

## Sarah G. Swygert, Ph.D.

Department of Biochemistry and Molecular Biology  
Colorado State University  
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### Positions and Affiliations

<b>Assistant Professor</b> Department of Biochemistry and Molecular Biology Faculty Member, Cell and Molecular Biology Program Affiliate Faculty, Data Science Research Institute Colorado State University, Fort Collins, Colorado	2022-present
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### Education and Training

<b>Postdoctoral Fellow</b> Fred Hutchinson Cancer Research Center, Seattle, Washington Research Advisor: Toshio Tsukiyama, Ph.D., D.V.M. Topic: Mechanisms and functions of repressive chromatin structure in quiescent cells.	2015-2021
<b>Doctor of Philosophy</b> (Biochemistry and Molecular Pharmacology) University of Massachusetts Medical School, Worcester, Massachusetts Research Advisor: Craig L. Peterson, Ph.D. Thesis: The solution-state conformation of biochemically reconstituted SIR heterochromatin.	2009-2015
<b>Research Specialist</b> Emory University, Atlanta, Georgia Research Advisor: Christian P. Larsen, M.D., D.Phil. Topic: Monitoring viral load in <i>Rhesus macaque</i> islet cell transplant recipients.	2008-2009
<b>Bachelor of Arts</b> (Biochemistry and Molecular Biology) Agnes Scott College, Decatur, Georgia Undergraduate Research Advisor (2006-2007): Timothy S. Finco, Ph.D. Topic: Transcriptional regulation of the human <i>LAT</i> gene.	2004-2008

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### Research Support

<b>K99/R00 Pathway to Independence Award</b> (K99GM134150) National Institute of General Medical Sciences	2019-2024
<b>F32 Ruth L. Kirschstein National Research Service Award</b> (F32GM120962) National Institute of General Medical Sciences	2017-2019
<b>T32 Ruth L. Kirschstein National Research Service Award</b> (T32CA009657) National Cancer Institute	2016-2017

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### Peer-Reviewed Publications

1. Swygert, S.G.,\* Lin, D., Portillo-Ledesma, S., Lin, P.Y., Hunt, D.R., Kao, C.F., Schlick, T., Noble, W.S., Tsukiyama, T.\* Local chromatin fiber folding represses transcription and loop extrusion in quiescent cells. *eLife* **10:e72062**, (2021). \*Corresponding authors.

