

# Christopher M. Uyehara

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## Research Experience

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2021 – Present **Postdoctoral Research Associate**

**Weill Cornell Medicine, New York, NY**

Molecular mechanisms of coordinated gene expression in stem cell development

- Use a mixture of targeted and global approaches to explore how cis-regulatory elements cooperate with one another to establish precise gene expression profiles in a variety of stem and stem-like cells.
- Mammalian tissue culture, *in vivo* differentiation, generation and validation of cell lines using viral delivery systems
- Targetted dCas9 CRISPR based tools

2014 – 2021

**Graduate Student, Ph.D**

**University of North Carolina, Chapel Hill, NC**

Tissue- and temporal-specific binding of the ecdysone hormone receptor directs genome-wide changes in gene expression

- Integrated RNAseq, FAIREseq, and CUT&RUN to investigate the role of the ecdysone hormone receptor in directing changes in gene expression over time and across tissues.
- Performed targeted experiments on cloned enhancers to determine how their activity patterns were established and regulated.
- Used immunofluorescence to connect genome-wide observations to broader developmental phenotypes

2012 – 2014

**Graduate Student, M.S**

**College of William and Mary, Williamsburg, VA**

New Insights into Fibrous Body Protein Complexes Involved in *C. elegans* Spermatogenesis

- Used fluorescence microscopy, DIC, western blots and immunoprecipitations to characterize the protein localization and PTM states of MSP accessory proteins.

2011 – 2012

**Undergraduate, B.S**

**University of Virginia, Charlottesville, VA**

Circadian Rhythms in *D. melanogaster*

- Performed a targeted screen of candidate transcription factors using RNAi and overexpression lines to identify novel transcription factors involved in effecting the rhythms of *D. melanogaster*.

## Education

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2014 – 2021 **University of North Carolina, Chapel Hill NC**

Degree: Ph.D., Genetics and Molecular Biology

Adviser: Daniel J. McKay

2012 – 2014      **College of William and Mary, Williamsburg VA**

Degree: M.S., Biology

Adviser: Diane C. Shakes

2008 – 2012      **University of Virginia, Charlottesville VA**

Degree: B.S., Biology

Adviser: Herman Wijnen

## Publications

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- Chatterjee K.\*, **Uyehara, C.M.\***, Kasliwal, K., Madhuranath, S., Scourzic, L., Polyzos, A., Apostolou, E., Stadtfeld, M. (2025). Coordinated repression of totipotency-associated gene loci by histone methyltransferase EHMT2 via LINE1 regulatory elements. *Embo Reports.* [10.1038/s44319-025-00657-5](https://doi.org/10.1038/s44319-025-00657-5). \*equal contributions
- Ee LS., Medina-Cano M., Goetzler E.M., **Uyehara C.**, Schwarz C., Salataj E., Madhuranath S., Evans T., Hadjantonakis A.K., Apostolou E., Polyzos A., Vierbuchen T., Stadtfeld, M. (2025). Enhancer remodeling by OTX2 directs specification and patterning of mammalian definitive endoderm. *Developmental Cell.* [10.1016/j.devcel.2025.07.020](https://doi.org/10.1016/j.devcel.2025.07.020).
- Murphy, D., Salataj, E., Di Giammartino, D.C., Rodriguez-Hernaez, J., Kloetgen, A., Garg, V., Char, E., **Uyehara, C.M.**, Ee, L., Lee, U., Stadtfeld, M., Hadjantonakis, A., Tsirigos, A., Polyzos, A., Apostolou, E. (2024). 3D Enhancer-promoter networks provide predictive features for gene expression and coregulation in early embryonic lineages. *Nature structural & molecular biology.* [10.1038/s41594-023-01130-4](https://doi.org/10.1038/s41594-023-01130-4)
- Uyehara, C.M.**, Apostolou, E. (2023). 3D enhancer-promoter interactions and multi-connected hubs: Organizational principles and functional roles. *Cell reports.* [10.1016/j.celrep.2023.112068](https://doi.org/10.1016/j.celrep.2023.112068)
- Buchert, E.M., Fogarty, E.A., **Uyehara, C.**, McKay, D.J., and Buttitta, L.A. (2023). A tissue dissociation method optimized for ATAC-seq and CUT&RUN in *Drosophila* pupal tissues. *Fly* (1), 2209481. [10.1080/19336934.2023.2209481](https://doi.org/10.1080/19336934.2023.2209481)
- Uyehara, C.M.**, Leatham-Jensen, M., and McKay, D.J. (2022). Opportunistic binding of EcR to open chromatin drives tissue-specific developmental responses. *Proceedings of the National Academy of Sciences* 119, e2208935119. [10.1073/pnas.2208935119](https://doi.org/10.1073/pnas.2208935119).
- Morrison, K.N., **Uyehara, C.M.**, Ragle, J.M., Ward, J.D., and Shakes, D.C. (2021). MFP1/MSD-1 and MFP2/NSPH-2 co-localize with MSP during *C. elegans* spermatogenesis. *MicroPubl Biol* 2021.
- Price, K.L., Presler, M., **Uyehara, C.M.**, and Shakes, D.C. (2021). The intrinsically disordered protein SPE-18 promotes localized assembly of MSP in *Caenorhabditis elegans* spermatocytes. *Development* 148. <https://doi.org/10.1242/dev.195875>

**Uyehara, C.M.**, and McKay, D.J. (2019). Direct and widespread role for the nuclear receptor EcR in mediating the response to ecdysone in *Drosophila*. *Proc Natl Acad Sci U S A* 116, 9893–9902.  
[10.1073/pnas.1900343116](https://doi.org/10.1073/pnas.1900343116).

