

**William J. Belden, Ph.D.**

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**Education**

- 1997-2002            Ph.D., Molecular and Cellular Biology (with high distinction)  
Dartmouth College, Hanover, NH
- 1992-1993            Postbaccalaureate Biology Program  
Bennington College, Bennington, VT
- 1986-1990            B.S., Aerospace Engineering  
State University of New York at Buffalo, Buffalo, NY

**Professional Positions**

- 2016-Present        Associate Professor, Department of Animal Sciences  
School of Environmental and Biological Sciences  
Rutgers, The State University of New Jersey
- 2013-2016            Assistant Professor, Department of Animal Sciences  
School of Environmental and Biological Sciences  
Rutgers, The State University of New Jersey  
*(Transferred from the Department of Biochemistry and Microbiology)*
- 2013-Present        Member, Graduate Program in Endocrinology and Animal Biosciences  
Rutgers Graduate School–New Brunswick
- 2013-Present        Member, Graduate Program in Cell and Developmental Biology  
Rutgers Graduate School–New Brunswick
- 2010-Present        Member, Graduate Program in Microbial Biology  
Rutgers Graduate School–New Brunswick
- 2010-Present        Member, Joint Graduate Program in Toxicology  
Rutgers Graduate School–New Brunswick
- 2010-Present        Member, NIEHS Center for Environmental Exposures and Disease  
Rutgers, The State University of New Jersey
- 2009-2013            Assistant Professor, Department of Biochemistry and Microbiology  
School of Environmental and Biological Sciences  
Rutgers, The State University of New Jersey
- 2003-2009            Postdoctoral Fellow, Genetics Department  
Dartmouth Medical School  
Advisor: Jay C. Dunlap, Ph.D.

2002-2003	Postdoctoral Fellow, Department of Biochemistry and Biophysics University of Pennsylvania School of Medicine Advisor: P. Leslie Dutton, Ph.D.
1997-2002	Graduate Student, Department of Biochemistry Dartmouth Medical School Advisor: Charles Barlowe, Ph.D.
1995-1997	Research Technician, Department of Biochemistry Dartmouth Medical School Advisor: Charles Barlowe, Ph.D.
1993-1995	Research Technician, Infectious Disease Unit Massachusetts General Hospital Advisor: Samuel I. Miller, M.D.

### **Awards and Honors**

2010-2012	Charles and Johanna Busch Memorial Award
2004-2007	Ruth L. Kirschstein–NRSA Postdoctoral Fellowship (NIH-NIGMS)
2002	John W. Strohschein Award for Excellence in Biomedical Research, Dartmouth Medical School ( <i>given to a single outstanding graduate student upon graduation</i> )
1999-2001	National Institutes of Health Pre-Doctoral Training Grant (NIGMS)
1991-1992	Dean's List, Bennington College
1986-1990	New York State Regent's Scholarship

### **Professional Societies**

2012-Present	American Society for Biochemistry and Molecular Biology
2010-Present	Genetics Society of America
2010-Present	Society for Research on Biological Rhythms
2005-Present	American Society of Cell Biology

### **Professional Activities**

#### **Students and Fellows Mentored**

<b>Undergraduates:</b>	Carly Deantoneo (2015-Present) Frenzhel Leyesa (2015-2017) Riasat Zaman (2012-2016) Catherine Ruesch (2010-2013) Hamidah Raduwan (2009-2011) Richard Frani (2009-2010) Krishma Patel (2009-2010) Swathi Gopalakrishnan (2003-2004; Dartmouth)
<b>Ph.D. Students:</b>	Qiaoqiao Zhu (2014-Present) Jinhee Park (2012-Present)
<b>Postdoctoral Fellows:</b>	Mukund Ramakrishnan, Ph.D. (2014-2017) Na Li, Ph.D. (2012-2016) Hin Siong Chong, Ph.D. (2012-2014)

