

## EDUCATION

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<b>Ph.D. Candidate</b> <b>University of Chicago, Chicago, IL</b> Committee on Genetics, Genomics, and Systems Biology Thesis: "Quantitative Studies of Histone Modifications: Methods and Applications of Chromatin Immunoprecipitation and Next-Generation Sequencing"	June 2020 – June 2022 (anticipated) GPA: 4.000/4.000 Advisor: Alexander J. Ruthenburg, Ph.D.
<b>M.D. Candidate</b> <b>Pritzker School of Medicine, University of Chicago, Chicago, IL</b> Hiatus to pursue Ph.D. between M2 and M3.	August 2018 – June 2024 (anticipated) USMLE Step 1: 262 (May 2020)
<b>Bachelor of Science with Honors</b> <b>University of Chicago, Chicago, IL</b> Majors: Biological Chemistry, Chemistry, and Biological Sciences	September 2014 – June 2018 Dean's List: 2014-2017 GPA: 3.900/4.000

## RESEARCH EXPERIENCE

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<b>Student Researcher</b> Principal Investigator: Alexander J. Ruthenburg, Ph.D. Department of Molecular Genetics and Cell Biology, University of Chicago <ul style="list-style-type: none"><li>Developed novel forms of calibrated chromatin immunoprecipitation to quantify histone modifications</li><li>Developed methods for Bayesian reallocation of ambiguously mapped next-generation sequencing reads</li><li>Served as systems administrator to manage and maintain lab servers</li></ul>	February 2015 – Present
<b>Chart Abstracter</b> Principal Investigator: Renslow Sherer, M.D. Section of Infectious Diseases, University of Chicago <ul style="list-style-type: none"><li>Performed chart abstractions of first 414 COVID-19 admissions to the University of Chicago Medical Center</li><li>Worked on subgroup study examining risk factors and outcomes of COVID-19 patients with coinfections</li></ul>	May 2020 – September 2020
<b>Research Consultant</b> EpiCypher, Inc. Durham, North Carolina, USA <ul style="list-style-type: none"><li>Trained researchers at EpiCypher, Inc. on-site in Durham in calibrated chromatin immunoprecipitation</li><li>Consulted on feasibility of simplification and consolidation of materials and procedures for commercialization</li></ul>	March 2017 – April 2018

## HONORS AND AWARDS

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<b>Best Talk, UChicago Molecular Biosciences Retreat, University of Chicago</b>	October 2021
<b>Growth, Development and Disabilities Training Program Appointee, University of Chicago</b>	April 2020
<b>Ting-Wa Wong MD, PhD Scholarship, University of Chicago</b>	April 2020
<b>Summer Research Program Overall Excellence in Basic Sciences, University of Chicago</b>	August 2019
<b>Keystone Symposia Scholarship Awardee, Keystone Symposia Foundation</b>	December 2018
<b>Frances E. Knock Prize for Outst. Acad. Achievement in Chemistry, University of Chicago</b>	May 2018
<b>Phi Beta Kappa Honor Society, Chapter Beta of Illinois, University of Chicago</b>	May 2017
<b>University of Chicago Student Marshal, University of Chicago</b>	April 2017
<b>Katen Scholar, University of Chicago</b>	Summer 2016
<b>Beatrice G. and Nate H. Sherman Fellowship, University of Chicago</b>	May 2015

## PRESENTATIONS AND PUBLICATIONS

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### PEER REVIEWED PUBLICATIONS

Richter WF, **Shah RN**, Ruthenburg AJ. Non-canonical H3K79me2-dependent pathways promote the survival of MLL-rearranged leukemia. *eLife*. 10, e64960 (2021).