Leatham-Jensen, M., **Uyehara, C.M.**, Strahl, B.D., Matera, A.G., Duronio, R.J., and McKay, D.J. (2019). Lysine 27 of replication-independent histone H3.3 is required for Polycomb target gene silencing but not for gene activation. *PLoS Genet* 15, e1007932. [10.1371/journal.pgen.1007932](https://doi.org/10.1371/journal.pgen.1007932).

**Uyehara, C.M.\***, Nystrom, S.L.\*<sup>†</sup>, Niederhuber, M.J., Leatham-Jensen, M., Ma, Y., Buttitta, L.A., and McKay, D.J. (2017). Hormone-dependent control of developmental timing through regulation of chromatin accessibility. *Genes Dev*. [10.1101/gad.298182.117](https://doi.org/10.1101/gad.298182.117). \*equal contributions

## Academic and Professional Honors

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### Weill Cornell Cardiovascular Research Institute

July 2023 – July 2026                      National Heart, Lung, and Blood Institute (NHLBI) T32HL16052

### Weill Cornell Stem Cell Biology Program

Dec 2020 – Dec 2022                      NYSTEM Stem Cell Biology Research Fellow C32558GG

### University of North Carolina – Chapel Hill

Spring 2015                              NIGMS T32 Training Grant Recipient

### College of William and Mary, Williamsburg VA

Fall 2013                              Outstanding Teaching Assistant Award

Spring 2013                              Graduate Student Research Grant

### University of Virginia, Charlottesville VA

Dean's List, Four Semesters

## Teaching Experience

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Spring 2016                              **Biol 202: Introduction to Genetics and Molecular Biology**, UNC Chapel Hill  
Teaching Assistant

Fall 2013                              **BIOL 221L: Introduction to Organisms, Ecology, and Evolution**, College of W&M  
Teaching Assistant

Spring 2013                              **BIOL 310: Molecular Cell Biology**, College of W&M  
Teaching Assistant

Spring 2013                              **BIOL 407: Cell Biology Lab**, College of W&M  
Teaching Assistant

Fall 2012                              **BIOL 221L: Introduction to Organisms, Ecology, and Evolution**, College of W&M  
Teaching Assistant

## Research Presentations

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- May 2019      **Triangle Fly Symposium, Chapel Hill NC**  
**Poster Presentation**  
Uyehara CM and McKay DJ. "The ecdysone hormone receptor directs the spatial and temporal activity of target enhancers."
- April 2019      **Annual Drosophila Research Conference, Dallas TX**  
**Poster Presentation**  
Uyehara CM and McKay DJ. "The ecdysone hormone receptor directs the spatial and temporal activity of target enhancers."
- March 2019      **MIBIO Back to Basics Symposium, Chapel Hill NC**  
**Poster Presentation**  
Uyehara CM and McKay DJ. "A direct and widespread role for the nuclear receptor EcR in mediating the response to ecdysone in *Drosophila*"
- May 2018      **Triangle Fly Symposium, Durham NC**  
**Platform Presentation**  
Uyehara CM and McKay DJ. "A direct and widespread role for the nuclear receptor EcR in mediating the response to ecdysone in *Drosophila*"
- April 2018      **Annual Drosophila Research Conference, Philadelphia PA**  
**Platform Presentation.**  
Uyehara CM and McKay DJ. "The Ecdysone Hormone Receptor directs genome-wide changes in gene expression and chromatin accessibility during wing morphogenesis."
- Dec. 2017      **Chromatin and Epigenetics Symposium, Chapel Hill NC**  
**Platform Presentation**  
Uyehara CM and McKay DJ. "The Ecdysone Hormone Receptor Directs Genome-Wide Changes in Gene Expression and Chromatin Accessibility During Wing Morphogenesis in *D. melanogaster*"
- Aug 2017      **Genetics Department Retreat, Chapel Hill NC**  
**Platform Presentation.**  
Uyehara CM and McKay DJ. "The Role of the Ecdysone Hormone Receptor in Directing a Gene Expression and Chromatin Accessibility Program in *D. melanogaster*"
- March 2014      **Graduate Research Symposium, Williamsburg VA**  
**Platform Presentation**  
Uyehara CM, Messina KL and Shakes DC. "New Insights into Fibrous Body Protein Complexes Involved in *C. elegans* Spermatogenesis"
- Dec. 2013      **American Society of Cell Biology, New Orleans LA**  
**Poster Presentation**  
Uyehara CM and Shakes DC. "An Investigation of MFP2 – A Protein Involved in *C. elegans* Spermatogenesis"

April 2013

**College of William and Mary Graduate Research Symposium, Williamsburg VA**

**Poster Presentation**

Uyehara CM, Messina KL and Shakes DC. "Investigation of Two Proteins Involved in Cytoskeletal Dynamics of *C. elegans* Spermatozoa"