## Courses Taught

### Rutgers, The State University of New Jersey:

Sp 2014-Present	Molecular and Cellular Physiology (11:067:492); Spring term
Sp 2011-Sp 2013	Microbial Genetics and Molecular Biology (16:682:504); Spring term
Fa 2010-Sp 2013	Seminar in Chromatin and Gene Expression (16:681:685); both Spring and Fall terms
Sp 2010	Topics in Molecular and Cellular Biology (16:695:612)

### Dartmouth College:

2000	Biochemistry, Invited to lecture 2 classes as a graduate student
1999	Teaching Assistant for Advanced Biochemistry
1998	Teaching Assistant for Biochemistry Lab

### Publications (\*, \*\*, and \*\*\* denotes those with $\geq$ 25, 50, and 100 citations, respectively)

[Total citations = 1900; Average citations per published paper = 63; Source: Google Scholar]

30. Al-Baghdadi, R.J.T., Nikonorova, I.A., Mirek, E.T., Wang, Y., Park, J., **Belden, W.J.**, Wek, R.C. and Anthony, T.G. (2017) Role of activating transcription factor 4 in the hepatic response to amino acid depletion by asparaginase. *Scientific Reports* 7:1272, 1-12.
29. Roberts, C.A., Al-Tameemi, H.A., Mashruwala, A.A., Rosario-Cruz, Z., Chauhan, U., Sause, W.E. Torres, V.J., **Belden, W.J.**, Boyd, J.M. (2017) The Suf iron-sulfur cluster biosynthetic system is essential in *Staphylococcus aureus* and decrease Suf function results in global metabolic defects and reduced survival in human neutrophils. *Infection and Immunity*. Accepted for Publication, Epub ahead of Print.
28. Yang, J.A., Stires, H, **Belden, W.J.**, and Roepke, T.A. (2017) The Arcuate Estrogen-Regulated Transcriptome: Estrogen Response Element-Dependent and -Independent Signaling of ER $\alpha$  in Female Mice. *Endocrinology* **158(3)**: 612-626.
27. **Belden, W.J.** (2017) Circadian Plasticity of Chromatin States, In: Chromatin Regulation and Dynamics. pg 399-416. London: Academic Press.  
<http://www.sciencedirect.com/science/article/pii/B9780128033951000162>
26. Li, N., Joska, T.M., Ruesch, C.E., Coster, S.J., and **Belden, W.J.** (2015) The *frequency* Natural Antisense Transcript First Promotes, Then Represses, *frequency* Gene Expression via Facultative Heterochromatin. *Proc Natl Acad Sci USA* **112**: 4357-4362.
25. Ruesch, C.E., Ramakrishnan, M., Park, J., Li, N., Chong, H.S., Zaman, R., Joska, T.M., and **Belden, W.J.** (2014) The Histone H3 Lysine 9 Methyltransferase DIM-5 Modifies Chromatin at *frequency* and Represses Light-Activated Gene Expression. *G3: Genes, Genomes, Genetics* **5**: 93-101. **Cover Article**
24. Joska, T.M., Zaman, R., and **Belden, W.J.** (2014) Regulated DNA methylation and the circadian clock: implications in cancer. *Biology* **3**: 560-577.
- 23.\* Hong, C.I., Zámboorszky, J., Baek, M., Labiscsak, L., Ju, K., Lee, H., Larrondo, L.F., Goity, A., Chong, H.S., **Belden, W.J.**, and Csikász-Nagy, A. (2014) Circadian Rhythms Synchronize Mitosis in *Neurospora crassa*. *Proc Natl Acad Sci USA* **111(4)**: 1397-1402.