**Shah RN\***, Ruthenburg AJ\*. Sequence deeper without sequencing more: Bayesian resolution of ambiguously mapped reads. *PLOS Comput. Biol.* 17(4), e1008926 (2021). **\*Corresponding authors.**

Grzybowski AT\*, **Shah RN\***, Richter WF, Ruthenburg AJ. Native internally calibrated chromatin immunoprecipitation for quantitative studies of histone post-translational modifications. *Nat. Protoc.* 14, 3275-3302 (2019). **\*Contributed equally.**

**Shah RN**, Grzybowski AT, Cornett EM, Johnstone AL, Dickson BM, Boone BA, Cheek MA, Cowles MW, Maryanski D, Meiners MJ, Tiedemann RL, Vaughan RM, Arora N, Sun ZW, Rothbart SB, Keogh MC, Ruthenburg AJ. Examining the roles of H3K4 methylation states with systematically characterized antibodies. *Mol. Cell* 72, 162-177 (2018).

Werner MS, Sullivan MA, **Shah RN**, Nadadur R, Grzybowski AT, Galat V, Moskowitz I, Ruthenburg AJ. Chromatin-enriched lncRNAs are cell-type specific enhancers for proximal genes. *Nat. Struct. Mol. Biol.* 24, 596-603 (2017).

### PREPRINTS AND MANUSCRIPTS UNDER REVIEW

**Shah RN\***, Grzybowski AT\*, Elias J\*, Chen Z, Hattori T, Lechner CC, Lewis PW, Koide S, Fierz B, Ruthenburg AJ. Re-evaluating the role of nucleosomal bivalency in early development. Preprint available at *bioRxiv*, doi: 10.1101/2021.09.09.458948 (2021). **\*Contributed equally. Under review.**

### PLATFORM PRESENTATIONS

**Shah RN**. Rethinking Bivalency in Early Differentiation. Epicypher 2021: Biological and Clinical Frontiers in Epigenetics. Clearwater Beach, FL. November 2021.

**Shah RN**. Rethinking Bivalency in Early Differentiation. UChicago Molecular Biosciences Retreat. The University of Chicago, Chicago, IL. October 2021.

**Shah RN**. Quantitative Studies of Histone Modifications. Pritzker School of Medicine Summer Research Program Symposium. The University of Chicago, Chicago, IL. August 2019.

**Shah RN**. Quantitative Studies of Histone Modifications. Keystone Symposia on Epigenetics and Human Disease. Banff, Alberta, Canada. March 2019.

**Shah RN**, Grzybowski AT, Ruthenburg AJ. Quantifying Internal Histone Modifications. Midstates Consortium for Math and Science Undergraduate Research Symposium in the Biological Sciences and Psychology. The University of Chicago, Chicago, IL. November 2016.

**Shah RN**, Grzybowski AT, Ruthenburg AJ. Developing Calibrated Chromatin Immunoprecipitation for Internal Modifications. Biological Sciences Collegiate Division Summer Fellowship Symposium. The University of Chicago, Chicago, IL. September 2015.

### POSTER PRESENTATIONS

**Shah RN**, Grzybowski AT, Elias J, Chen Z, Hattori T, Lechner CC, Lewis PW, Koide S, Fierz B, Ruthenburg AJ. Re-evaluating the role of nucleosomal bivalency in early development. Epicypher 2021: Biological and Clinical Frontiers in Epigenetics. Clearwater Beach, FL. November 2021.

**Shah RN**, Grzybowski AT, Ruthenburg AJ. Quantitative Studies of Histone Modifications. Keystone Symposia on Epigenetics and Human Disease. Banff, Alberta, Canada. March 2019.

**Shah RN**, Grzybowski AT, Cornett EM, Johnstone AL, Cheek MA, Meiners MJ, Rothbart SB, Keogh M-C, Ruthenburg AJ. Probing H3K4 Methylform Specificity. Undergraduate Research Symposium. The University of Chicago, Chicago, IL. October 2017.

## PRESENTATIONS AND PUBLICATIONS (continued)

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### POSTER PRESENTATIONS (CONTINUED)

**Shah RN**, Grzybowski AT, Ruthenburg AJ. Quantifying Internal Histone Modifications. National Cancer Institute Site Visit. Northwestern University Physical Sciences – Oncology Center, Evanston, IL. November 2016.

