CURRICULUM VITAE

SARAH J HAINER, Ph.D.

Department of Biological Sciences
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CURRENT POSITION

2018 – present **Assistant Professor**
Department of Biological Sciences, University of Pittsburgh

EDUCATION

2012 **Ph.D., Molecular, Cell, and Developmental Biology** University of Pittsburgh.
Department of Biological Sciences

2007 **B.S., Molecular Biology** University of Pittsburgh.
Department of Biological Sciences

PREVIOUS POSITIONS

Sept. 2012 – Dec. 2017 **Postdoctoral Research Scholar**
Advisor: Dr. Thomas G. Fazzio. Department of Molecular, Cell, and Cancer Biology, University of Massachusetts Medical School.
The Role of esBAF in Regulating ncRNA mediated Gene Expression in ES cells.

Aug. 2007 – Aug. 2012 **Doctoral Student**
Advisor: Dr. Joseph Martens. Department of Biological Sciences, University of Pittsburgh. *The Contribution of Chromatin and Chromatin Associated Factors to Transcription Regulation in* Saccharomyces cerevisiae

Sept. 2004 – Aug. 2007 **Undergraduate Researcher**
Advisor: Dr. Jeffrey Lawrence. Department of Biological Sciences, University of Pittsburgh. *The Influence of Protozoan Predation on Antigenic Diversity in* Salmonella enterica

ACTIVE GRANTS

	Years	Total Direct Costs
New Investigator Award. "Building a network of ncRNA regulation". Charles E. Kaufman Foundation. **Role: PI**	2018 – 2020	$136,364
Research Grant. "Mechanosensitive orchestration of transcriptional program of MKL coupling to selective autophage-driven regulation of cell migration". University of Pittsburgh Collaborative Fund. **Role: co-PI**	2019 – 2020	$10,000
Research Grant. "Investigating the role of overlapping dinucleosomes in gene regulation." University of Pittsburgh Central Research Development Fund. **Role: PI**	2019 – 2021	$18,000
R35GM133732, Research Grant. "Chromatin-mediated mechanisms of transcription regulation in ES cells." National Institute of General Medicine, NIH, R35. **Role: PI**	2019 – 2024	$1,250,000
Research Grant. "Determining BAF complex function during neural development." Whitehall Foundation. **Role: PI**	2019 – 2022	$206,476

PREVIOUSLY FUNDED GRANTS	**Years**	**Direct Costs**
Research Grant. "Determining the Role of the Essential Elongation Factor Spt16 in Embryonic Stem Cell Pluripotency". Samuel and Emma Winters Foundation, Pittsburgh, PA. **Role: PI**	2018 – 2019	$10,600
CDP-8895-16, Special Fellow. "Role of Nucleosome Remodeling Factors in Regulating ncRNA Expression". Leukemia and Lymphoma Society, Career Development Grant. **Role: PI.**	2016 – 2019	$185,715

SUBMITTED/PENDING GRANTS	**Years**	**Total Direct Costs**
EEC Project Grant. "Engineering Research Center for Advanced Organ Biofabrication". Engineering Research Centers, NSF. **Role: co-I (Director Cook)**	2020 – 2025	$674,810
Research Grant. "MRTF-profilin axis in ocular neovascularization". National Institute NIH, R01. **Role: co-PI (PI Roy)**	2020 – 2024	$94,725
Research Grant. "Using Nanobodies to increase the sensitivity and resolution of chromatin profiling through uliCUT&RUN". National Institute of Cancer, NIH, R33. **Role: PI**	2020 – 2023	$450,000
Research Grant. "Coupling protein localization and RNA-seq in a single cell: application to gene expression through control of genomic organization". Scholars Award Program, WiSTEM^{2}D, Johnson&Johnson. **Role: PI**	2020 – 2023	$150,000
Research Grant. New Investigator Research Fellowship, Sloan. **Role: PI**	2020 – 2021	$70,00
Research Grant. "Imaging nanoscale chromatin folding in early carcinogenesis" NCI, NIH, R01 **Role: co-PI (PI Liu)**	2020 – 2024	$213,819
Research Grant. "Tissue resident memory T cells are a reservoir for oscillatory inflammation. Chan Zuckerberg Initiative. **Role: co-PI (PI Poholek)**	2020 – 2022	$150,000

AWARDS AND FELLOWSHIPS	**Year(s)**
Leukemia and Lymphoma Special Fellow, Postdoctoral Fellowship/Transition Award	2016 – 2019
Leukemia and Lymphoma Fellow, Postdoctoral Fellowship Award	2013 – 2016
Postdoctoral Training Program Fellowship (T32), Postdoctoral Fellowship at the University of Massachusetts Medical School	2012 – 2013
Andrew Mellon Predoctoral Fellowship, Mellon Foundation	2011 – 2012
Mary P. Edmonds Graduate Student Award, University of Pittsburgh, Department of Biological Sciences	2011
Outstanding Presentation Award, University of Pittsburgh, Dietrich School of Arts and Sciences	2011
Honorable Mention for Poster and Poster Presentation, Pennsylvania State University Summer Symposium on Chromatin and Epigenetics	2011
***Pisum* Prize Poster Award.** University of Pittsburgh, Department of Biological Sciences	2010
Samuel D. Colella Award for Undergraduate Research. University of Pittsburgh, Department of Biological Sciences	2006

PUBLICATIONS

DC Klein and **SJ Hainer**. Chromatin Regulation and Dynamics in Stem Cells. Current Topics in Developmental Biology, Accepted.

