

ALLISON M. PORMAN SWAIN, Ph.D.

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EDUCATION

University of Colorado Anschutz Medical Campus, Aurora, CO Postdoctoral Fellow, Laboratory of Dr. Aaron M. Johnson Biochemistry and Molecular Genetics Department	Feb 2017-Present
Brown University, Providence, RI Ph.D. Molecular Biology, Cell Biology, and Biochemistry Laboratory of Dr. Richard Bennett, MMI Department	Aug 2009-July 2014
Lehigh University, Bethlehem, PA B.S. Molecular Biology Academic Honors: Pool Scholar, Dean's List, High Honors, Biology Departmental Honors Laboratories of Dr. Stefan Maas and Dr. Linda Lowe-Krentz	Aug 2005-May 2009

RESEARCH EXPERIENCE**Postdoctoral Research: m6A in HOTAIR-mediated breast cancer**

- Through co-developing an m6A eCLIP method, I mapped single nucleotide m6A sites and identified sites in the lncRNA HOTAIR. My work discovered an antimorph mutation at a single m6A site in HOTAIR and identified a role for this site in induction of cancer growth & invasion.
- I developed assays to m6A-modify RNA molecules *in vitro* and examine interactions with proteins, chromatin, and other RNAs

This work resulted in two second author publications (publications 3,4) and one first author manuscript that is currently under review (publication 1). This work was funded through a Department of Defense Postdoctoral Fellowship, including independent research funding, and a T32 Postdoctoral fellowship from the CU Anschutz Cancer Biology Program.

Graduate Thesis Research: Phenotypic switching and sexual mating in *Candida tropicalis*

- Pioneered research methods in an understudied human fungal pathogen *C. tropicalis*
- Identified a parasexual cycle in *C. tropicalis* and the role of a white-opaque phenotypic switch
- Identified transcription factors and determined a toggle-switch mechanism for a multistate switch between white, opaque, and a third hybrid state in *C. tropicalis*

This work resulted in two first author publications (publications 8,9) and four additional publications (publications 3,5,6,7). This work was funded through a F31 NRSA Predoctoral Fellowship from NIDCR and a T32 Fellowship from the Molecular Biology, Cell Biology, and Biochemistry Graduate Program.

Undergraduate Thesis Research: Statins effect on MAPK activation in vascular smooth muscle cells

- Designed new project based on literature to investigate effect of statins on MAPK activation in primary rat vascular smooth muscle cells
- Performed over 100 Western Blots to analyze effects of statin treatment on MAPK pathway

This work was funded through the Pool Premedical Scholars Program and resulted in obtaining Biological Sciences Departmental Honors.

HHMI Summer Research: Experimental validation of computationally identified RNA editing sites

- Worked as part of a collaborative team to identify new sites of A-to-I RNA editing by developing computational tools and validating in the lab with RNA obtained from human brain tissue

This work resulted in a publication.

PUBLICATIONS

1. **Porman AM**, Roberts JT, Chrupcala M, Kennedy M, Williams MM, Richer JK, Johnson AM. A single N6-methyladenosine site in lncRNA HOTAIR regulates its function in breast cancer cells. In review at *PLoS Biology*. bioRxiv 2020.06.08.140954 (May 2021); doi:10.1101/2020.06.08.140954
2. Roberts, JT, **Porman, AM** & Johnson, AM. Identification of m6A residues at single-nucleotide resolution using eCLIP and an accessible custom analysis pipeline. *RNA* (2020). doi:10.1261/rna.078543.120
3. Mancera E, Frazer C, **Porman AM**, Ruiz S, Johnson AD, Bennett RJ. Genetic Modification of Closely Related *Candida* Species. *Front Microbiol*. 2019 Mar 19;10:357. doi: 10.3389/fmicb.2019.00357.
4. Balas MM, **Porman AM**, Hansen KC, Johnson AM. SILAC-MS Profiling of Reconstituted Human Chromatin Platforms for the Study of Transcription and RNA Regulation. *J Proteome Res*. 2018 Oct 5;17(10):3475-3484. doi: 10.1021/acs.jproteome.8b00395.
5. Anderson MZ, **Porman AM**, Wang N, Mancera E, Huang D, Cuomo CA, Bennett RJ. A Multistate Toggle Switch Defines Fungal Cell Fates and is Regulated by Synergistic Genetic Cues. *PLoS Genet*. 2016 Oct 6;12(10):e1006353. doi: 10.1371/journal.pgen.1006353.
6. Mancera E, **Porman AM**, Cuomo CA, Bennett RJ, & Johnson AD. Finding a Missing Gene: EFG1 Regulates Morphogenesis in *Candida tropicalis*. *G3* (Bethesda). 2015 Mar 9;5(5):849-56. doi: 10.1534/g3.115.017566.
7. Seervai RN, Jones SK Jr, Hirakawa MP, **Porman AM**, & Bennett RJ. Parasexuality and Ploidy Change in *Candida tropicalis*. *Eukaryot Cell*. 2013 Dec;12(12):1629-40. doi: 10.1128/EC.00128-13.
8. **Porman AM**, Hirakawa MP, Jones, SK Jr, Wang N, & Bennett, RJ. *MTL*-independent phenotypic switching in *Candida tropicalis* and a dual role for Wor1 in regulating switching and filamentation. *PLoS Genet*. 2013 Mar;9(3):e1003369. doi: 10.1371/journal.pgen.1003369.
9. **Porman AM**, Alby K, Hirakawa MP, & Bennett RJ. Phenotypic switching regulates sexual mating in the opportunistic pathogen *Candida tropicalis*. *Proc Natl Acad Sci U S A*. 2011 Dec 27;108(52):21158-63. doi: 10.1073/pnas.1112076109.
10. Maas S, Godfried Sie CP, Stoev I, Dupuis DE, Latona J, **Porman AM**, Evans B, Rekawek P, Kluempers V, Mutter M, Gommans WM, Lopresti D. Genome-wide evaluation and discovery of vertebrate A-to-I RNA editing sites. *Biochem Biophys Res Commun*. 2011 Sep 2;412(3):407-12. doi: 10.1016/j.bbrc.2011.07.075.