- 22.\* Joska T.M., Mashruwala A, Boyd J.M, and **Belden W.J.** (2014) A universal cloning method based on yeast homologous recombination that is simple, efficient and versatile. *J Microbiol Methods* **100**: 46-51.
21. **Belden, W.J.**, and Dunlap, J.C. (2013) Aging Well with a Little Wine and Good Clock. *Cell* **153**(7): 1421-1422.
20. Raduwan, H., Isola, A.L., and **Belden, W.J.** (2013) Methylation of histone H3 on lysine 4 by the lysine methyltransferase SET1 protein is needed for normal clock gene expression. *Journal of Biological Chemistry* **288**(12): 8380-8390.
- 19.\*\* **Belden, W.J.**, Lewis Z.A., Selker E.U., Loros, J.J., and Dunlap, J.C. (2011) CHD1 Remodels Chromatin and Influences Transient DNA Methylation at the Clock Gene frequency. *PLoS Genetics* **7**: e1002166.
- 18.\*\* Froehlich, A.C., Chen, C.H., **Belden, W.J.**, Madeti, C., Roenneberg, T., Mellow, M., Loros, J.J., and Dunlap, J.C. (2010) Genetic and molecular characterization of a cryptochrome from the filamentous fungus *Neurospora crassa*. *Eukaryotic Cell* **9**: 738-750.
- 17.\*\* **Belden, W.J.**, and Dunlap, J.C. (2008) SIRT1 is a circadian deacetylase for core clock components. *Cell* **134**: 212-214.
- 16.\*\* Lambreghts, R., Shi, M., **Belden, W.J.**, DeCaprio, D., Park, D., Henn, M.R., Galagan, J.E., Bastürkmen, M., Birren, B., Loros, J.J., and Dunlap, J.C. (2009) A High-Density Single Nucleotide Polymorphism Map for *Neurospora crassa*. *Genetics* **181**: 767-781.
- 15.\*\* Dunlap, J.C., Loros, J.J., Colot, H.V., Mehra, A., **Belden, W.J.**, Shi, M., Hong, C.I., Larrondo, L.F., Baker, C.L., Chen, C.H., Schwerdtfeger, C., Collopy, P.D., Gamsby, J. J., and Lambreghts, R. (2007) A circadian clock in *Neurospora*: how genes and proteins cooperate to produce a sustained, entrainable, and compensated biological oscillator with a period of about a day. *Cold Spring Harbor Symposia on Quantitative Biology* **72**: 57-68.
- 14.\* Loros, J.J., Dunlap, J.C., Larrondo, L.F., Shi, M., **Belden, W. J.**, Gooch, V.D., Chen, C.H., Baker, C.L., Mehra, A., Colot, H.V., Schwerdtfeger, C., Lambreghts, R., Collopy, P. D., Gamsby, J.J., and Hong, C.I. (2007) Circadian output, input, and intracellular oscillators: insights into the circadian systems of single cells. *Cold Spring Harbor Symposia on Quantitative Biology* **72**: 201-214.
13. \*\*\* **Belden, W.J.**, Larrondo, L.F., Froehlich, A.C., Shi, M., Chen, C., Loros, J.J. and Dunlap, J.C. (2007) The *band* mutation in *Neurospora crassa* is a dominant allele of *ras-1* implicating Ras-signaling in circadian output. *Genes & Development* **21**: 1494-1505.
12. \*\*\* **Belden, W.J.**, Loros, J.J., and Dunlap, J.C. (2007) Execution of the circadian negative feedback loop in *Neurospora* requires the ATP-dependent chromatin-remodeling enzyme CLOCKSWITCH. *Molecular Cell* **25**: 587-600.
11. **Belden, W.J.**, Loros, J.J., and Dunlap, J.C. (2006) CLOCK Leaves Its Mark on Histones. *Trends in Biochemical Sciences* **31**: 610-613.
10. \*\*\* **Belden, W.J.**, and Barlowe, C. (2001) Role of Erv29p in Collecting Soluble Secretory Proteins into ER-derived Transport Vesicles. *Science* **294**: 1528-1531.  
**Selected commentary on this manuscript:** Faculty of 1000 evaluations:  
<http://f1000.com/1002087#evaluations>

