Tyler John Hansen

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EDUCATION:

Ph.D. Candidate, Biochemistry, Vanderbilt University, Nashville, TN, 2017-present

B.S, Biochemistry, University of Wisconsin-Madison, Madison, WI, 2011-2015

RESEARCH EXPERIENCE:

PhD Candidate, Department of Biochemistry, Vanderbilt University, Nashville, TN, 2018-present
Advisor: Emily Hodges, Ph.D.
Thesis Project: The development and application of ATAC-STARR-seq to investigate fundamental mechanisms of enhancer function.

Post-Baccalaureate IRTA Fellow, Laboratory of Biochemistry and Genetics, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2015-2017
Advisor: Andy Golden, Ph.D.
Research Focus: Modeled rare human monogenic diseases in *C. elegans* for purposes of elucidating unknown disease mechanisms and developing potential drug treatments.

Undergraduate Researcher, Department of Biochemistry, University of Wisconsin-Madison, Madison, WI, 2012-2015
Advisor: Judith Kimble, Ph.D.
Research Focus: Investigated genetic regulation of germ cell fate using the roundworm *C. elegans* as a model.

TEACHING AND MENTORING EXPERIENCE:

Assistant Facilitator, Vanderbilt University, Fall 2021 | Lead a first-year graduate student discussion group as a key contributor to the first-year IGP program. Teaching duties involved facilitating discussion of journal articles, assisting with problem set questions, and grading various assessments.

Undergraduate Mentor, Vanderbilt University, 2018-present | Mentoring an undergraduate researcher in relevant techniques, such as: ATAC-seq, electroporation transfection, flow cytometry, western blotting, human embryonic stem cell culture, and standard mammalian tissue culture.

Genome-Editing Instructor, National Institute of Diabetes and Digestive and Kidney Diseases, 2015-2017 | Trained a Ph.D. candidate and three NIH post-baccalaureate fellows in microinjection and CRISPR-based genome editing methods.

PUBLICATIONS:

Rourke, C.K., Murat, D., **Hansen, T.**, and Jaramillo-Lambert, A. (2021) Endogenous localization of TOP-2 in C. elegans using a C-terminal GFP-tag. *microPublication Biology*. doi: 10.17912/micropub.biology.000402 PMID: 34095779

Guarnaccia, A. D., … **Hansen, T.**, … Tansey, W. P. (2021) Impact of WIN site inhibitor on the WDR5 interactome. *Cell Reports.* 34(3), 108636. doi:10.1016/j.celrep.2020.108636. PMID: 33472061

Fernando, L., Nguyen, V., **Hansen, T.**, Golden, A., & Allen, A. (2020). Loss of proteasome subunit RPN-12 causes an increased mean lifespan at a higher temperature in C. elegans. *microPublication Biology*. doi: 10.17912/micropub.biology.000234 PMID: 32550497

Barnett, K. R., Decato, B., Scott, T., **Hansen, T.**, Chen, B., Attalla, J., Smith, A., & Hodges, E. (2018). ATAC-Me Captures Prolonged DNA Methylation of Dynamic Chromatin Accessibility Loci During Cell Fate Transitions. *Molecular Cell*. *77*(6), 1350–1364. doi:10.1016/j.molcel.2020.01.004 PMID: 31999955

Iyer, J., Devaul, N., **Hansen, T.**, & Nebenfuehr, B. (2019). Using Microinjection to Generate Genetically Modified Caenorhabditis elegans by CRISPR/Cas9 Editing. Methods Mol. Biol., 1874, 431—457. doi: 10.1007/978-1-4939-8831-0_25 PMID: 30353529. (Invited book chapter).

Kim, S., Twigg, S. R. F., Scanlon, V. A., Chandra, A., **Hansen, T. J**., Alsubait, A., … Corsi, A. K. (2017). Localized TWIST1 and TWIST2 basic domain substitutions cause four distinct human diseases that can be modeled in *Caenorhabditis elegan*s. *Human Molecular Genetics*, *26*(11), 2118–2132. https://doi.org/10.1093/hmg/ddx107. PMID: 28369379.

Jaramillo-Lambert, A., Fabritius, A. S., **Hansen, T. J**., Smith, H. E., & Golden, A. (2016). The Identification of a Novel Mutant Allele of topoisomerase II in *Caenorhabditis elegans* Reveals a Unique Role in Chromosome Segregation During Spermatogenesis. *Genetics*, *204*(4), 1407–1422. https://doi.org/10.1534/genetics.116.195099. PMID: 27707787.