PATENTS

Johnson AM, **Swain AMP**, and Roberts JT. "Compositions and methods of use for mutated HOTAIR in the treatment of cancers." U.S. Provisional Patent 63/187,835.

SUBMITTED RESEARCH GRANTS

NIH K99/R00 Pathway to Independence Award, NIDCR	1K99DE030528-01A1
"N6-methyladenosine in <i>Candida</i> white-opaque switching and oral infection"	
Role: PI	Submitted March 2021
Amount: \$90,000/year, 2 years (mentored); \$249,000/year, 3 years (Independent)	
Impact score: 26	

FUNDING

Department of Defense Breast Cancer Research Program Breakthrough Fellowship Award	
BC170270, W81XWH-18-1-0023	July 2018-June 2022
Role: PI (Postdoctoral Fellow)	\$100,000/year for 3 years

NIH T32 Training Grant, Cancer Biology Program

5T32CA190216

Role: Trainee (Postdoctoral Fellow)

June 2017-June 2018

NIH NRSA F31 Predoctoral Award, NIDCR

1F31DE022703

Role: Graduate Fellow

July 2012-July 2015

NIH Training Grant, MCB Graduate Program

T32GM007601

Role: Predoctoral Trainee

September 2010-May 2011

HONORS & AWARDS

1. Eclipse Bioinnovations RNA Grant, “m6A modifications in *C. albicans*,” February 2020
2. RNA Bioscience Travel Grant, for Travel to Keystone Symposia on Noncoding RNAs, January 2020
3. PDRD First Place Poster Presentation, University of Colorado Denver | Anschutz Medical Campus Postdoc Research Day, July 2019
4. PDRD Travel Award, University of Colorado Denver | Anschutz Medical Campus Postdoc Research Day, July 2019
5. Young Investigator Award, FEBS Advanced Lecture Course on Human Fungal Pathogens, May 2013
6. Oliver Cromwell Gorton Arnold Biological Predoctoral Fellow, 2012
7. ASM Student Travel Grant to attend the 11th ASM Conference on Candida and Candidiasis, 2012
8. Lehigh University Pool Premedical Scholar, 2005-2009

