Steven M. Johnson, Ph.D.

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Education, Training and Positions

Associate Professor Microbiology & Molecular Biology, Brigham Young University, 2015-present
Assistant Department Chair Microbiology & Molecular Biology, Brigham Young University, 2015-present
Assistant Professor Microbiology & Molecular Biology, Brigham Young University, 2009-2015
Postdoc Departments of Pathology and Genetics, Stanford University School of Medicine, 2004-2009
Ph.D. Molecular, Cellular and Developmental Biology Graduate Program, Yale University, 2004
M.Phil. Molecular, Cellular and Developmental Biology Graduate Program, Yale University, 2001
M.S. Molecular Biology Program, San Diego State University, 1999
B.S. Molecular Biology major, Chemistry and Philosophy minors, Brigham Young University, 1994

Honors and Fellowships

Phi Kappa Phi Faculty Initiate, ΦΚΦ Chapter 58, Brigham Young University. 2013
Teaching Award (Highest Students Ratings in a 500-level Course). 2012
Department of Microbiology and Molecular Biology, Brigham Young University
Research Award (Highest Impact Factor Journal Publication). 2012
Department of Microbiology and Molecular Biology, Brigham Young University
Postdoctoral Fellowship, Ruth L. Kirschstein-NSRA, Stanford Genome Training Program. 2008-2009
Invited Nobel week seminar, Karolinska Institutet, Stockholm, Sweden. December 2006
Postdoctoral Fellowship, American Cancer Society, Inc. 2005-2008
Exceptionally clear and effective poster presentation Award, MCDB Retreat, Yale University. 2002
Outstanding Teaching Associate of 1999, Biology Department, SDSU. 1999
Blue Ribbon Protocol Award, American Society of Nephrology Annual Meeting. 1996
Trustees' Scholar and Scholarship, Brigham Young University. 1988-1989, 1992-1994
Regents' Scholarship, Arizona State University, gratefully declined. 1988

Peer-Reviewed Publications (total Google scholar citations 5352)

BYU students underlined

1. Kempton, C.E., Weber, K.S., and **Johnson, S.M.** (2017) Method to increase undergraduate laboratory student confidence in performing independent research. ***JMBE***, 18:1, xxx-xxx.
2. Weber, K.S., Jensen, J.L., and **Johnson, S.M.** (2015) Anticipation of personal genomics data enhances interest and learning environment in genomics and molecular biology undergraduate courses. ***PLoS One***, 10(8): e0133486. doi:10.137/journal.pone.0133486.
3. Kempton, C.E., Heninger, J.R., and **Johnson, S.M.** (2014) Reproducibility and consistency of *in vitro* nucleosome reconstitutions demonstrated by invitrosome isolation and sequencing. ***PLoS One***, 9(8): e103752. doi:10.137/journal.pone.0103752.
4. Locke, G., Haberman D., **Johnson, S.M.**, and Morozov, A.V. (2013) Global remodeling of nucleosome positions in *C. elegans*. ***BMC Genomics***, 14:284.
5. Kundaje, A., Kyriazopoulou-Panagiotopoulou, S., Libbrecht, M., Smith, C.L., Raha, D., Winters, E.E., **Johnson, S.M.**, Snyder, M.P., Batzoglou S., and Sidow, A. (2012) Ubiquitous heterogeneity and asymmetry

of the chromatin environment at regulatory elements. ***Genome Res***., 22, 1735-1747. *Featured on the journal cover*.