DC Klein and **SJ Hainer**. Genomic Methods in Profiling DNA Accessibility and Factor Localization. *Chromosome Res*. 2019 Nov 27

C Tavera-Montanez, **SJ Hainer**, D Cangussu, SJV Gordon, Y Xiao, P Reyes-Gutierrez, AN Imbalzano, JG Navea, TG Fazzio, T Padilla-Benavides. The classic metal-sensing transcription factor MTF1 promotes myogenesis in response to copper. *FASEB J*. 2019 Dec; 33(12):14556-14574

SJ Hainer*, A Boskovic, KN McCannell, OJ Rando, TG Fazzio*. Profiling of pluripotency factors in individual stem cells and early embryos. *Cell*. 2019 May 16; 177(5):1319-1329

SJ Hainer* and TG Fazzio*. "High Resolution Chromatin Profiling using CUT&RUN". Current Protocols Molecular Biology. 2019 April;126(1):e85

*denotes co-corresponding authors

Publications Prior to University of Pittsburgh Appointment:

D Acharya, **SJ Hainer**, Y Yoon, F Wang, I Bach, JA Rivera-Perez, TG Fazzio. KAT-independent gene regulation by Tip60 promotes ESC self-renewal but not pluripotency. Cell Reports. 2017 19: 671-679

SJ Hainer, KN McCannell, J Yu, L Ee, LJ Zhu, OJ Rando, TG Fazzio. DNA methylation directs genomic localization of Mbd2 and Mbd3 in ES cells. Elife. 2016 Nov 16;5.

SJ Hainer and JA Martens. Regulation of chaperone binding and nucleosome dynamics by key residues within the globular domain of histone H3. Epigenetics & Chromatin. 2016 Apr 30;9:17.

SJ Hainer and TG Fazzio. Regulation of Nucleosome Architecture and Factor Binding Revealed by Nuclease Footprinting of the ESC Genome. Cell Reports. 2015 Oct 6;13(1):61-9

SJ Hainer, W Gu, BR Carone, BL Landry, OJ Rando, CC Mello, TG Fazzio. Suppression of pervasive noncoding transcription in embryonic stem cells by esBAF. Genes & Dev. 2015 Feb 15;29(4): 362-378

PB Chen, LJ Zhu, **SJ Hainer**, KN McCannell, TG Fazzio. Unbiased chromatin accessibility profiling by RED-seq uncovers unique features of nucleosome variants in vivo. BMC Genomics. 2014 15:1104

BR Carone, JH Hung, **SJ Hainer**, MT Chou, DM Carone, Z Weng, TG Fazzio, OJ Rando. High-resolution mapping of chromatin packaging in mouse embryonic stem cells and sperm. Dev Cell. 2014 Jul 14: 11-22

SJ Hainer, BA Charsar, SB Cohen, JA Martens. Identification of mutant versions of the Spt16 histone chaperone that are defective for transcription-coupled nucleosome occupancy in *Saccharomyces cerevisiae*. G3 (Bethesda). 2012 May 2:555-567

JA Pruneski, **SJ Hainer**, KO Petrov, JA Martens. The Paf1 complex represses *SER3* transcription in *Saccharomyces cerevisiae* by facilitating intergenic transcription-dependent nucleosome occupancy of the *SER3* promoter. Eukaryotic Cell. 2011 Oct;10(10):1283-94

SJ Hainer and JA Martens. Identification of histone mutations that are required for transcription-coupled nucleosome occupancy. Mol Cell Biol. 2011 Sep;31(17):3557-68

SJ Hainer and JA Martens. Transcription of ncDNA across regulatory sequences: many roads lead to local gene regulation. Transcription. 2011 May/June 2(3):120-123

SJ Hainer, JA Pruneski, RD Mitchell, R Monteverde, JA Martens. Intergenic transcription causes repression by directing nucleosome assembly. Genes & Dev. 2011 Jan 1;25(1):29-40

POPULAR PRESS

"uliCUT&RUN maps protein binding on chromatin in single cells and single embryos", EurekAlert!. April 8, 2019. https://eurekalert.org/pub_releases/2019-04/uop-ump040819.php

INVITED PRESENTATIONS

Cold Spring Harbor Laboratories Course on Chromatin, Epigenetics, and Transcription, Guest lecture. To be given July 2020

Indiana University School of Medicine. To be given May 2020

Oregon State University. To be given May 2020

Keystone Symposia: Gene Regulation from Mechanism to Disease. To be given January 2020

Human Genetics Department, University of Pittsburgh. November 2019

Michigan State University. October 2019

Cold Spring Harbor Laboratories Meeting Mechanisms of Eukaryotic Transcription, August 2019