PRESENTATIONS

Oral Presentations

1. Colorado RNA Club’s RNA Day Gong Show. Denver, CO. August 1, 2021. Oral presentations, “RNA Day Singalong” and “The secret life of the yeast that live on you.”
2. Keystone Symposia on Noncoding RNAs: Biology & Applications. Virtual Event. May 10-14, 2021. Oral and poster presentation, “A single N6-methyladenosine site in lncRNA HOTAIR regulates its function in breast cancer cells.”
3. EMBL Symposium on The Complex Life of RNA. Virtual Event. October 6, 2020. Invited Oral Presentation, Eclipse Biosciences Webinar Guest Speaker.
4. RNA Biosciences Initiative RNA Collaboration Club. Aurora, CO. March 3, 2020. Invited Chalk Talk Oral Presentation, “Investigating the role of m6A in *Candida albicans* white-opaque switching and mating.”
5. Keystone Symposia on Noncoding RNAs: Mechanism, Function, and Therapy. Whistler, CO. January 12, 2020. Oral and poster presentation, “N6-Methyladenosine and YTHDC1 Regulate Long Noncoding RNA HOTAIR Function in Breast Cancer.”
6. An Evening with RNA, University of Colorado Anschutz Medical Campus RNA Bioscience Initiative. Aurora, CO. November 19, 2019. Oral presentation, “m6A RNA modifications regulate lncRNA HOTAIR in breast cancer.”
7. Cancer Biology Program Retreat. Denver, CO. November 2, 2018. Invited Oral Presentation, “A role for RNA modification m6A in mediating HOTAIR-induced heterochromatin.”
8. Cancer Biology T32 Postdoc Symposium. Aurora, CO. May 18, 2018. Invited Oral Presentation, “A role for RNA modification m6A in mediating HOTAIR-induced heterochromatin in breast cancer.”
9. Molecular Biology Program Symposium. Aurora, CO. April 19, 2018. Invited Lightning Talk Oral Presentation, “Epigenetics & Epitranscriptomics: Investigating m6A in lncRNA HOTAIR function.”
10. Proteintech Webinar Wednesdays Presentation. April 2, 2018. “Molecular Mechanism of lncRNA HOTAIR.” <https://fast.wistia.net/embed/iframe/05bd48oqxm>

11. RNA Biosciences Initiative RNA Collaboration Club. Aurora, CO. May 9, 2017. Invited Oral Chalk Talk Presentation, "RNA Collaboration Club – Chalk Talk, May 9, 2017 "The role of the RNA modification m6A in HOTAIR-mediated gene repression."
12. 11th ASM Meeting on *Candida* and Candidiasis. San Francisco, CA, March 29-April 2, 2012. General Session Oral Presentation, "A Phenotypic Switch Regulates the Program of Sexual Mating in *Candida tropicalis*."

Poster Presentations

1. RNA Society Conference. Virtual Event. May 26-31, 2020. Poster presentation, "A single m6A site regulates HOTAIR function in breast cancer."
2. University of Colorado Denver | Anschutz Medical Campus Postdoc Research Day 2019. Aurora, CO. June 11, 2019. Poster Presentation, "A role for m6A RNA modifications in mediating HOTAIR-induced breast cancer metastasis." Gong Show Presentation, "Modified HOTAIR Helps Breast Cancer Take Flight."
3. Abcam Conference on the Functions of Epitranscriptomes. Chicago, IL. June 17-18, 2019. Poster Presentation, "A role for m6A RNA modifications in mediating HOTAIR-induced breast cancer metastasis."
4. Molecular Biology Graduate Program Retreat. Granby, CO. Poster Presentation, "lncRNA HOTAIR gets m6A modified in breast cancer."
5. 12th ASM Meeting on *Candida* and Candidiasis. New Orleans, LA, March 26-30, 2014. Poster Presentation, "Divergent Regulation: Highlighting Differences in White-Opaque Switching Between *Candida tropicalis* and *Candida albicans*."
6. 5th FEBS Advanced Lecture Course on Human Fungal Pathogens: Molecular Mechanisms of Host-Pathogen Interactions and Virulence. La Colle-sur-Loup, France, May 25-31, 2013. Poster Presentation, "Defining the role of the MTL and the Wor1 transcription factor in the regulation of white-opaque phenotypic switching in *Candida tropicalis*."

TEACHING EXPERIENCE

Lecturer, University of Colorado Denver

Fall 2020

Course: General Genetics (BIOL3832)

Responsibilities: Developed hybrid course using materials from previous lecturers. Designed and posted virtual lecture videos twice a week, weekly quizzes, quarterly exams, and final project to Canvas. Graded assignments for 30 students.

Guest Lecturer, University of Colorado Anschutz Medical Campus

2020-2021

Course: Foundations in Molecular Biology (BSBT6073)

Responsibilities: Invited to co-teach one 2-hour lecture on techniques in molecular biology with 5 other postdocs. Organized and assigned topics to other postdocs. Taught 20 minute lecture on qRT-PCR and northern blotting techniques. Developed discussion and test questions. Invited back to teach for a second year.

Lecturer, University of Colorado Denver

Spring 2019

Course: Molecular Biology Laboratory for Masters Students (BIOL5125)

Responsibilities: Working with Dr. Chris Phiel, I independently led a section of the Molecular Biology Laboratory Course for students in the Biomedical Sciences and Biotechnology Masters Program on performing CRISPR in human cells. Designed and delivered lectures before laboratory class. Designed and graded weekly quizzes. Helped students and TA troubleshoot experiments. Addressed questions during laboratory sessions.

Initiative for Maximizing Student Development Senior Scholar, Brown University

Spring 2014

Course: Scientific Writing: Key Principles

Responsibilities: Serving as the Senior Scholar, I helped answer workshop participants questions, reviewed assignment submissions, and supported instructors.