**Shah RN**, Grzybowski AT, Ruthenburg AJ. Denaturative Internally Calibrated Chromatin Immunoprecipitation to Quantify Internal Histone Modifications. Katen Scholars/Potter Fellows Research Symposium. The University of Chicago, Chicago, IL. August 2016.

**Shah RN**, Grzybowski AT, Ruthenburg AJ. Denaturative Internally Calibrated Chromatin Immunoprecipitation Can Quantify Internal Histone Modifications. Undergraduate Research Symposium. The University of Chicago, Chicago, IL. October 2015.

### OTHER CONFERENCE ABSTRACTS

Lehmann CJ, **Shah RN**, Zhu M, Petit NN, Ridgway JP, Sherer R. Identifying Predictors of Coinfection in COVID-19: Making a Difficult Diagnosis. Infectious Diseases Society of America IDWeek 2021. Virtual. October 2021.

## TEACHING EXPERIENCE

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<b>Teaching Assistant, Biological Dynamics</b> University of Chicago	Spring 2021
<b>Teaching Assistant, Molecular Biology of the Cell</b> University of Chicago	Fall 2020
<b>Peer Educator, The Human Body</b> University of Chicago	Fall 2019
<b>Teaching Assistant, Biological Dynamics</b> University of Chicago	Spring 2018
<b>Teaching Assistant, Principles of Physiology</b> University of Chicago	Fall 2017
<b>Teaching Assistant, Katen Scholars Program</b> University of Chicago	Summer 2017
<b>Teaching Assistant, Biological Dynamics</b> University of Chicago	Spring 2017
<b>Teaching Assistant, Molecular Biology of the Cell</b> University of Chicago	Fall 2016
<b>Teaching Assistant, Biological Dynamics</b> University of Chicago	Spring 2016

## VOLUNTEER EXPERIENCE

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<b>New Life Volunteering Society, Chicago, IL</b> <ul style="list-style-type: none"><li>Volunteered in free clinic for underserved patients on the north side of Chicago by taking histories, conducting physical exams, and presenting to attending physicians</li></ul>	September 2018 – Present
<b>University of Chicago Medical Center, Chicago, IL</b> <ul style="list-style-type: none"><li>Volunteered in Emergency Room, NICU waiting room, and Hematology-Oncology Outpatient Clinic</li></ul>	April 2015 – October 2017
<b>NorthShore University HealthSystem, Glenbrook Hospital, Glenview, IL</b> <ul style="list-style-type: none"><li>Worked in Environmental Health and Safety to conduct data analysis and streamline processes</li><li>Volunteered at nursing stations to assist clinical staff in their duties and help ensure patient comfort</li><li>Over 1,300 total volunteer hours logged</li></ul>	June 2012 – December 2016

## **CAMPUS INVOLVEMENT**

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### **Pritzker Dean's Council Representative**

October 2020 – Present

- Representative of the Growth, Development, and Disabilities Training Program (GDDTP) to the Pritzker School of Medicine Dean's Council, working with administration to express the views of the GDDTP MD/PhD students.

### **Pritzker Class Technology Representative**

November 2018 – June 2020

- Technology representative for Pritzker Class of 2022, working with administration to promote more effective use of technology in the medical school and to provide feedback on implementations therein

### **Model United Nations of the University of Chicago (MUNUC)**

October 2014 – February 2018

- Served on thirteen-person Executive Committee to organize Model United Nations conference for over 2,700 high school students with the aim of teaching speaking and writing skills and fostering awareness of global issues
- Served as Under-Secretary-General, directly leading five committee chairs as they developed their Model United Nations committees, trained staff, and operated their respective committees for over 650 high school students

### **University of Chicago Model United Nations Team**

October 2014 – April 2018

- Competed as part of the top-ranked University of Chicago Model United Nations Team in several competitions across North America, winning several awards
- Helped teach new team members the speaking and writing skills needed for competitive success
- Successfully operated several committees in which college students from North America competed