9. \*\* **Belden, W.J.**, and Barlowe, C. (2001) Distinct Roles for the Cytoplasmic Tail Sequences of Emp24p and Erv25p in Transport Between the Endoplasmic Reticulum and Golgi Complex. *Journal of Biological Chemistry* **276**: 43040-43048.  
**Selected commentary on this manuscript:** Faculty of 1000 evaluations:  
<http://f1000.com/1002401#evaluations>
8. \*\*\* Vashist, S., Kim, W., **Belden, W.J.**, Spear, E.D., Barlowe, C., and Ng, D.T.W. (2001) Distinct Retrieval and Retention Mechanisms Are Required for the Quality Control of Endoplasmic Reticulum Protein Folding. *Journal of Cell Biology* **155**: 355-367.  
**Selected commentary on this manuscript:** Faculty of 1000 evaluations:  
<http://f1000.com/1002049#evaluations>
7. \*\* **Belden, W.J.**, and Barlowe, C. (2001) Deletion of Yeast p24 Genes Activates the Unfolded Protein Response. *Molecular Biology of the Cell* **12**: 957-969.
6. **Belden, W.J.**, and Barlowe, C. (2001) Purification of Functional Sec13p-Sec31p Complex, a Subunit of the COPII Coat. *Methods in Enzymology* **329**: 438-443.
5. \*\*\* Otte, S., **Belden, W.J.**, Heidtman, M., Liu, J., Jensen, O.N., and Barlowe, C. (2001) Erv41p and Erv46p: New Components of COPII Vesicles Involved in Transport Between the ER and Golgi Complex. *Journal of Cell Biology* **152** (3): 503-517.
4. \*\* Gunn, J.S., **Belden, W.J.**, and Miller, S.I. (1998) Identification of PhoP-PhoQ Activated Genes within a Duplicated Region of the *Salmonella typhimurium* Chromosome. *Microbial Pathogenesis* **25**(2): 77-90.
3. \*\*\* **Belden, W.J.**, and Barlowe, C. (1996) Erv25p, a component of COPII-coated vesicles, forms a complex with Emp24p that is required for efficient endoplasmic reticulum to Golgi transport. *Journal of Biological Chemistry* **271**: 26939-26946.
2. \*\* Gunn, J.S., Alpuche-Aranda, C.M., Loomis, W.P., **Belden, W.J.**, and Miller, S.I. (1995) Characterization of the *Salmonella typhimurium pagC/pagD* Chromosomal Region. *Journal of Bacteriology* **177**: 5040-5047.
1. \*\*\* **Belden, W.J.**, and Miller, S.I. (1994) Further Characterization of the PhoP Regulon: Identification of New PhoP-Activated Virulence Loci. *Infection and Immunity* **62**: 5095-5101.

**Invited Talks:**

26. "The Circadian Clock, Noncoding RNA, Heterochromatin and Aging" Rockefeller University, New York, NY, December 7, 2016.
25. "Facultative heterochromatin at the clock gene *frequency*" 2016 Neurospora Fungal Genetics Conference, Asilomar Conference Center, Pacific Grove, CA, March 13, 2016.
24. "Natural Antisense Transcripts and Facultative Heterochromatin in the Circadian Clock" Penn Chronobiology Program Clock Meeting Series University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, October 19, 2015.