Penn State Molecular Biology Symposium on Chromatin and Epigenetic Regulation of Transcription, July 2019
Pittsburgh Local Nucleic Acids Meeting, Carnegie Mellon University. May 2019
The Epigenome Across the Lifespan, University of Pittsburgh. May 2019
Department of Biological Sciences, University of the Sciences in Philadelphia. April 2019
Computational and Systems Biology, University of Pittsburgh. January 2019
Lynch Syndrome Focus Group, University of Pittsburgh. January 2019
School of Engineering/Biological Sciences collaborative symposium, University of Pittsburgh. Dec 2018
School of Medicine/Biological Sciences collaborative symposium, University of Pittsburgh. May 2018
Pittsburgh Area Chromatin Symposium, University of Pittsburgh. May 2018
Magee-Womens Research Institute, University of Pittsburgh. March 2018

CONFERENCE POSTER PRESENTATIONS

Keystone Symposia: Gene Regulation from Mechanism to Disease, Denver, CO, USA. January 2020
Keystone Symposia: Gene Control in Development Disease, British Columbia, Canada. March 2018
Cold Spring Harbor Laboratories Systems Biology Conference, New York, USA. March 2018

PROFESSIONAL SERVICE

Editorial Board(s), Guest Editorships, Advisory Boards

Editorial Advisory Board, *Chromosome Research* 2018-2020
Early Career Reviewer, *eLife* 2018-2019
Reviewer, *WIREs System Biology and Medicine* 2019

Manuscript Reviews:

Nature, 2019 (1); Nucleic Acid Research, 2019 (2); WIREs System Biology and Medicine, 2019 (1); Nature Communications, 2019 (1); PLoS Biology, 2019 (1)

UNDERGRADUATE-LEVEL TEACHING SINCE APPOINTMENT

Instructor: Department of Biological Sciences Genomics (BIOSC1275), University of Pittsburgh, January 2020-April 2020.

GRADUATE-LEVEL TEACHING SINCE APPOINTMENT

Guest Lecturer: Department of Biological Sciences Graduate Genomic Course, University of Pittsburgh, October 1, 2018. "Genome-wide epigenetic profiling methods". 1 Lecture, 2 hours.

TEACHING PRIOR TO APPOINTMENT

Teaching Assistant, Department of Biological Sciences, University of Pittsburgh.
Introduction to Biology Laboratory II. Summer 2012. Duties: Lab setup and instruction

Teaching Assistant, Department of Biological Sciences, University of Pittsburgh.
Introduction to Biology Laboratory I. Summer 2012. Duties: Lab setup and instruction

Teaching Assistant, Department of Biological Sciences, University of Pittsburgh.
Virology Laboratory. Fall 2010. Duties: Lab setup and instruction

LAB PERSONNEL AND ACTIVITIES

Current Personnel	Position	Start Date
Cailin Jordan	Undergraduate Researcher	May 2019

Sarah Tripplehorn	MCDB PhD Student (Joint with K. Arndt)	April 2019
Benjamin Patty	MCDB PhD Student	April 2019
Santana Lardo	Research Specialist II	June 2018
Christine Troy	Research Specialist II	April 2018
David Klein	MCDB PhD Student	February 2018
Dominic Hendrickson	Undergraduate Researcher	February 2018
Lisa Coe	Undergraduate Researcher	January 2018

Previous Personnel	Position	Dates	Subsequent positions (most recent listed last)
Sanchirmaa Namjilsuren	Rotation Student	February 2020 – April 2020	First year; rotating
Mitchell Lesko	Rotation Student	August 2019 – November 2019	First year; rotating
Alex Francette	Rotation Student	February 2019 – April 2019	PhD in K. Arndt Lab
Shunran Zhang	Rotation Student	November 2018 – February 2019	Exited Program
Caleb Kim	Undergraduate Researcher	February 2018 – July 2018	Undergraduate student

Student Research Fellowships	Name/Position	Year(s)
HHMI Summer Research Fellowship. Department of Biological Sciences, University of Pittsburgh.	Lisa Coe, Undergraduate	Summer, 2018
HHMI Summer Research Fellowship. Department of Biological Sciences, University of Pittsburgh.	Cailin Jordan, Undergraduate	Summer, 2019

UNIVERSITY SERVICE:

Departmental committees:

Committee	Role	Academic Year(s)
Diversity Initiative Committee	Member	2019 – 2020
Graduate Fellowship Committee	Member	2019 – 2020
HHMI Oversite Committee	Member	2019

Dissertation committees (University of Pittsburgh Department of Biological Sciences):

Student	Role	Purpose	P.I.	Program	Dates
Yunye Zhu	Member	PhD Thesis	Kaplan	MCDB	Spring 2019 – Present
Alex Francette	Member	Comps/Thesis	Arndt	MCDB	Fall 2019 – Present
Payal Arora	Member	Comps/Thesis	Kaplan	MCDB	Fall 2019 – Present

Student	Role	Purpose	P.I.	Program	Dates
Madeline Torres	Member	HMB committee	n/a	HMB	Fall 2019 – Spring 2020

Other Service:
Intersectionality Initiative Lead, Early Career Group eLife Ambassador 2019–2020