Kershner, A. M., Shin, H., **Hansen, T. J**., & Kimble, J. (2014). Discovery of two GLP-1/Notch target genes that account for the role of GLP-1/Notch signaling in stem cell maintenance. *Proceedings of the National Academy of Sciences of the United States of America*, *111*(10), 3739–3744. https://doi.org/10.1073/pnas.1401861111. PMID: 24567412.

ORAL PRESENTATIONS:

Hansen, T., *Simultaneous profiling of regulatory activity, chromatin accessibility, and transcription factor occupancy with ATAC-STARR-seq.* Presented at The 23rd Annual Vanderbilt University Program in Developmental Biology Retreat, Lake Guntersville State Park, AL, September 2021.

Hansen, T., *Investigating gene regulatory differences in primate immune cells with ATAC-STARR-seq.* Presented at Stem and Progenitor Cell Interest Group (SPRING) seminar, Vanderbilt University, TN, March 2021.

Hansen, T., *Using ATAC-STARR-seq to identify core units of transcriptional enhancers.* Presented at Biochemistry Student Association Colloquium, Vanderbilt University, TN, November 2019.

POSTER PRESENTATIONS:

Hansen, T. *& Hodges, E. Using ATAC-STARR-seq to quantify the regulatory potential of chromatin accessible genomes.* Presented at the 5th Annual Cold Spring Harbor Laboratory meeting on Epigenetics and Chromatin, Virtual Conference, September 2020.

Hansen, T., *Wilt, A., & Hodges, E. Assaying Enhancer Activity with ATAC-STARR-seq.* Presented at the 22st Annual Vanderbilt University Program in Developmental Biology Retreat, Pickwick Landing State Park, TN, September 2019.

Hansen, T., *Barnett, K., & Hodges, E. A Functional and Unbiased Approach to Measure Global Enhancer Activity Dynamics During Cell Fate Transitions.* Presented at the 4th Annual Biochemistry Department Retreat, Vanderbilt University, February 2019. Also presented at the Epithelial Biology Center & Center for Stem Cell Biology Symposium, Vanderbilt University, April 2019.

***Hansen, T.** & Hodges, E. Measuring enhancer activity dynamics during human pluripotent stem cell differentiation using ATAC-STARR.* Presented at the 21st Annual Vanderbilt University Program in Developmental Biology Retreat, Montgomery Bell State Park, TN, September 2018.

***Hansen**, **T.** & Golden, A. Modeling NGLY1 deficiency in Caenorhabditis elegans.* Presented at the 21st International *C. elegans* Conference, Los Angeles, CA, July 2017. Also presented at the Mid-Atlantic Society for Developmental Biology Regional Meeting, University of Maryland-Baltimore County, Baltimore, MD, May 2017. Also presented at the 12th Annual NIDDK Scientific Conference, Bethesda, MD, April 2016.

***Hansen, T**., Chandra, A., Kim, S., Scanlon, V., Wilkie, A., Corsi, A., & Golden, A. Modeling Craniofacial Diseases in Caenorhabditis elegans*. Presented at the Allied Genetics Conference, Orlando, FL, July 2016. Also presented at the Mid-Atlantic Society for Developmental Biology Regional Meeting, Howard University, Washington, D.C., May 2016. Also presented at the 11th Annual NIDDK Conference, Bethesda, MD, April 2016.

***Hansen, T.**, Kershner, A., & Kimble, J. Investigating the Nuclear Import Factor Regulation of Gamete Cell Fate.* Presented at the College of Agricultural and Life Sciences Undergraduate Research Seminar, University of Wisconsin-Madison, April 2013.

HONORS/AWARDS:

Best Poster Award - Honorable Mention, The 22nd Annual Vanderbilt University Program in Developmental Biology Retreat, Pickwick Landing State Park, TN | September 2019

Dean's List Honors, University of Wisconsin-Madison, Spring Semester 2015

Dean's List Honors, University of Wisconsin-Madison, Fall Semester 2014

PROFESSIONAL MEMBERSHIPS:

American Association for the Advancement of Science Member | 2020 - Present

American Society for Biochemistry and Molecular Biology Member | 2019 - 2020