2. **Swygert, S.G.**, Kim, S., Wu, X., Fu, T., Hsieh, T.H., Rando, O.J., Eisenman, R.N., Shendure, J., McKnight, J.N., Tsukiyama, T. Condensin-dependent chromatin compaction represses transcription globally during quiescence. *Molecular Cell* **73**, 533-546 (2019). Recommended by Faculty of 1000.
3. **Swygert, S.G.**, Senapati, S., Bolukbasi, M.F., Wolfe, S.A., Lindsay, S., Peterson, C.L. SIR proteins create compact heterochromatin fibers. *Proceedings of the National Academy of Sciences* **115**, 12447-12452 (2018).
4. Adkins, N.L., **Swygert, S.G.**, Kaur, P., Niu, H., Grigoryev, S.A., Sung, P., Wang, H., Peterson, C.L. Nucleosome-like, single-stranded DNA (ssDNA)-histone octamer complexes and the implication for DNA double strand break repair. *Journal of Biological Chemistry* **292**, 5271-5281 (2017).
5. Zhao, H., Ghirlando, R., Alfonso, C., Arisaka, F., Attali, I., Bain, D.L., Bakhtina, M.M., Becker, D.F., Bedwell, G.J., Bekdemir, A., Besong, T.M.D., Birck, C., Brautigam, C.A., Brennerman, W., Byron, O., Bzowska, A., Chaires, J.B., Chaton, C.T., Cölfen, H., Connaghan, K.D., Crowley, K.A., Curth, U., Daviter, T., Dean, W.L., Díez, A.I., Ebel, C., Eckert, D.M., Eisele, L.E., Eisenstein, E., England, P., Escalante, C., Fagan, J.A., Fairman, R., Finn, R.M., Fischle, W., de la Torre, J.G., Gor, J., Gustafsson, H., Hall, D., Harding, S.E., Hernández-Cifre, J.G., Herr, A.B., Howell, E.E., Isaac, R.S., Jao, S.C., Jose, D., Kim, S.J., Kokona, B., Kornblatt, J.A., Kosek, D., Krayukhina, E., Krzikike, D., Eric A. Kuszniir, E.A., Kwon, H., Larson, A., Laue, T.M., Le Roy, A., Leech, A.P., Lilie, H., Luger, K., Luque-Ortega, J.R., Ma, J., May, C.A., Maynard, E.L., Modrak-Wojcik, A., Mok, Y.F., Mücke, N., Nagel-Steger, L., Narlikar, G.J., Noda, M., Nourse, A., Obsil, T., Park, C.K., Park, J.K., Pawelek, P.D., Perdue, E.E., Perkins, S.J., Perugini, M.A., Peterson, C.L., Peverelli, M.G., Piszczek, G., Prag, G., Prevelige, P.E., Raynal, B.D.E., Rezabkova, L., Richter, K., Ringel, A.E., Rosenberg, R., Rowe, A.J., Rufer, A.C., Scott, D.J., Seravalli, J.G., Solovyova, A.S., Song, R., Staunton, D., Stoddard, C., Stott, K., Strauss, H.M., Streicher, W.W., Sumida, J.P., **Swygert, S.G.**, Szczepanowski, R.H., Tessmer, I., Toth, R.T., Tripathy, A., Uchiyama, S., Uebel, S.F.W., Unzai, S., Gruber, A.V., von Hippel, P.H., Wandrey, C., Wang, S.H., Weitzel, S.E., Wielgus-Kutrowska, B., Wolberger, C., Wolff, M., Wright, E., Wu, Y.S., Wubben, J.M., Schuck, P. A multilaboratory comparison of calibration accuracy and the performance of external references in analytical ultracentrifugation. *PloS One* **10**, e0126420 (2015).
6. **Swygert, S.G.**, Manning, B.J., Senapati, S., Kaur, P., Lindsay, S., Demeler, B., Peterson, C.L. Solution-state conformation and stoichiometry of yeast Sir3 heterochromatin fibres. *Nature Communications* **5**, 4751 (2014).
7. Badell, I.R., Russell, M.C., Thompson, P.W., Turner, A.P., Weaver, T.A., Robertson, J.M., Avila, J.G., Cano, J.A., Johnson, B.E., Song, M., Leopardi, F.V., **Swygert, S.**, Strobert, E.A., Ford, M.L., Kirk, A.D., Larsen, C.P. LFA-1-specific therapy prolongs allograft survival in *Rhesus macaques*. *Journal of Clinical Investigation* **120**, 4520-4531 (2010).
8. Whitten, C.,\* **Swygert, S.**,\* Butler, S.E.,\* Finco T.S. Transcription of the LAT gene is regulated by multiple binding sites for Sp1 and Sp3. *Gene* **413**, 58-66 (2008). \*Authors contributed equally.

## Reviews and Book Chapters

1. **Swygert, S.G.**, Tsukiyama, T. Unraveling quiescence-specific repressive chromatin domains. *Current Genetics* **65**, 1145-1151 (2019).
2. Spain M.M., **Swygert S.G.**, Tsukiyama T. Preparation and analysis of *Saccharomyces cerevisiae* quiescent cells. In: Lacorazza H. (eds) *Cellular Quiescence. Methods in Molecular Biology*, vol 1686. Humana Press, New York, NY (2018).
3. **Swygert, S.G.** & Peterson, C.L. Chromatin dynamics: interplay between remodeling enzymes and histone modifications. *Biochimica et Biophysica Acta - Gene Regulatory Mechanisms* **1839**, 728-736 (2014).

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## Extramural Presentations

Local chromatin fiber folding represses transcription and loop extrusion in quiescent cells. (Invited talk) <b>Biophysical Society Multiscale Genome Organization Webinars</b>	2021
(Volunteered talk) <b>Colorado Genome Regulation Seminar</b>	2021
Local chromatin fiber folding represses transcription in quiescent cells. (Talk) <b>CSHL Meeting on Epigenetics and Chromatin</b>	2020
(Poster) <b>EMBL Transcription and Chromatin Conference</b>	2020
Global condensin redistribution represses transcription during quiescence. (Poster) <b>Penn State Chromatin &amp; Epigenetic Regulation of Transcription Meeting</b>	2019
Condensin-dependent chromatin compaction represses transcription globally during quiescence. (Talk) <b>Gordon Research Conference on Chromatin Structure and Function</b>	2018
(Poster) <b>CSHL Meeting on Mechanisms of Eukaryotic Transcription</b>	2017
Solution-state conformation and stoichiometry of yeast Sir3 heterochromatin fibers. (Poster) <b>Gordon Research Conference on Chromatin Structure and Function</b>	2014