6. Valouev, A., **Johnson, S.M.**, Boyd, S., Smith, C.L., Fire, A.Z., and Sidow, A. (2011) Determinants of nucleosome organization in primary human cells. ***Nature***, 474, 516-520. *Web of Science Highly Cited Paper*.
7. **Johnson, S.M.** (2010) Painting a perspective on the landscape of nucleosome positioning. ***J Biomol Struct Dyn***., 27, 795-802.
8. Valouev, A., Ichikawa, J., Tonthat, T., Stuart, J., Ranade, S., Peckham, H., Zeng, K., Malek, J.A., Costa, G., McKernan, K., Sidow, A., Fire, A., and **Johnson, S.M.** (2008) A high-resolution, nucleosome position map of *C. elegans* reveals a lack of universal sequence-dictated positioning. ***Genome Res***., 18, 1051-1063. *Featured on the journal cover*.
9. **Johnson, S.M.**, Tan, F.J., McCullough, H.L., Riordan D.P., and Fire, A.Z. (2006) Flexibility and constraint in the nucleosome core landscape of *Caenorhabditis elegans* chromatin. ***Genome Res***., 16, 1505-1516. *Recommended by Faculty of 1000. Featured on the journal cover*.
10. Moreno-Herrero, F., Seidel, R., **Johnson, S.M.**, Fire, A., and Dekker, N.H. (2006) Structural analysis of hyperperiodic DNA from *Caenorhabditis elegans*. ***Nucleic Acids Res***., 34, 3057-3066.
11. Esquela-Kerscher, A., **Johnson, S.M.**, Bai, L., Saito, K., Partridge, J., Reinert, K.L., and Slack, F. J. (2005) Post-embryonic expression of *C. elegans* microRNAs belonging to the *lin-4* and *let-7* families in the hypodermis and the reproductive system. ***Dev. Dynamics***, 234, 868-877.
12. **Johnson, S.M.**, Grosshans, H., Shingara, J., Byrom, M., Jarvis, R., Cheng, A., Labourier, E., Reinert, K.L., Brown, D., and Slack, F.J. (2005) *RAS* is regulated by the *let-7* microRNA family. ***Cell***, 120, 635-647. *Must Read by Faculty of 1000. Web of Science Highly Cited Paper*.
13. **Johnson, S.M.**, Lin, S-Y., and Slack, F.J. (2003) The time of appearance of the *C. elegans let-7* microRNA is transcriptionally controlled utilizing a temporal regulatory element in its promoter. ***Dev. Biol***., 259, 364-379. *Recommended by Faculty of 1000*.
14. Lin, S-Y., **Johnson, S.M.**, Abraham, M., Vella, M.C., Pasquinelli, A., Gamberi, C., Gottlieb, E., and Slack, F.J. (2003) The *C. elegans hunchback* homolog, *hbl-1* controls temporal patterning and is a probable microRNA target. ***Dev. Cell***, 4, 639-650.
15. Ma, X., Husain, T., Peng, H., Lin, S., Mironenko, O., Maun, N., **Johnson, S.**, Tuck, D., Berliner, N., Krause, D.S., and Perkins, A.S. (2002) Development of a murine hematopoietic progenitor complementary DNA microarray using a subtracted complementary DNA library. ***Blood***, 100, 833-844.

Invited Seminars and Talks

Nucleosome Positioning, Meta-Shapes and Transgene Expression.
Invited seminar, Department of Molecular Biology and Biochemistry, Rutgers University, Piscataway, New Jersey September 17, 2015

Nucleosome Positioning.
Invited lecture, Department of Molecular Biology and Biochemistry, Rutgers University, Piscataway, New Jersey September 17, 2015

Chromatin Architecture, Meta-Shapes and Transgene Expression.
Invited seminar, MCDB, Yale University, New Haven, Connecticut March 18, 2014

Chromatin Patterns, Meta-Shapes and Transgene Expression.
Invited seminar, Biology Department, San Diego State University, San Diego, California, June 24, 2013

Evaluating, Defining and Applying Sequence-Directed Nucleosome Positioning.
Invited seminar, Center for NanoBiotechnology and Life Sciences Research, Alabama State University, Montgomery, Alabama, April 25, 2013

Unraveling The Patterns That Turn On Genes.
Invited seminar, Research Revolution '13, Orem Public Library, Orem, Utah, February 26, 2013

Nucleosome Organization and Positioning: From Human Cells to C. elegans.
Invited talk, The 2013 Southwest Regional Meeting of the Society for Developmental Biology, University of Utah, Salt Lake City, Utah, February 15, 2013

Nucleosome Organization and Positioning in Human Cells.
Invited talk and session chair, 5th Annual GeneExpression Systems-Epigenomics, Sequencing & SNiPomics 2012 meeting, Harvard Medical School, Boston, Massachusetts, July 9, 2012

Chromatin Architecture: Turning On and Off Genes.
Keynote address, 6th Annual Biotechnology Symposium, Mesa Community College, Mesa, Arizona, April 20, 2012

Gene Therapy-Turning On and Off Genes.
Invited seminar, Research Revolution '12, Orem Public Library, Orem, Utah, February 15, 2012