Teaching Assistant, Brown University

Fall 2011

Course: Advanced Biochemistry Lab*Responsibilities:* Under guidance of Dr. Rebecca Page, organized and led one section of this Advanced Biochemistry Laboratory course, including lecturing, testing and guiding experiments, grading reports, and answering student questions.**MENTORING EXPERIENCE**

 Hamza Ahmed, Undergraduate Intern from CU Denver, RBI Summer Intern 2021-Present

 Pedro X. Medina, Student from University of Puerto Rico-Arecibo, Mentee in the National Summer Undergraduate Research Project (NSURP) Summer 2020
Current: NSF REU Scholar at UC Berkeley

 Ariel Levine, High School Volunteer and RNA Biosciences Summer Intern 2018-2019
Current: Undergraduate at Duke University

 Students from BIOL5125 Course Spring 2019
 Allison Phelan, *Current: Research Nursing Project Manager at Illingworth Research Group*
 Charles Satterlee, *Current: Senior Laboratory Associate at SomaLogic*
 Tyler Matlock, *Current: Researcher at University of Colorado AMC*
 Kenneth Link, *Current: Educator at Numerade*
 Alecia Morgan, *Current: D.O. Medical Student at New York Institute of Technology*
 Kayla Kurzawa, *Current: Regulatory Affairs Coordinator at University of Colorado AMC*
 Chau Le, *Current: Clinical Intern at University of Colorado AMC*
 TA Maria Nikulkova, *Current: PhD Student at New York University*

 Madeline Chrupcala, RNA Biosciences Intern Summer 2018
Current: PhD Student at Dartmouth University

Justin Roberts, Molecular Biology Graduate Student 2017-Present

 Natasha Nelson, Undergraduate Student at Brown University 2012-2014
Current: Project Coordinator at Thrasio

 Riyad Seervai, Undergraduate Student at Brown University 2011-2014
Current: Physician-Scientist in Training at Baylor College of Medicine

 Benjamin Cowan, Undergraduate Student at Brown University 2011-2013
Current: Resident Physician, Anesthesiology at NYU Langone Health

 Na Wang, Undergraduate Student and Lab Assistant at Brown University 2010-2014
Current: Resident, Podiatric Surgery at Long Island Jewish Medical Center
LEADERSHIP & SERVICE

 Biochemistry & Molecular Genetics Diversity, Equity, Anti-Racism, and Inclusion (DEAR) Initiative, Inclusion Subcommittee Co-chair 2020-Present
 Departmental Representative Program Chair, CU Anschutz Postdoctoral Association 2020-Present
 Mentorship Program Coordinator of Women in STEM at CU Anschutz 2019-Present
 Interim Treasurer of Women in STEM at CU Anschutz Fall 2019
 President of Women in STEM at CU Anschutz 2018-2019
 Trainee Search Committee for Biochemistry & Molecular Genetics Department Chair Fall 2018
 Biochemistry and Molecular Genetics Department Representative, CU Anschutz Postdoc Association 2017-Present

Postdoctoral Liaison of Women in STEM at CU Anschutz	2017-2018
Chair of the Cancer Biology Program Postdoctoral Symposium Committee at CU AMC	2017-2018
Volunteer at DPS CareerCoach Program	Fall 2017
Judge for Gates Summer Internship Program, University of Colorado Anschutz	August 2017
Graduate-Undergraduate Mentoring Initiative Mentor, Brown University	2014
Graduate Student Council Representative, MCB Program	2012-2014
MCB Graduate Program Admissions Committee	2012-2013
Judge for Sigma Xi Student Research Showcase	March 2014
Judge at Rhode Island Science and Engineering Fair	2011-2012
MCB Graduate Program Sheridan Center Liaison	2010-2011
Brown University Women in Science Mentor	2010-2011

OTHER TRAINING

Building Up Training Program for Diversity in Medical Science, CU Anschutz	2020-2021
Diversity on Campus Workshop, CU Boulder	May 2018
Learning How to Teach Workshop	Spring 2018
Sheridan Center Teaching Certificate I & II Programs	Fall 2012

REFERENCES

Dr. Aaron M. Johnson, PhD

Associate Professor, University of Colorado Anschutz Medical Campus

Department of Biochemistry and Molecular Genetics

Postdoctoral Fellowship Advisor

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Dr. Richard Bennett, PhD

Professor of Biology, Interim Chair of Molecular Microbiology and Immunology

Brown University

Graduate Thesis Advisor

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Dr. Jennifer Richer, PhD

Professor and Co-Leader of the University of Colorado Tumor Host Interactions Program

Department of Pathology

Co-advisor for Postdoctoral Department of Defense Fellowship

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Dr. Jeffrey S. Kieft, PhD

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Dr. Julia P. Cooper, PhD

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