23. "The Circadian Clock, Noncoding RNA and Heterochromatin"  
Seminars in Endocrinology and Animal Biosciences  
Rutgers University, New Brunswick, NJ, October 19, 2015.
22. "Circadian Rhythms, Noncoding RNA and Heterochromatin"  
Child Health Institute of New Jersey Seminar Series  
Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ, June 22, 2015.
21. "The Protective Effects of Circadian Chromatin in Aging and Age-related Disease"  
NE1439 Changing the Health Trajectory of Older Adults Annual Meeting  
Narragansett, RI, June 8, 2015.
20. "Chromatin Remodeling, Natural Antisense Transcripts, and Facultative  
Heterochromatin Control the Circadian Rhythm with a Surprising Twist"  
Proteomics & BioMaPS Joint Seminar Series  
Rutgers University, Piscataway, NJ, April 22, 2015.
19. "The Interconnected Network Between the Circadian Clock and Facultative  
Heterochromatin"  
The Interactive Group in Human Genetics Meeting  
Rutgers University, Piscataway, NJ, March 10, 2015.
18. "How Chromatin Remodeling Controls the Circadian Rhythm"  
Smith College, Northampton, MA, October 6, 2014.
17. "The *frequency* Natural Antisense Transcript Promotes then Represses Expression via  
Facultative Heterochromatin"  
14<sup>th</sup> Biennial Meeting of the Society for Research on Biological Rhythms (SRBR)  
Big Sky, MT, June 17, 2014.
16. "Chromatin in circadian and light regulated gene expression."  
2014 Neurospora Fungal Genetics Conference,  
Asilomar Conference Center, Pacific Grove, CA, March 18, 2014.
15. "The Role of Chromatin Remodeling in Circadian Rhythms"  
Drexel University School of Medicine, Philadelphia, PA, October 8, 2012.
14. "The Role of Chromatin Remodeling in Circadian Rhythms"  
Virginia Commonwealth University School of Medicine, Richmond, VA, July 11, 2012.
13. "Chromatin Remodeling Assists Circadian Clock-regulated Gene Expression"  
13<sup>th</sup> Biennial Meeting of the Society for Research on Biological Rhythms (SRBR)  
Sandestin, FL, May 22, 2012.
12. "Microbial Genomics in the Space-Time Continuum"  
Fairleigh Dickinson University, Teaneck, NJ, September 27, 2011.
11. "Examining the Role of Histone Crosstalk in Circadian Regulated Gene Expression"  
Keystone Symposia, Histone Code: Fact or Fiction  
Midway, Utah, January 14, 2011.
10. "Circadian Rhythms, Chromatin Remodeling, Cancer, and Mold"  
Department of Chemical Biology Seminar Series, Ernest Mario School of Pharmacy  
Piscataway, NJ, November 18, 2010.

9. "Chromatin Remodeling and Epigenetics Assist Clock-regulated Gene Expression"  
26<sup>th</sup> Conference of the International Society for Chronobiology  
Vigo, Spain, July 7, 2010.
8. "Chromatin Remodeling and Epigenetics Assist Circadian Regulated Gene Expression"  
The Waksman Institute of Microbiology, Piscataway, NJ, April 24, 2010.
7. "The Biological Clock, Its Time to Remodel"  
The 4<sup>th</sup> Annual Mini-Symposium on Microbiology  
New Brunswick, NJ, Feb. 2, 2010.
6. "Circadian Clock-Regulated Gene Expression Requires Chromatin Remodeling"  
Tulane University School of Medicine, New Orleans, LA, August 14, 2009.
5. "Chromatin Remodeling and Epigenetics Assist Circadian Clock-Regulated Gene Expression"  
25<sup>th</sup> Fungal Genetics Conference, Asilomar Conference Center, Pacific Grove, CA,  
March 18, 2009.
4. "Circadian Clock-Regulated Gene Expression Requires Chromatin Remodeling"  
Albert Einstein School of Medicine, New York, NY, February 19, 2009.
3. "Chromatin Remodeling and Circadian Clock-Regulated Gene Expression"  
University of California, Davis, Davis, CA, January 30, 2008.
2. "Chromatin Remodeling and Epigenetics Assist Circadian Clock-Regulated Gene Expression"  
University of Connecticut, Storrs, CT, December 10, 2007.
1. "Lessons about circadian control from systematic disruption of putative chromatin remodeling factors"  
2006 *Neurospora* Fungal Genetics Conference, Asilomar Conference Center,  
Pacific Grove, CA, April 2, 2006.

**Poster Presentations:**

*Due to space considerations, published abstracts and posters presented at scientific meetings are omitted but can be provided upon request.*

**Community Outreach:**

Rutgers Cooperative Extension, Environmental Stewards Colloquium & Commencement  
"The circadian clock, aging and disease"  
Duke Farms, Hillsborough, NJ, October 28, 2014

Community Discussion on Environmental Health & Exposures  
"The adverse health effects of light-at-night and insults to normal circadian rhythms"  
Temple Emanu-El, Edison, NJ, December 7, 2011