors and Fellows Conference**
"Rewiring of RNA methylation by the oncometabolite fumarate in renal cell carcinoma"
- July 2022 **Gordon Research Seminar & Conference: Post-Transcriptional Gene Regulation**
"Investigating metabolic-epitranscriptomic crosstalk in cancer"
- May 2022 **27th Meeting of the RNA Society**
"Investigating metabolic-epitranscriptomic crosstalk in cancer"
- Apr 2021 **NCI Symposium on RNA Biology**
"Investigating the molecular and cellular roles of metabolism on RNA epitranscriptomics in renal cell carcinoma"
- June 2019 **84th Annual CSHL Symposium on Quantitative Biology: RNA Control and Regulation**
"Elucidating the modification status of tRNAs in response to environmental and metabolic stress"
- Apr 2019 **NCI Symposium on RNA Biology**
"Investigating the molecular and cellular roles of metabolism on RNA epitranscriptomics in renal cell carcinoma"
- May 2018 **23rd Meeting of the RNA Society**
"Isolation, Enrichment, and Identification of Acetyl-CoA Modified RNAs"
- Apr 2016 **Chemical Biology in the Bay Area Symposium**
"Substrate specificity of the radical SAM methyl synthase RlmN" [POSTER AWARD]
- Sept 2014 **248th Meeting of the American Chemical Society**
"Substrate specificity of the radical SAM methyl synthase RlmN"
- Apr 2011 **241st Meeting of the American Chemical Society**

“Characterization of a flavin-dependent amine hydroxylase required for siderophore biosynthesis in Aspergillus nidulans”

FUNDING, HONORS, AND AWARDS

Completed Funding:

- 2020-2022 **American Cancer Society Postdoctoral Fellowship**
 Role: Postdoctoral Fellow
 Title: *Investigating molecular and cellular roles of metabolism in RNA epigenetics*
- 2019 **NCI Director’s Intramural Innovation Award**
 Role: Principal Investigator
 Title: *Linking fumarate and gene expression in renal cell carcinoma*
- 2018 **Sallie Rosen Kaplan Postdoctoral Fellowship “Mini-K99” (Equipment Award)**
 Role: Principal Investigator
 Title: *Investigating molecular and cellular roles of metabolism in RNA epigenetics*
- 2013-2014 **UCSF-Genentech Foundation Predoctoral Fellowship**
 Role: Graduate Student
 Title: *Investigating the Requirements for Substrate Specificity in RNA Methyl Synthases*
- 2010 **Macalester College Student-Faculty Summer Research Fellowship**
 Role: Undergraduate Student
 Title: *Characterization of Ornithine Hydroxylation During TAFC Biosynthesis by A. nidulans*
- 2009 **Macalester College Student-Faculty Summer Research Fellowship**
 Role: Undergraduate Student
 Title: *Studies on the Prenylation of Tyrosine During Sirodesmin Biosynthesis*

Honors and Awards:

- 2022 HHMI-Janelia Leading Edge Fellow
- 2022 RNA Society Travel Award
- 2022 *Semi-Finalist*, NCI Outstanding Postdoctoral Fellow Award (1 of 5 semi-finalists)
- 2022 NIH Fellows Award for Research Excellence with Distinction in RNA Biology
- 2021 Selected for American Chemical Society Postdoc2Faculty Workshop
- 2021 Selected for NIH Future Research Leaders Conference
- 2020, 2021 NIH Fellows Award for Research Excellence (FARE)
- 2018 RNA Society Travel Award
- 2017-2018 Sallie Rosen Kaplan Postdoctoral Fellowship
- 2016 *Poster Prize*, Chemical Biology in the Bay Area Symposium
- 2012, 2013 *Honorable Mention*, NSF Graduate Research Fellowship Program
- 2011 *Outstanding Student-Teacher Award*, Macalester College Dept. of Chemistry
- 2010-2011 *Iota Sigma Pi*: National Honor Society for Women in Chemistry
- 2010 *“Best Talk”* MN Academy of Sciences Winchell Undergraduate Symposium
- 2007-2011 National MS Society Presidential Scholar (1 of 2 awarded in the US)
- 2007-2008 *“Emerging Leaders”* Macalester College

TEACHING AND MENTORING

University Teaching Experience:

- 2012-2016 Lecturer, Chemistry and Chemical Biology Graduate Program “Bootcamp”, UCSF
- 2013, 2014 Course Director, Chemistry and Chemical Biology Graduate Program “Bootcamp”, UCSF
- 2012 Teaching Assistant, Physical Chemistry, UCSF School of Pharmacy
- 2009-2011 Departmental Chemistry Tutor, Macalester College

2009-2011 Laboratory Preceptor for General, Organic, and Biological Chemistry, Macalester College
 2009-2011 Grader for General and Physical Chemistry Lecture Sections, Macalester College

Additional Teaching Experience:

2017 California Academy of Sciences Guest Experience Associate
 2011-2017 UCSF Science and Health Education Partnership (see outreach section)