Chromatin Architecture, Nucleosome Positioning and Gene Regulation.
Invited seminar, Biophysics Graduate Symposium, Department of Physics and Biophysics Graduate Program, The Ohio State University, Columbus, Ohio, January 12, 2012

Nucleosome Organization in Primary Human Cells.
Selected talk, Keystone Symposia on Molecular and Cellular Biology; Histone Code: Fact or Fiction, Midway, Utah, January 13, 2011

Chromatin Architecture and Nucleosome Organization in Primary Human Cells.
Invited seminar, CTE Seminar Series, Life Science Department, Mesa Community College, Mesa, Arizona, December 1, 2010

Epigenetics, Chromatin Architecture and Nucleosome Positioning.
Invited seminar, Current Topics in Molecular Life Sciences Seminar, Brigham Young University, Provo, Utah, October 14, 2010

Genome-wide mapping and analysis of nucleosome positions in multiple human tissues.
Panel member and invited talk, Post-Conversation Nucleosome Positioning Workshop, 16th Conversation Satellite, State University of New York, Albany, New York, June 20, 2009

Parallel evolution of hypotheses and sequencing technologies in understanding chromatin architecture.
Invited seminar, San Francisco State University, San Francisco, California, October 16, 2008

Local scrutiny and global examination of flexibility and constraint in the C. elegans nucleosome position-ome.
Invited seminar, Utah State University, Logan, Utah, October 23, 2007

Toward a high-resolution nucleosome position map of the Caenorhabditis elegans genome.
Selected talk, 16th International *C. elegans* Meeting, University of California, Los Angeles, California, June 2007

Toward a high-resolution nucleosome position map of the C. elegans genome.
Selected talk, Bay Area Worm Meeting, California State University, East Bay, Hayward, California, March 2007

Contrasting methods of gene regulation: from small RNAs to the chromatin landscape.
Invited Nobel week seminar, Department of Oncology, Södersjukhuset, Karolinska Institutet, Stockholm, Sweden, December 2006

Flexibility and constraint in the nucleosome core landscape of Caenorhabditis elegans chromatin.
Invited talk, Bay Area Chromatin Meeting, Stanford University School of Medicine, Stanford, California, June 2006

The C. elegans ras gene, let-60, is regulated by a let-7 microRNA family member.
Invited talk, Developmental Biology Symposium, Yale University, New Haven, Connecticut, January 2004

mir-84, a let-7 family member, may regulate timing and other aspects of developmental events.
Selected talk, 14th International *C. elegans* Meeting, University of California, Los Angeles, California, July 2003

Temporal regulation of the let-7 stRNA.
Selected talk, MCDB Departmental Retreat, Woods Hole, Massachusetts, April 2001

Mentoring

Since 2009, I have been on 2 graduate student committees.

Since 2009, I have mentored 30 undergraduate students, five master's student (two graduated) and two Ph.D. student in my lab.

Johnson Lab Abstracts/Posters/Student Presentations (BYU student authors are underlined)

1. Nay, SJ. and Johnson, SM. (2014) Talk, UCUR, Brigham Young University
2. Richie, JB. and Johnson, SM. (2014) Poster, UCUR, Brigham Young University
3. Nay, SJ. and Johnson, SM. (2014) Poster, President's Leadership Council Presentation
4. Kempton, CE., Winters, EE. and Johnson, SM. (2013) Poster, 17th International C. elegans Meeting
5. Wright, AN. and Johnson, SM. (2013) Poster, 17th International C. elegans Meeting
6. Hammond, TR. and Johnson SM. (2013) Poster, President's Leadership Council Presentation
7. Shumway, HS., Hecht, KB. and Johnson, SM. (2013) Poster, UCUR, Utah State University
8. Hammond, TR. and Johnson, SM. (2013) Poster, UCUR, Utah State University
9. Vranes, ML. and Johnson, SM. (2013) Poster, UCUR, Utah State University
10. Wilkes, SR., McQuivey, KS. and Johnson, SM. (2012) Poster, NCUR, Weber State University
11. Roberts, JA., Martinez, SM. and Johnson, SM. (2012) Poster, NCUR, Weber State University
12. McQuivey, KS., Kempton, CE. and Johnson, SM. (2012) Poster, NCUR, Weber State University
13. Bollenbach, KS., Loud, Z. and Johnson, SM. (2012) Poster, NCUR, Weber State University
14. Winters, EE., Johnson, SM. and Singh, SR. (2012) Poster, President's Leadership Council Presentation
15. Winters, EE., Kundaje, A., Kyriazopoulou-Panagiotopoulou, S., Libbrecht, M., Smith, CL., Raha, D., Sidow, A., Snyder, MP., Batzoglou S., and Johnson, SM. (2012) Poster, President's Leadership Council Presentation
16. Kempton, CE., Winters, EE. and Johnson, SM. (2011) Poster, 16th International C. elegans Meeting
17. Johnson, SM., Valouev, A., Boyd, S., Smith, C., Sidow, A. and Fire, A. (2011) Poster, Keystone Symposia
18. Jorgensen, BV., Winters EE. and Johnson, SM. (2010) Poster, Life Sciences Practice Poster Session, BYU
19. Wilkes, SR., McQuivey, KS. and Johnson, SM. (2010) Poster, Life Sciences Practice Poster Session, BYU