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## Service

<b>Manuscript Review</b>	2012-present
Reviewed and co-reviewed papers for a variety of journals including: <i>Nature</i> , <i>Cell</i> , <i>Molecular Cell</i> , <i>Nature Structural and Molecular Biology</i> , <i>eLife</i> , <i>Genome Research</i> , and <i>Biophysical Journal</i> .	
<b>Chromatin Club Coordinator</b>	2016-2020
Fred Hutchinson Cancer Research Center, Seattle, Washington Organized a monthly research and paper discussion meeting attended by groups at the Fred Hutchinson Cancer Research Center and the University of Washington.	
<b>Postdoc-hosted Seminar Speaker Committee Chair</b>	2018-2020
Fred Hutchinson Cancer Research Center, Seattle, Washington Chaired a committee of postdoctoral researchers in the Basic Sciences Division responsible for selecting and hosting a visiting seminar speaker.	
<b>Scientific Communications Liason Selection Committee</b>	2019
Fred Hutchinson Cancer Research Center, Seattle, Washington Participated in selecting and interviewing candidates responsible for communicating Basic Sciences Division research to donors and the public.	
<b>Weintraub Award Review Committee</b>	2017
Fred Hutchinson Cancer Research Center, Seattle, Washington	
<b>Scientific Advisory Committee Representative</b>	2017
Fred Hutchinson Cancer Research Center, Seattle, Washington Was selected to give a research presentation to and to interact with members of a Scientific Advisory Committee evaluating the Basic Sciences Division.	
<b>Admissions Review Committee</b>	2015-2016
Fred Hutchinson Summer Undergraduate Research Program, Seattle, Washington	

Sarah G. Swygert

**Student-Invited Speaker Host** 2012-2013  
University of Massachusetts Medical School, Worcester, Massachusetts  
Was selected by the Biochemistry and Molecular Pharmacology department to represent the students in selecting and hosting a visiting seminar speaker.

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### Teaching and Mentoring

**Mentored Graduate Rotation Students at Colorado State University**  
Kayla Stewart (Biochemistry and Molecular Biology) 2022-present  
Ban Alkurdi (Cell and Molecular Biology) 2022  
Tyler Guthrie (Biochemistry and Molecular Biology) 2022

**Mentored Undergraduate Students at Colorado State University**  
Jason Hernandez (BC475, student hourly) 2022-present  
Paige Churchill (student hourly) 2022-present

**Mentored Graduate Students at the Fred Hutchinson Cancer Research Center**  
Alison Greenlaw 2019-2021

**Mentored Post-baccalaureates at the Fred Hutchinson Cancer Research Center**  
Dakota Hunt (now a Ph.D. student at the University of Colorado, Boulder) 2019-2021  
Tianhong Fu (now a Masters student at the University of Arizona) 2015-2019  
Kean Bracerros (now a Ph.D. student at the University of North Carolina, Chapel Hill) 2015-2017

**Graduate Core Course Mentor** 2010-2011  
University of Massachusetts Medical School, Worcester, Massachusetts  
Organized and led a weekly lecture review and tutoring session for first year graduate students completing courses in genetics and cell biology.

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### Professional Development

**Creating Inclusive Excellence Program** 2022-present  
21 hour program that seeks to create diversity, equity, and inclusion practitioners  
Colorado State University, Fort Collins, CO

**Supervisor Development Program** 2022  
18 hour training program focused on maximizing potential as a supervisor  
Colorado State University, Fort Collins, CO

**Safe Zone Training** 2022  
3 hour training program for creating inclusive and safe spaces for LGBTQIA+ community members  
Colorado State University, Fort Collins, CO

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### Outreach

**Conference Abstract and Travel Award Review** 2021  
Society for Advancement of Chicanos/Hispanics and Native Americans in Science

**Mentor and Poster Session Judge** 2016  
Fred Hutchinson Summer Undergraduate Research Program

Sarah G. Swygert

**Judge**

Northwest Association for Biomedical Research Middle School Essay Contest

2016

**Judge**

Massachusetts State Middle School Science and Engineering Fair

2013

**Volunteer**

Davis Hill Elementary School Math and Science Night, Holden, Massachusetts

2012

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