Mentoring Experience:

<i>Mentee</i>	<i>When</i>	<i>Position/Group</i>	<i>Next Position</i>
Sellers Hill	2022	NIH SIP summer student	Undergrad, Harvard
Siddu Maligireddy	2021-Present	NIH postbaccalaureate fellow	Applying to MSTP Programs
José Gonzalez-Dalmasy	2021-Present	NIH postbaccalaureate fellow	Grad Student, UNC-Chapel Hill
Colin Fischer	2021	NIH ICRC summer student	MS Student, Uni. College London
Elshaddai White	2020	Friends of Friends in STEM	Postdoc, Kimmelman Lab, NYU
Jodie Lunger	2019-2021	NIH postbaccalaureate fellow	Grad Student, Stanford
Frances Maher	2019, 2020	NIH ICRC summer student	MS Student, GWU
Kayla McDonald	2018, 2019	NIH ICRC summer student	Med. Student, Emory Uni.
Brooke Hansen	2013-2015	NeXXT scholars program	Undergrad, Western MI Uni.
Nathan Gamara	2014	UCSF Tetrad Rotation Student	Grad Student, Narlikar Lab, UCSF

COMMUNITY OUTREACH AND APPEARANCES

Community Outreach:

2020 Friends of Friends in STEM

- *Program providing mentoring for Black STEM students seeking graduate/postdoc positions*
- *I served as a mentor to a grad student during his F99/K00 application and postdoc search*

2018 “Meet a Scientist”, USA Science and Engineering Festival
 2018 Volunteer, American Chemical Society Booth, USA Science and Engineering Festival

2011-2017 UCSF Science and Health Education Partnership (SEP)

- *Partnering with K-12 schools and teachers in the San Francisco Unified School District*
- *Preparing and co-teaching hands-on science lessons during the academic year*

2011-2016 Bay Area Science Festival

- *10-day science festival to bring science to the public*
- *Engaging attendees of all ages in hands-on science activities and demonstrations*

2016 UCSF Benioff Children’s Hospital Science Education Program

- *Developed programming to bring SEP resources to teachers and patients at UCSF Benioff Children’s Hospital*

2013-2015 US Dept. of State and NY Academy of Science NeXXT Fellow

- *Program aims to increase opportunities and partnerships for women in US and countries with predominantly Muslim populations*
- *Mentoring and skill building with first and second-year undergrad women in STEM*

Media Interviews:

2021 Interviewed by Unique Scientists Blog
 2020 Interviewed for Lasker Foundation Podcast

- 2016 JKX Comics Scientist Spotlight
- 2015, 2016 Interviewed by KRON4 (NBC) at Bay Area Science Festival
- 2015 Interviewed by KTVU2 (FOX) at Bay Area Science Festival
- 2013 Macalester Alumni Spotlight
- 2011 Interviewed for MN Colleges article “*Programs aim to get girls to study STEM fields*”
- 2010 Macalester College Video Interview: “*Christina Fitzsimmons ‘11 in the lab*”

Panel Discussions:

- 2020 Brandeis University American Cancer Society
- 2020 NIH Virtual Summer Enrichment Program, “Speak with an NCI Scientist” Panel
- 2020 Alumni Speaker for Johns Hopkins CTY “Genetics and Bioinformatics” Summer Program
(**Canceled due to COVID-19**)
- 2019 “Leadership Day” Career Panel, Bnos Yisroel Bridge Program for Orthodox Jewish teen girls
- 2017 Moderated “Chemical Education Research” Panel Discussion, UCSF

Leadership Positions:

- 2019-2022 Solo Organizer, NIH RNA Biology Trainee Interest Group and Seminar Series
- 2015-2017 Founding Member, UCSF Science Education Journal Club
- 2014-2016 Founding Member, UCSF Women in Quantitative Biology Interest Group
- 2010-2011 Chair, Macalester College Chemistry Club
- 2010-2011 Co-President, Macalester College Women in Science and Math

MEMBERSHIPS, UNIVERSITY SERVICE, CERTIFICATES

Professional Memberships:

- 2018-Present RNA Society
- 2010-Present American Chemical Society

University Service:

- 2023 National Academy Ideation Challenge on RNA Modifications
- 2020-Present Lead Judge, NIH Fellows Award for Research Excellence (Chemistry and Biophysics Section)
- 2020 NCI Outstanding Mentor Selection Committee
- 2018-Present Peer Editor for NIH Postbaccalaureate Graduate School Applications
- 2018-Present Poster Judge for NIH Postbaccalaureate Poster Day
- 2014-2021 Regional Interviewer for Prospective Students, Macalester College
- 2008-2011 Group Leader, Incoming Student Orientation, Macalester College

Certificates:

- 2023 NIH: Workplace Dynamics, Leadership & Management Training Program
- 2021 NIH: Statistics for Biomedical Researchers
- 2021 NIH: Writing and Publishing a Scientific Paper
- 2020 NIH: Scientists Teaching Science Class
- 2020 American Chemical Society Reviewer Lab