Johnson Lab Student ORCA awards (BYU student authors are underlined)

1. Richie, JB. (2014) Histone Modifications and their Effects on Nucleosome Positioning and Gene Expression
2. Shumway, HS. (2013) Tissue Specific Isolation of Nucleosomes in *Caenorhabditis elegans*
3. Vranes, ML. (2013) The Effects of DNA Methylation on Nucleosome Positioning
4. Roberts, JA. (2012) DNA Sequence Effects on Nucleosome positioning
5. Bollenback, KS. (2011) Determining Nucleosome positioning in Varying Developmental Stages of *Caenorhabditis elegans*
6. Jorgensen, BV. (2010) Moving Nucleosomes to Regulate and Maintain Gene Function
7. Winters, EE. (2010) Isolating Mononucleosome Core DNAs To Be Used in the ENCODE Project

Current Funding

2014-2017 **Steven M. Johnson** (PI). 1R15GM110646-01, NIH/NIGMS; $330,030
Overcoming Transgene Silencing by DNA-Directed Chromatin Reconformation

2016-2017 **Steven M. Johnson** (PI). Teaching Enhancement Grant, Col. of Life Sciences, BYU; $8,700
Integrating microbiome metagenomic analysis into immuno, mol bio and genomics

Completed Funding

2014-2015 **Steven M. Johnson** (PI). Teaching Enhancement Grant; $8,500
Integrating personal genome testing into genomics courses
College of Life Sciences, Brigham Young University

2012-2014 **Steven M. Johnson** (PI). Mentoring Environment Grant; $20,000
Office of Research and Creative Activities, Brigham Young University

2010-2012 **Steven M. Johnson** (PI). Mentoring Environment Grant; $20,000
Office of Research and Creative Activities, Brigham Young University

2009-2011 **Steven M. Johnson** (PI). Mentoring Environment Grant; $20,000
Office of Research and Creative Activities, Brigham Young University

2005-2008 Postdoctoral Fellowship; $138,000
American Cancer Society, Inc.

Teaching

Advanced Molecular Biology MMBIO 441	(2009-present)
Advanced Molecular Biology Laboratory MMBIO 442	(2009-present)
Molecular Biology of the Cell MMBIO 661	(2010-2015)
Readings in Molecular Biology MMBIO 390R	(2011)
RNA mediated Gene Regulation MMBIO 515	(2011)
Genomics MMBIO 468	(2012-present)
Molecular Biology Seminar MMBIO 490R	(2013)
Graduate Seminar MMBIO 691R	(2013)
Genomics MMBIO 665	(2017-present)

Citizenship

MMBIO Graduate Committee 2009-present
Genomics Group Meeting Organizer 2009-2010
ORCA Undergraduate Grant Reviewer 2010
Life Sciences Building Committee 2010-2015
College Safety Committee 2011-present
MMBIO Executive Committee 2015-present
College Research Committee 2015-present

Editorial Positions

Ad Hoc Reviewer: *Genome Research* 2009, 2010, 2011, 2012, 2013; *Nature Structure and Molecular Biology* 2012; *Nature Communications* 2014; *BMC Genomics* 2010

Editorial Board: *Journal of Nanogenomics and Nanomedicine* 2012-present

Ad Hoc Member, Pathogenic Eukaryotes Study Section, National Institutes of Health, IDM, PTHE 2015

Patents

2004 Frank J. Slack, **Steven M. Johnson** and Helge Grosshans
Regulation of Oncogenes by microRNAs